SEMI International Standards: Compilation of Terms
(Updated 0124)

Contents

Abbreviations and Acronyms	2
Definitions	39
Symbols	335

Table 1 Abbreviations and Acronyms

Term	*Meaning*	*Standard(s)*
%F.S.	percent full scale	SEMI E77, SEMI E80
'->'	indicates a mapping of an argument to its contents or its meaning.	SEMI P39
2D	two-dimensional	SEMI D59, E159, M80
3D	three-dimensional	SEMI D59
3DMAS	tris(dimethylamino) silane	SEMI C81
3DS-IC	three-dimensional stacked integrated circuit	SEMI 3D3, 3D19, 97
A	absorbance	SEMI C1
A	actuator (a CDM class definition)	SEMI E54.2
A	measured value	SEMI E56
A	elongation at rupture	SEMI PV18, PV19
Aa	average measured value (units of flow)	SEMI E56
AA	active area of the device	SEMI E35
A_{afs}	average measured value at full scale set point (units of flow)	SEMI E56
AAS	atomic absorption spectroscopy	SEMI M59
AAS/GFAAS	atomic absorption spectroscopy/graphite furnace atomic absorption spectroscopy	SEMI F48
AC	alternating current	SEMI E135, E136, E149, E176
ACAS	anti-counterfeiting authentication system	SEMI T20
ACID	atomicity consistency isolation durability	SEMI E96
ACL	access control list	SEMI E147
ACR	average picture level contrast ratio	SEMI D64
AD	accuracy of the DUT (%)	SEMI E56
ADC	analog to digital converter	SEMI PV10
addn.	addition	SEMI C1
AD_F	accuracy of the flow standard (%)	SEMI E56
AE	active element (a CDM class definition)	SEMI E54.2
AE	analysis engine	SEMI E133
AED	atomic emission detector	SEMI MF1982
AED	automated external defibrillator	SEMI S21
AES	auger electron spectroscopy	SEMI F19, F72
AEV	additional exhaust ventilation	SEMI S18
AFM	atomic force microscope	SEMI E163, HB14, M59
AFM	atomic force microscopy	SEMI C78
AGT	automated guided transport	SEMI E82, E109, E168.3
AGV	automated guided vehicle	SEMI E109, G92, G95, S17
AGV	automatic guided vehicle (cart)	SEMI E98, E101
AHE	automated handling equipment	SEMI E43
AI	artificial intelligence	SEMI E10
AIAG	Automotive Industry Action Group	SEMI E89
AIM	association for automatic identification and mobility	SEMI T20.1
AISI	American Iron and Steel Institute	SEMI C92
AIST	National Institute of Advanced Industrial Science and Technology	SEMI F110
AIT	autoignition temperature	SEMI S3

Term	*Meaning*	*Standard(s)*
alc.	alcohol(ic)	SEMI C1
ALD	atomic layer deposition	SEMI F57
AM	acoustic microscopy	SEMI 3D4
AMHS	automated material handling system	SEMI D43, D44, E81, E82, E85, E87, E88, E98, E109, E153, E156, E168, E171, F107, S17
amp.	ampere(s)	SEMI C1
AMSAA	Army Materials Systems Analysis Activity	SEMI E10
amt.	amount	SEMI C1
Amu	atomic mass unit	SEMI F48
A/N	alphanumeric.	SEMI M59
ANOVA	analysis of variance	SEMI E89
AOI	automated optical inspection	SEMI 3D22
AOI	angle of incidence	SEMI PV40, PV42, PV51
AOV	air-operated valves	SEMI F22
APC	advanced process control	SEMI E81, E98, E133, E151, E174
APCFI	advanced process control framework initiative	SEMI E81
APD	2-amino-2-hydroxymethyl-1,3-propanediol	SEMI C89
API	applications programming interface	SEMI E54, E81
API	application process identifier	SEMI E54.14
APIMS	atmospheric pressure ionization mass spectroscopy	SEMI C91, F118
APIMS	atmospheric pressure ionization mass spectrometer	SEMI F27, F33, F67, F68, F80
APIMS	atmospheric pressure ionization mass spectrometry	SEMI F30, F58
APL	average picture level	SEMI D64, D71, D75, D76, D82
Approx.	approximate(ly)	SEMI C1
APDU	application protocol data unit	SEMI E54.8, E54.14, E54.16
aq.	aqueous	SEMI C1
AQL	acceptance quality level	SEMI PV63
Ar	argon	SEMI E49
AR	anti-reflective	SEMI PV47
ARAMS	Automated Reliability, Availability, and Maintainability Standard	SEMI E58, E98, M59
AREP	application reference endpoint	SEMI E54.8, E54.14
ARHS	automated reticle handling system	SEMI E109
ARLS	angular resolved light scatter	SEMI PV15
As	arsenic, an *n*-type dopant in silicon.	SEMI M59
AS	accuracy of set point (%)	SEMI E56
ASB	authentication service body	SEMI T20, T20.1, T22
ASCII	American Standard Code for Information Interchange	SEMI M59, E149
ASE	application service element	SEMI E54.8, E54.14. E54.23
ASK	amplitude shift keying	SEMI E144
ASM-GENSen	Assembly GENSen	SEMI E54.24
ASO	automatic shutoff valve	SEMI F22

Term	*Meaning*	*Standard(s)*
ATE	automatic test equipment	SEMI G79, G80, G91
ATL	accredited testing laboratory	SEMI F107, S3, S7, S30
atm.	atmosphere(s)	SEMI C1, C3, F74
ATM	atmospheric	SEMI F51
Au	measured value, up cycle (units of flow)	SEMI E56
AUF	A-LINK user forum	SEMI E54.17
av.	average	SEMI C1
Avg.	average	SEMI F19
AVI	audio visual interleave	SEMI E149
B	bias (units of flow)	SEMI E56
B	boron, a *p*-type dopant in silicon.	SEMI M59
B	blue	SEMI PV65
BC	back contact or back contacted	SEMI PV62
BCC	block check character	SEMI E144
BCDS	bulk chemical distribution system	SEMI F41, F51
BCS	back contact sheet	SEMI PV62
B-Cz	boron-doped Czochralski silicon	SEMI PV13
BD-ICPMS	bulk-dissolution inductively coupled plasma mass spectroscopy	SEMI PV21
BDP	bilateral datum plane	SEMI E184, E185
BEOL	back-end-of-line	SEMI E154
BFSL	best-fit straight line	SEMI F113
BGA	ball grid array	SEMI G93
BI	BOLTS interface surface	SEMI E154, E182, E184, HB3
BiFi	bifacial	SEMI PV62
BIPV	building integrated photovoltaic	SEMI PV99
BIST	built-in self test	SEMI G91
BM	black matrix	SEMI D45
BMD	bulk micro defect	SEMI M59
BNF	Backus-Naur form	SEMI P39
BOX	buried oxide layer	SEMI M59, MS13
b.p.	boiling point	SEMI C1, C3
BP	buffer port	SEMI E88
BP	bilateral plane	SEMI E154, E156, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, G92, G95, HB3, M80
BRDF	bidirectional reflectance distribution function	SEMI M59, PV15
BS	back sheet	SEMI PV62
BSC	brick slice code	SEMI PV32, PV48
BSDF	bidirectional scatter distribution function	SEMI PV15
BSF	back surface field	SEMI PV58
BTDF	bidirectional transmittance distribution function	SEMI PV15
BUB	backside micro-bump	SEMI 3D6

Term	*Meaning*	*Standard(s)*
BV	blind via	SEMI 3D11, 3D16, 3D21, 3D22
BVR	backside via reveal	SEMI 3D6
BWP	bonded wafer pair	SEMI 3D13, 3D17
BWS	bonded stack wafer	SEMI 3D4
BZ	breathing zone	SEMI S2
C	controller (a CDM class definition)	SEMI E54.2
C	compression test system	SEMI PV44
C2C	chip to chip	SEMI 3D7
C2W	chip to wafer	SEMI 3D7
ca.	circa (i.e., about or approximately)	SEMI C1
CA	Certification Authority	SEMI E132.2, T21
CAD	computer aided design	SEMI F114, F115
cal.	calorie(s)	SEMI C1
CAN	Controller Area Network	SEMI E54.4, E54.15
CB	communication block	SEMI A1.1
CBI	color breakup index	SEMI D65
CBOR	concise binary object representation	SEMI E183
CBU	color breakup	SEMI D58, D65
CCBRDF	cosine corrected bidirectional reflectance distribution function	SEMI PV15
CCBTDF	cosine corrected bidirectional transmittance distribution function	SEMI PV15
CCC	critical chamber component	SEMI E180
CCD	charge coupled device	SEMI G93
CCFL	cold cathode fluorescent lamp	SEMI D35, D47
CCT	correlated color temperature	SEMI D71
C_{CU}	copper cross section	SEMI PV19
CCW	counterclockwise	SEMI M59
c.d.	current density	SEMI C1
CD	compact disk	SEMI E149
CD	critical dimension	SEMI 3D4, 3D11, 3D22, E78, E129, E163, P46, P47, P48, MS19
CDA	clean dry air	SEMI F28, F59, F70.1, F101, S12
CDA	compressed dry air	SEMI PV96
CDF	cumulative distribution function	SEMI E35, M59
CDL	charging dissipation layer	SEMI P48
CDM	Common Device Model	SEMI E54, E54.2, E54.4, E54.8, E54.9, E54.12, E54.13, E54.14, E54.15, E54.16, E54.17, E54.19, E54.21, E54.23, E54.24
CDM	charged device model	SEMI E43, E78, E129, E163
CDM	chemical dispensing module	SEMI F31
CDS	chemical distribution system	SEMI F107
CDU	chemical dispensing unit	SEMI F31

Term	*Meaning*	*Standard(s)*
CE	European conformity	SEMI F107
CEM	Common Equipment Model	SEMI E120
CEO	cost of equipment ownership	SEMI E35
CEW	Carrier Exchange Window	SEMI E171
CF (gasA/gasB)	conversion factor from Gas A to Gas B	SEMI E77
CFJ	Carrier Flow Job	SEMI E171
CFL	compact fluorescent lamp	SEMI E176
CFR	Code of Federal Regulations	SEMI E33, E176, S4
CFU	colony-forming units	SEMI F75
CGA	compressed gas association	SEMI C3, S4
CGPM	general conference on weights and measures	SEMI E145
CGS	centimeter-gram-second system	SEMI E145
CI	control interface	SEMI PV69, PV76, PV80, PV89
CIDRW	Carrier ID Reader/Writer	SEMI E99, E99.1
CIH	certified industrial hygienist	SEMI S7
CIM	computer integrated manufacturing	SEMI E81, E98, F107
CIP	control and information protocol	SEMI E54.13
CISPR	International Special Committee on Radio Interference	SEMI E33
CJ	control job	SEMI E174
CJM	control job management	SEMI E98
CL	centerline	SEMI E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E185
CL	center line	SEMI M80, PV32, PV70, PV71
CLJ	Carrier Logistics Job	SEMI E171
CLSM	confocal laser scanning microscope	SEMI PV66
CLSO	Certified Laser Safety Officer	SEMI S7
CM	connection manager object	SEMI E54.13
CM	context matching	SEMI E133
CM	contrast modulation	SEMI D64
CM	camera module	SEMI PV65
CMC	critical micelle concentration	SEMI F110
CMD	command	SEMI E144
CMOS	complementary metal oxide semiconductor	SEMI MS2, MS3, MS4, M59
CMP	chemical mechanical polishing	SEMI F107
CMP	chemical mechanical planarization	SEMI C100, C101, C102, C104, F98, MS3, MS4
CMS	Carrier Management Standard	SEMI E98
CNC	condensation nucleus counter	SEMI C97, C98, E66, F38, F43, F70, F70.1
CNC	computerized numeric control	SEMI G93
COB	center of brightness	SEMI PV40, PV42
CoA	certificate of acceptance	SEMI C100, C102, C103, C104

Term	*Meaning*	*Standard(s)*
CoA	certificate of analysis	SEMI C96, C98, C101
CoC	chip on chip	SEMI 3D14
CoE	CANopen over EtherCAT	SEMI E54.20
COLIWASA	composite liquid waste sampler	SEMI C96, C101
compd.	compound	SEMI C1
compn.	composition	SEMI C1
concn.	concentration	SEMI C1
CONWIP	constant work in process	SEMI E124
COO	cost of ownership	SEMI E10, E35, E78, E79, E129, E140, E124
COP	conventional operation	SEMI E170
COP	crystal originated particle/pit	SEMI E146
COP	crystal originated particles	SEMI M51
COP	crystal originated pit	SEMI M59
COP	coefficient of performance	SEMI S23
CoS	chip on substrate	SEMI 3D14
COV	coefficient of variation	SEMI E104
CoW	chip on wafer	SEMI 3D14
CP	configuration parameter	SEMI E54.16
cp	process capacity	SEMI G93
CPC	condensation particle counter	SEMI C98, F111, F121
Cpd	cycle per degree	SEMI D65
Cpk	process capability index	SEMI M59
Cpk	process capability	SEMI G93
CPR	cardiopulmonary resuscitation	SEMI S19, S21
CPS	counts per second	SEMI F33
CPT	critical pitting temperature	SEMI F19, F119, C92
CPU	central processing unit	SEMI F97
CPV	critical pitting voltage	SEMI F120
CR	contrast ratio	SEMI D64
CR	chemical symbol for chromium	SEMI F19
CR	code reference	SEMI PV32
CRC	cyclic redundancy check	SEMI E144
CRCT	transmit CRC	SEMI E144
CRDS	cavity ring down spectroscopy	SEMI C91, F112, F118, PV24
Cr/Fe	ratio of total Chromium to total Iron in the passive oxide layer	SEMI F19, F60, F72
CRI	Criterioin-Referenced Instruction	SEMI E150
CRM	certified reference material	SEMI D62, E89, E149, HB5, HB6, HB7, M59, PV10
CrOX	chromium oxide	SEMI F19
CrOX/FeOX	ratio of chromium oxide to iron oxide in the passive oxide layer	SEMI F19, F60
CRS	conventional recipe space	SEMI E170
CRT	cleanroom technology	SEMI F116
CRTU	carrier ready to unload	SEMI E87

Term	*Meaning*	*Standard(s)*
CS	conducted susceptibility	SEMI F53
CS	code start	SEMI PV32
CSB	certificate service body	SEMI T21
c-Si	crystalline silicon	SEMI PV38, PV56, PV65, PV79
CSMA/CD	carrier sense multiple access with collision detection	SEMI E54.20
CSV	comma separated value	SEMI G93
CSW	crystalline sapphire wafer(s)	SEMI HB5, HB6, HB7
CTE	coefficient of thermal expansion	SEMI 3D21, 3D22, G98, C100
CTL	control signal	SEMI E144
C_{TOT}	total cross section	SEMI PV19
CTMC	cluster tool module communications	SEMI E58
CTX-GENSen	Context-GENSen	SEMI E54.24
CU	code unit	SEMI PV32
Cv	valve flow coefficient	SEMI E49
CV	coefficient of variation	SEMI C77, E89
CV	character value	SEMI PV32
CVD	chemical vapor deposition	SEMI E49, E79, E113, E114, E115, E135, E143, F5, F51, M59
CVE	Common Vulnerabilities and Exposures	SEMI E188
CVP	cryogenic vacuum pump	SEMI E54.18
CVSS	Common Vulnerability Scoring System	SEMI E187, E188
CW	continuous wave	SEMI E135, E136
CW	clockwise	SEMI M59
CWS	chromatic white light sensor	SEMI 3D4, 3D12
CYL	cost of yield loss	SEMI E35, E140
Cz	Czochralski, a type of crystal growth	SEMI M59
D	density (or difference in statistical analysis)	SEMI C1
D	dead band value (units of flow)	SEMI E56
DA	destination address	SEMI E54.23
DADD	direct acid droplet decomposition	SEMI M85
DAS	data application server	SEMI A4, A4.1
dB	decibel	SEMI F53
DB	data block	SEMI A1.1
DBD	dead band of device (units of flow)	SEMI E56
DBS	dead band of set point (units of flow)	SEMI E56
DC	direct current	SEMI F53, E43, E113, E135, E136, E143, E149, E176
DCE	distributed Computing Environment	SEMI E54.14
DCP	Data Collection Plan	SEMI E134
DCP	discovery and configuration protocol	SEMI E54.14
DCRC	data BCC	SEMI E144
DCV	digestion in closed vessel	SEMI F48

Term	*Meaning*	*Standard(s)*
DD	defect density	SEMI E35
DDA	digestion by dry ashing	SEMI F48
DDM	die device mark	SEMI T19
DDT	dichlorodiphenyltrichloroethane	SEMI C27
DEE	demand equipment efficiency	SEMI E79
DEP	designated eye position	SEMI D59
DF	down force	SEMI C1004
DH	data handshake	SEMI A1.1
DH	damp heat	SEMI PV72
DHCP	dynamic host configuration protocol	SEMI E54.14
DI	deionized	SEMI F51, F107, M59
DI	data identifier	SEMI T20.1
DID	discharge ionization detector	SEMI PV21, PV24
DID-GC	discharge ionization detector-gas chromatograph	SEMI F30
diam.	diameter	SEMI C1
dil.	dilute	SEMI C1
DIN	Deutches Institut für Normung, the German national standards organization, which has developed numerous standards for silicon during the last three decades	SEMI M59
DIW	deionized water	SEMI C103, E49, F31, S12, S23, PV10
DLP	digital light processing	SEMI D58
DLS	dynamic light scattering	SEMI C89, C98
DLY	defect limited yield	SEMI E35, E140
DM	descriptive model	SEMI E10
DM	device manager	SEMI E54, E54.2, E54.14, E54.15, E54.16
DM	device manager (object)	SEMI E54.4
DM	device management object	SEMI E54.9, E54.13
DM	device mark	SEMI T19
DMA	differential mobility analyzer	SEMI C79, C98
DMA	dynamic mechanical analysis	SEMI C100, C102
DMC	data matrix code	SEMI PV29
DMPM	data link mapping protocol machine	SEMI E54.8
DN	DeviceNet	SEMI E54.4
DO	dissolved oxygen	SEMI F75
dof	degrees of freedom	SEMI E66
DOS	denial of service	SEMI E169
DP	decentralized periphery	SEMI E54.8
DPM1	DP-master class 1	SEMI E54.8
DPM2	DP-master class 2	SEMI E54.8
DPPM	defective parts per million	SEMI T23
DPV1	DP extensions version 1	SEMI E54.8
DR	data receiver	SEMI A1.1
DRE	destruction or removal efficiency	SEMI S29

Term	*Meaning*	*Standard(s)*
DRIE	deep reactive ion-etch	SEMI MS3
DRIE	deep reactive ion etching	SEMI MS13
DRM	depletion-region modulation	SEMI PV13
DS	device status	SEMI E54.16
DS	data sender	SEMI A1.1
DSAP	destination SAP	SEMI E54.8
DSC	differential scanning calorimetry	SEMI C100
DSEMU	distance-considered SEMI Mura	SEMI D31
DSF	dead space free	SEMI E49
DSSC	dye-sensitized solar cell	SEMI PV57, PV69, PV76, PV80, PV89
DTD	document type definition	SEMI E121
Du	upper dead band value (units of flow)	SEMI E56
DUT	device under test	SEMI C91, D56, D68, D73, D75, D82, D83, E56, E66, E68, E77, E80, E135, F43, F55, F56, F59, F62, F64, F67, F68, F70.1, F101, F106, F113, F118, G79, G80, MS3, MS8, MS10, PV57, PV69, PV76, PV80, PV89
DUT	display under test	SEMI D72, D76, D81
DWC	direct WIP conveyor	SEMI E82, E168.3
DY	defect yield	SEMI E35
E2E	equipment-to-equipment	SEMI A2, A5
EB	equipment boundary	SEMI E154, E182, E184, G95, HB3
EBR	edge bead removal	SEMI HB14
EC	European Comission	SEMI E78, E129, E176
ECA	event-condition-action (rule)	SEMI E96
ECA	electrically conductive adhesive	SEMI PV62
ECAA	event-condition-action-alternative action (rule)	SEMI E96
ECAT	Ethernet control and automation technology	SEMI E54.20
ECF	energy conversion factor	SEMI S23
ECID	electronic chip identification	SEMI T23
ECM	European Common Market	SEMI E129
ECPK	process capability index on a non-normal process that is corrected for non-normality	SEMI M59
ECT	equipment controller terminal	SEMI E169
ECTFE	ethylene-chlorotrifluoroethylene copolymer	SEMI F57, S25
EDA	electronic design automation	SEMI P39
EDA	Equipment Data Acquisition	SEMI E125.2, E132.2, E148, E151, E157, E164, E169
EDA	equipment data acquisition	SEMI E160, E178
EDI	electrodionization	SEMI F75, F98
EDP	end-point	SEMI 3D6
EDS	energy dispersive X-ray spectroscopy	SEMI F19, F63, F73

Term	*Meaning*	*Standard(s)*
EDTA	ethylenediaminetetraacetate (i.e., [ethylenedinitrilo] tetraacetate)	SEMI C1
EDX	energy dispersive X-ray spectroscopy	SEMI F37
EDX	energy dispersive X-ray microanalysis	SEMI F75
EE	end effector	SEMI E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E185, M80
EED	ESD event detector	SEMI E43
EES	extremely electrostatic sensitive	SEMI E163
EESM	Equipment Energy Saving Mode Communications	SEMI E167, E167.1
EEW	energized electrical work	SEMI S19, S21
EF	effectiveness factor	SEMI E10
EFEM	equipment front end module	SEMI E116, E164, S28
EFFU	equipment fan filter unit	SEMI F111
EFIC	electrofluidic integrated circuit	SEMI MS3, MS7
EFM	electric field-induced migration	SEMI E163
EG	ethylene glycol	SEMI C86
EHS	environmental, health, and safety	SEMI E35, S13, S19, S30
EIS	equipment information system	SEMI E169
EIP	EtherNet/IP	SEMI E54.13
EL	Ethernet link object	SEMI E54.13
EL	electroluminescence	SEMI PV38, PV56, PV72, PV94
ELF	extremely low frequency	SEMI E33, E176
E-MCBF$_p$	mean cycles between equipment-related failures during productive time	SEMI E10
E-MCBF$_u$	mean cycles between equipment-related failures during uptime	SEMI E10
E-MTBF$_p$	mean productive time between equipment-related failures	SEMI E10
E-MTBF$_u$	mean uptime time between equipment-related failures	SEMI E10
E-MTTR	mean time to repair during equipment-related failures	SEMI E10
EM	electromagnetic	SEMI C98
EMC	electromagnetic compatibility	SEMI E33, E43, F53, F107, E176
EMCD	Equipment Management of Consumables and Durables	SEMI E189.1
EMF	electromagnetic field	SEMI E176
EMI	electromagnetic interference	SEMI E33, E43, E78, E129, E163, E176, F53
EMO	emergency off	SEMI S17, S21, S28, S30
EMS	Exception Management Standard	SEMI E41, E58
ENG	engineering state	SEMI E10, E79
ENS	event notification system	SEMI E96
EoE	Ethernet over EtherCAT	SEMI E54.20
EOF	end of frame	SEMI E144
EOP	equipment operation	SEMI E170
EOS	electrical overstress	SEMI E176
EP	endpoint	SEMI E54.11
EP	electropolished	SEMI F28, F43

Term	*Meaning*	*Standard(s)*
EPA	electrostatic protective area	SEMI E129
EPD	electronic paper display	SEMI D72
EPD	etch pit density	SEMI HB10
EPI	epitaxial deposition	SEMI F5
EPS	expanded polystyrene	SEMI E137
EPSS	electropolished stainless steel	SEMI C91, E58, F27, F58, F112, F118
EPT	equipment performance tracking	SEMI E116
EQ	equipment	SEMI A1.1
EQIP	equipment quality information parameter	SEMI E126
equiv.	equivalent(s)	SEMI C1
ER	equipment required (integer number)	SEMI E35, E140
ERO	edge roll-off	SEMI M59, M77
ERP	enterprise resource planning	SEMI E96, F97
ERS	Event Reporting Standard	SEMI E58
ERT	emergency response team	SEMI S21
ESA	electrostatic attraction	SEMI E78, E129, E163
ESCA	electron spectroscopy for chemical analysis (also known as XPS)	SEMI E49, F19, F60
ESD	electrostatic discharge	SEMI E33, E43, E78, E129, E163, E176
ESDS	electrostatic discharge sensitive	SEMI E163
ESOV	emergency shut off valve	SEMI S18
E-Stop	emergency stop	SEMI S17
ESVM	electrostatic voltmeter	SEMI E43
ETFE	ethylene tetrafluoroethylene	SEMI F57, S25
ETG	EtherCAT technology group	SEMI E54.20
EUT	equipment under test	SEMI C77, E33
EUV	extreme ultraviolet	SEMI D54, E152, P40, P48
EUV	extreme ultraviolet light radiation	SEMI P37
EUVL	extreme ultraviolet lithography	SEMI P40, P48
eV	electron volts	SEMI F60
EVA	ethylene-vinyl acetate	SEMI PV45, PV62, PV72, PV87
EVA	ethylene-vinyl acetate copolymer	SEMI PV85
EWT	emitter wrap through	SEMI PV62
EY	equipment yield	SEMI E35, E140
EXG	execution group	SEMI E174
f	frame rate	SEMI D65
F	compensating factor	SEMI PV44
FAMM	focus/acquire/measure/move	SEMI 3D4
FEA	finite element analysis	SEMI MS5
FEM	finite element method	SEMI MS5
FC	flow controller	SEMI C77
FC	fault classification	SEMI E133
FCs	fluorinated compounds	SEMI S29

Term	*Meaning*	*Standard(s)*
FCD	flow control device	SEMI C97
FCRC	frame BCC	SEMI E144
FD	fault detection	SEMI E133
FDC	fault detection control	SEMI E98
FDC	fault detection and classification	SEMI E54.24, E133
FDL	fieldbus data link	SEMI E54.8
FDP	facial datum plane	SEMI E184, E185
FDT	flammable degradation temperature	SEMI S3
Fe	chemical symbol for Iron	SEMI F19
FECS	fail-to-safe equipment control system	SEMI S17
FeOX	iron oxide	SEMI F19
FEOL	front-end-of-line	SEMI E154
FEP	fluorinated ethylene-propylene	SEMI C27, C30, F40
FF	final filter	SEMI F75
FF	fill factor	SEMI PV79
FFT	fast Fourier transform	SEMI MS3, MS4, E176
FFU	fan filter unit	SEMI F111
FG	functional group	SEMI E133
F-GHG	fluorinated greenhouse gas	SEMI S29
FIB	focused ion beam	SEMI E33
FIC	frontside interconnect contact	SEMI 3D6
FICS	factory information and control system	SEMI E139, E168
FID	flame ionization detector	SEMI MF1982, PV21, PV24
FID-GC	flame-ionization detector-gas chromatograph	SEMI F30
FIMS	front-opening interface mechanical standard	SEMI E87, E98, E164, E171, S28
FLD	flow limiting device	SEMI S5
FL-ICPMS	filtration inductively coupled plasma mass spectroscopy	SEMI PV21
FM	flow meter	SEMI C77, C89, F104
FMCS	facility monitoring and control system	SEMI F31, F97
FMPS	fiducial mark placement square	SEMI P48
FMS	facility monitoring system	SEMI F31
FoE	file transfer over EtherCAT	SEMI E54.20
FOG	fineness of grind	SEMI PV54, PV58
FOP	factory operation	SEMI E170
FOSB	front-opening shipping box	SEMI M80, E162
FOUP	front opening unified pod	SEMI E82, E87, E88, E98, E99, E118, E153, E158, E170, E171, E181, E181.1, E181.2, E181.3, E181.4, E185, S28
FOV	field of view	SEMI D75, D76, D81, D82, MS2, MS3, MS4
FM	flow meter	SEMI C82, F110
f.p.	freezing point	SEMI C1
FP	fault probability	SEMI E35

Term	*Meaning*	*Standard(s)*
FP	functional prediction (or prognosis)	SEMI E133
FP	facial plane	SEMI E154, E156, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, G92, G95, HB3, M80
FPD	flat panel display	SEMI D43, D44, D69, D70, D73, E33, E35, E98, E149, E163, E176, F107, F111, S17, S19, S21, S24, S28
FPD	focal plane deviation	SEMI 3D4, M59
FPD	flame photometric detector	SEMI MF1982
FPDME	FPD manufacturing equipment	SEMI S17
FPDMS	FPD manufacturing system	SEMI S17
FPU	facility package unit	SEMI F97
FQA	fixed quality area	SEMI 3D12, 3D16, HB5, HB6, HB7
FQA	fixed quality area, of a silicon wafer.	SEMI M59
FR	flammable range	SEMI S3
FRDL	frontside redistribution layer	SEMI 3D6
F_{RM}	force tensile strength	SEMI PV19
F_{RP}	force yield strength	SEMI PV19
FRU	field-replaceable unit	SEMI E149
FS	full scale flow rate (units of flow)	SEMI E56
FS	full scale	SEMI E66, E68, E69, F55, F113
FSD	field sequential display	SEMI D65
FSE	Field Support Engineer	SEMI E188
FSPM	fieldbus service protocol machine	SEMI E54.8
FT-IR	fourier transform infrared (spectrometer)	SEMI M59
ft-lbs	foot-pounds (force)	SEMI F74
FTIR/FT-IR	Fourier transform infrared	SEMI E49, F30, S29
FTIR	Fourier transform infrared spectroscopy	SEMI F51, F114, PV21, PV24, PV37
FTP	File Transfer Protocol	SEMI E169, M59
FTPL	Fourier transform photo-luminescence	SEMI PV21
FTV	floor traveling vehicle	SEMI S17
FUB	frontside micro-bump	SEMI 3D6
FW	formula weight	SEMI C1
FWHM	full width half maximum	SEMI C98, F60, F73, M63
FZ	float zone, a type of crystal growth.	SEMI M59
FZ	float zone (floating zone) silicon	SEMI PV13
g	gravity	SEMI F62
G	green	SEMI PV65
GB	grain boundry	SEMI HB10
GBIR	global backside indicated reading	SEMI 3D12
GBIR	global flatness back surface ideal range	SEMI M92

Term	*Meaning*	*Standard(s)*
GC	gas chromatography (or chromatographic)	SEMI C1, MF1982
GC	gas chromatograph	SEMI MF1982, PV21, PV24
GC-MS	gas chromatograph interfaced to a mass spectrometer	SEMI MF1982
GC-MS	gas chromatography-mass spectrometry	SEMI F114, S29
GD	General Data	SEMI A1, A1.1, A2, A5
GDMS	glow discharge mass spectrometry	SEMI PV22
GEM	Generic Equipment Model	SEMI A3, E30, E30.1, E30.5, E58, E82, E87, E88, E109, E151, E153, E170, E171, E174, HB4, HB13, M59, PV2
GENSen	Generic Equipment Networked Sensor	SEMI E54.4, E54.14
GFA	gas fusion analysis	SEMI M59
GFAA	graphite furnace atomic absorption	SEMI C27
GFAAS	graphite furnace atomic absorption spectroscopy	SEMI E45, F48
GFCI	ground fault circuit interrupter	SEMI S3
GHG	greenhouse gas	SEMI S29
GHS	Globally Harmonized System of Classification and Labeling of Chemicals	SEMI S30
GHz	gigahertz	SEMI F53
GLC	gas-liquid chromatography (or chromatographic)	SEMI C1
GNF	gain-nonlinearity function	SEMI M53
GNP	gold nanoparticle	SEMI C82, C89
GOI	gate oxide integrity	SEMI M51, M59
GP	general purity	SEMI C92, F119
Grms	root-mean-square acceleration	SEMI PV38
gRPC	Remote Procedure Call system	SEMI E125.2
GRR/GR&R	gauge repeatability and reproducibility	SEMI E89
GRR	grand round robin	SEMI M59
GSD	generic data description	SEMI E54.8
GSD	generic station description	SEMI E54.14
GTT	glass transition temperature	SEMI C100
GUE	good unit equivalents	SEMI E35, E124
GUI	graphical user interface	SEMI E96, F97
GWP	global warming potential	SEMI S29
H	tester input comparator expect high level	SEMI G80
H	hue	SEMI PV65
HAP	hazardous air pollutants	SEMI F5
HAST	high accelerated stress test	SEMI PV72
HARM	high aspect ratio micromachining	SEMI MS3
HAZCOM	hazard communication	SEMI S12
HBC	Hennecke Systems – Compressed	SEMI PV32
HBD	horizontal base down	SEMI E80
HB-LED	high-brightness light emitting diode	SEMI E35, HB3, HB4, HB13
HB-LED ECI	HB-LED Equipment Communication Interface	SEMI HB4, HB13
HBM	human body model	SEMI E43, E78, E129

Term	*Meaning*	*Standard(s)*
HC	Horizontal Communication	SEMI A1, A1.1, A2, A5
H_C	high current	SEMI FH1
HD	high density	SEMI E49
HD	hysteresis of device (units of flow)	SEMI E56
HDBS	hysteresis plus dead band at a set point (units of flow)	SEMI E56
HDD	hard disk drive	SEMI E35
HDP	horizontal datum plane	SEMI E184, E185
HDP	high density plasma	SEMI F51
HDPE	high density polyEthylene	SEMI S25
HDT	hazardous degradation temperature	SEMI S3
HDX	half duplex RFID system	SEMI E144
HED	horizontal either side down	SEMI E80
HEI	hazardous energy isolation	SEMI S12, S17
HEPA	high-efficiency particulate air	SEMI E104, S12
HF	hydrofluoric acid	SEMI F51, F98, F107, M59
HF	high frequency	SEMI M55
HFW	hydrofluoric acid waste	SEMI F98
HID	helium ionization detector	SEMI PV24
HIDVM	high-impedance contacting digital voltmeter	SEMI E43
High bit	binary bit ‘1’	SEMI E144
HMAC	hash-based message authentication code	SEMI E132.2
HP	high purity	SEMI C92, E49, F40, F119
HP	horizontal plane	SEMI E154, E156, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, G92, G95, HB3, M80
HP	high power	SEMI M55
H_P	high potential	SEMI FH1
HPC	high-pressure particle counter	SEMI C97
HPIX	high-purity ion exchange	SEMI C93
HPM	hazardous production material	SEMI E49, S4
HPP	homogeneous Poisson process	SEMI E10
HPW	high purity water system	SEMI PV3
hr.	hour	SEMI C1
HRTEM	high resolution transmission electron microscopy	SEMI PV17
HRXRD	high resolution X-ray diffraction	SEMI M63
HS	hysteresis at a set point (units of flow)	SEMI E56
HSMS	high speed SECS message service	SEMI A3, HB4, HB13, M59, PV2
HSSD	high sensitivity smoke detector	SEMI S30
HTF	heat transfer fluid	SEMI S3, S29
HTTP	Hypertext Transfer Protocol	SEMI E121, E132.1, A4.1
HTTP/2	Hypertext Transfer Protocol version 2	SEMI E132.2
HUD	horizontal upside down	SEMI E80
HUPW	hot ultrapure water	SEMI C79

Term	*Meaning*	*Standard(s)*
HVAC	heating ventilation and air conditioning	SEMI F97
HVM	high volume manufacturing	SEMI 3D4
i	reading number in a cycle for a given set-point (unit-less)	SEMI E56
I	intermediate value (units of flow)	SEMI E56
IAS	inner surface alignment system	SEMI MS1, MS3
IAQG	international aerospace quality group	SEMI T20.1
IBC	interdigitated back contact	SEMI PV62
IBSEM	interbay/intrabay specific equipment model	SEMI E88
IC	ion chromatography	SEMI F75, PV21, PV74
IC	integrated circuit	SEMI E35, E43, E78, E129, E163, E176, F107, M59, MS3, MS4, MS7
ICP-AES	inductively coupled plasma-atomic emission spectroscopy	SEMI F48
ICP-MS	inductively coupled plasma-mass spectroscopy	SEMI C89, E45, M59
ICP-MS	inductively coupled plasma-mass spectrometry	SEMI C27, C30, C44, C79, C100, F48, F57, F114, F115, PV50
ICP-OES	inductively coupled plasma optical emission spectroscopy	SEMI PV17
ICP-OES	inductively coupled plasma optical emission spectrometry	SEMI PV64
ID	inside diameter	SEMI C1, F52
ID	identification	SEMI A2, M59, T23
ID	identifier	SEMI A5, PV32
ID/OD	inside/outside	SEMI E49
IDL	ID on long reference edge leading	SEMI D48
IDL	interface definition language	SEMI E54, E178
IDLH	immediately dangerous to life and health	SEMI S18
IDC	datum point for 2D-ID center	SEMI D52
IDCL	datum line for ID center on long edge side	SEMI D52
IDCS	datum line for ID center point on short edge side	SEMI D52
IDM	integrated device manufacturer	SEMI C99, C101
IDS	ID on short reference edge leading	SEMI D48
IEE	intrinsic equipment efficiency	SEMI E79
IH	industrial hygiene	SEMI S7
IKS	isokinetic sampler	SEMI E66
ILS	indoor lighting simulator	SEMI PV80
ILS	isothermal test plane	SEMI PV89
ILT	instructor led training	SEMI E150
ILU	integrated lighting unit	SEMI D72
IM	identification and maintenance	SEMI E54.8, E54.14
IMM	integrated measurement module	SEMI E127, E131
IMMC	integrated measurement module communications	SEMI E127
IMMDTOSM	IMM data table object state model	SEMI E127
in.	inch	SEMI F67, F68
INAA	instrumental neutron activation analysis	SEMI PV10
insol.	insoluble	SEMI C1

Term	*Meaning*	*Standard(s)*
IO	input output	SEMI E54.14, E54.20
I/O	input/output device	SEMI F97
IOC-88	international oxygen conversion factor-1988	SEMI M59
IoT	Internet of Things	SEMI E183
IP	intellectual property	SEMI E149, C104
IP	internet protocol	SEMI E54.9, E54.13, E54.14, E54.20, E54.23, E169
IPA	isopropyl alcohol	SEMI E49, F40, E137
IPC	industrial process computer	SEMI F31
IPC	industry PC	SEMI PV65
IPCC	Intergovernmental Panel on Climate Change	SEMI S29
IPCE	incident photon-electron conversion efficiency	SEMI PV57, PV69, PV76, PV80
ICP-MS	inductively coupled plasma mass spectrometry	SEMI M85
IPD	interpupillary distance	SEMI D59
IPS	intended process set	SEMI E10, E35, E79, E140
IPS/MPCT	intended process set or multi-path cluster tool	SEMI E79
IQC	incoming quality control	SEMI 3D14
IQE	internal quantum efficiency	SEMI PV13
IR	infrared	SEMI 3D4, 3D5, 3D12, 3D13, C1
IRL	internal reticle library	SEMI E109
ISO-OSI	International Organization for Standardization – Open Systems Interconnect	SEMI E54.2
ISPM	in situ particle monitor	SEMI E54.10, E104
ITP	isothermal test plane	SEMI PV57, PV69, PV76, PV80, PV89
ITS	interbay or intrabay transport system	SEMI E82, E88
ITU	International Telecommunication Union	SEMI E176
IT system	information system	SEMI F97
I-V	current-voltage	SEMI PV69, PV72
j	cycle for a given set point (unit-less)	SEMI E56
JDV	job deck viewing	SEMI P46
JND	just noticeable difference	SEMI D31, D41
JPEG	Joint Photographics Expert Group	SEMI M59
JSON	JavaScript Object Notation	SEMI A4.1
K	key group	SEMI E10
k	up cycle number for a given set point (unit-less)	SEMI E56
KC	kinematic coupling	SEMI E152, E154, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, E184, E185, G92, G95, M80
KCP	kinematic coupling pin	SEMI E154, E158, E159, E181.1, E181.2, E181.3, E181.4, E182, E184, G92, G95, M80

Term	*Meaning*	*Standard(s)*
kg	kilogram(s)	SEMI C1, F59
kHz	kilohertz	SEMI F53
kPa	kilopascal	SEMI E56, E66, E69, E77, E80, F43, F55, F59, F62, F67, F68, F74
kPa	1000 newtons per square meter	SEMI C88, F101, F117
L	tester input comparator expect low level	SEMI G80
LATF	local thickness fluctuations	SEMI PV22
LB	load boundary	SEMI E154, E182, G95, HB3
L_C	low current	SEMI FH1
LC_{50}	median lethal concentration in air	SEMI S4
LCA	life cycle assessment	SEMI S23
LCB	lower confidence bound	SEMI E10
LCD	liquid crystal display	SEMI D56, D58
LCDS	liquid chemical distribution systems	SEMI F57
LC-OCD	liquid chromatography with organic carbon detector	SEMI C93
LC-OCD-OND	liquid chromatograhpy with organic carbon detector and organic nitrogen detector	SEMI F98
LCS	laser current sensor	SEMI E54.10
LD	linearity of DUT (%)	SEMI E56
LDL	lower detectable limit	SEMI E104
LDPE	low density polyethylene	SEMI PV10
LED	light emitting diode	SEMI C98, D62, MS3, MS4
LEDME	HB-LED manufacturing equipment	SEMI HB3
LER	line edge roughness	SEMI P47, P48
LeTID	light and elevated temperature induced degradation	SEMI PV93
LFL	lower flammable limit	SEMI S3
LFL	lower flammability limit	SEMI S2
LFP	load face plane	SEMI E184
LGP	light guide plate	SEMI D62
LIA	lock-in amplifier	SEMI PV69
LID	light induced degradation	SEMI PV93
LIGA	lithographie, galvanoformung und abformung	SEMI MS3
LLDP	link layer discovery protocol	SEMI E54.14
LLS	localized light scatterer	SEMI E146, M59
LM	lux meter	SEMI PV80, PV89
LMD	light measurement device	SEMI D56, D59, D68, D69, D70, D72, D75, D76, D81, D82, D83
LMS	learning management system	SEMI E150
LNS	liquid nano-particle sizing system	SEMI C93
LOCOS	local oxidation of silicon	SEMI M51, M59
LOD	limit of detection	SEMI F67, F68, PV10
Lock	permanently disable memory programming	SEMI E144
Low bit	binary bit ‘0’	SEMI E144

Term	*Meaning*	*Standard(s)*
LP	loading port	SEMI E88
L_P	low potential	SEMI FH1
LPA	label placement area	SEMI G92
LPC	liquid-borne particle counter	SEMI C77
LPC	laser particle counter	SEMI C93, E66, F28, F63, F70, F70.1
LPCVD	low pressure chemical vapor deposition	SEMI F51, MS10
LPD	light point defect	SEMI E146, M59
LPM	liters per minute (L/min)	SEMI C82, C89, F110
LPPD	low-pressure particle detector	SEMI E104
LR	Load Request	SEMI E171
LRE	long reference edge	SEMI 3D23, D44, D48, D49, D52
L-ROA	linear referenced ROA	SEMI M59, M77
LRV	log reduction value	SEMI C82, C89, F38, F110
LS	linearity of set point (%)	SEMI E56
LS	Load Stagnation	SEMI E171
LS	laser scanning	SEMI PV60
LSB	least significant bit	SEMI E144
LSC	least squares circle	SEMI G93
LSE	latex sphere equivalent	SEMI E146
LSE	light scattering equivalent	SEMI M59
LSI	large scale integration	SEMI M59
LSL	lower specification limit	SEMI E35, E89, M59
LSR	low series resistance	SEMI E43
LTFT-IR	low temperature, Fourier transform infrared (spectrometer)	SEMI M59
LWR	linewidth roughness	SEMI P47
m	meter(s) or milli (10)	SEMI C1
m	milli	SEMI PV45
m	millimicron(s) (=nm)	SEMI C1
m	down cycle number for a set point (unit-less)	SEMI E56
m	meter	SEMI F59, F67, F68
M	molar or molarity	SEMI C1
M2M	machine-to-machine	SEMI A2, E183
ma	milliampere(s)	SEMI C1
MA	moving average	SEMI M72
MAC	Media Access Control	SEMI E54.4, E54.15
MAC	multi application carrier	SEMI E159
MAE	mixed acid etchant	SEMI M59
MALY	mask layout data format	SEMI P45
MAWL	maximum acceptable weight of lift	SEMI S8
MAWP	maximum allowable working pressure	SEMI S18
max.	maximum (or maxima)	SEMI C1, C3, F19
MC	monochromator	SEMI PV69
MCA	multichannel analyzer	SEMI PV10

Term	*Meaning*	*Standard(s)*
MCBF	mean cycles between failures	SEMI E10
$MCBF_p$	mean cycles between failures during productive time	SEMI E10
$MCBF_u$	mean cycles between failures during uptime	SEMI E10
MCC	minimum circumscribed circle	SEMI G93
MCDMML	mask critical dimension measurement markup language	SEMI P46
MCS	machine coordinate system	SEMI 3D22
MCS	material control system	SEMI E168.2, E168.3
MCz	magnetic Czochralski	SEMI M59
MD	Material Data	SEMI A1, A1.1, A5
MDIR	metadata indexed repository	SEMI E183
MDL	method detection limit	SEMI C64
MDML	mask defect markup language	SEMI P41
MDU	modular dispensing unit	SEMI F31
ME	manufacturing equipment	SEMI S7, S12, S27, S29
MEOL	middle end of line	SEMI 3D6
MEMS	microelectromechanical system	SEMI E33, E35, E176, F107, MS2, MS3, MS4, MS5, MS6, MS8, MS10
meq	millequivalent(s)	SEMI C1
MES	manufacturing execution system	SEMI E81, E96, E147, F97, E169, E170, PV96
MFC	mass flow controller	SEMI E49, E67, E69, E77, E80, E186, F27, F53, F55, F56, F59, F62, F67, F68, F70, F70.1, F74, F106, F114, F115, S29
MFD_p	mean failure duration for failures during productive time	SEMI E10
MFD_u	mean failure duration for failures during uptime	SEMI E10
MFM	mass flow meter	SEMI E186, F55, F70
mg	milligram(s)	SEMI C1
MH	material handshake	SEMI A1.1
MHz	megahertz	SEMI F53
MIBC	methyl isobutyl carbinol	SEMI C85
MIC	maximum inscribed circle	SEMI G93
MIME	multipurpose internet message extensions	SEMI T12.2, T13.2
Min	micro inch (= 10^{-6} inch)	SEMI F19
min	minute(s)	SEMI C1, PV45
min.	minimum	SEMI C1, C3
MIRP	maximum inlet rated pressure	SEMI F101
mixt.	mixture	SEMI C1
mM	millimolar (or millimolarity)	SEMI C1
MM	machine model	SEMI E43
Mm	micrometer (= 10^{-6} meter)	SEMI F19
MMH	manual material handling	SEMI S8
MMMS	material movement management services	SEMI E81
mmol	millimole	SEMI C1

Term	*Meaning*	*Standard(s)*
MNS	median noise sensor	SEMI E54.10
MOCVD	metal organic chemical vapor deposition	SEMI F51
MOEMS	micro-electro-opticalmechanical system	SEMI MS3
mol	mole	SEMI C1
MOP	maximum operating pressure	SEMI S18
MORP	maximum outlet rated pressure	SEMI F101
MOS	metal oxide semiconductor	SEMI M51, M59
MOSFET	metal-oxide semiconductor field-effect transistor	SEMI MF576
m.p.	melting point	SEMI C1
MP	multi page tag	SEMI E144
MP	melting point	SEMI C3
mPa	megaPascal	SEMI F74
MPCT	multi-path cluster tool	SEMI E10, E35, E79, E140
MPE	maximum permissible exposure	SEMI S2
MPEG	Moving Picture Experts Group	SEMI E149
MPRC	monotonic predicted response curve	SEMI M53
MPS	mean particle size	SEMI C98
MQTT	Message Queuing Telemetry Transport	SEMI E183
MR	message router object	SEMI E54.13
MR	magneto-resistive	SEMI E163
MRC	monotonic response curve	SEMI M53
MS	measurement system	SEMI E35, E89
MS	mass spectrometer	SEMI MF1982, PV21
MSA	mercaptosuccinic acid	SEMI C82, C89
MSA	measurement system analysis	SEMI C101, E89, PV41, PV46, PV51, PV52, PV70, PV71
MSB	most significant bit	SEMI E144
MSD	moving standard deviation	SEMI M72
MSD	musculoskeletal disorders	SEMI S19
MSDS	material safety data sheet	SEMI S12, S13, S18, S21
MST	micro systems technology	SEMI MS3
MTBA	mean time between assists	SEMI E49
MTBF	mean time between failure	SEMI E10, E49, PV96
$MTBF_p$	mean time between failures during productive time	SEMI E10
$MTBF_u$	mean time between failures during uptime	SEMI E10
MTOL	mean time off-line	SEMI E10
MTSC	material transport and storage component	SEMI E102
MTTPM	mean time to [perform] preventive maintenance	SEMI E10
MTTR	mean time to repair	SEMI E10, E49, PV96
mv	millivolt(s)	SEMI C1
MV	metering valve	SEMI F64
mw	molecular weight (g/mole)	SEMI C3
MWT	metal wrap through	SEMI PV62, PV85
m/z	m in atomic mass units and z in elementary charge units	SEMI F33

Term	*Meaning*	*Standard(s)*
MZC	minimum zone circle	SEMI G93
N	normal or normality	SEMI C1
N	newton (kg m/s^2)	SEMI F59, F74
n	nano (10^{-9})	SEMI C1
n	number of up scale readings (unit-less)	SEMI E56
N_A	Avogadro's constant	SEMI MF1982
NAA	neutron activation analysis	SEMI PV10, PV17, PV21
NC	normally closed	SEMI E69
NCPC	nebulization with condensation particle counter	SEMI C79, F63, F75
N-CPC	nebulization with condensation particle and particle precursor counter	SEMI C93
NCS	Network Communication Standard	SEMI E54, E54.2, E54.4, E54.8, E54.9, E54.12, E54.13, E54.14, E54.15, E54.16, E54.17, E54.19, E54.20, E54.21, E54.23, E54.24
NDIR	nondispersive infrared	SEMI F30
NDIR	nondispersive infrared analysis	SEMI F75
ng	nanogram(s)	SEMI C1
NHPP	nonhomogeneous Poisson process	SEMI E10
NIL	not in list	SEMI E54.8
nj	number of readings at a setpoint at a given cycle (unit-less)	SEMI E56
nm	nanometer(s)	SEMI C1, F19
Nm	newton meters	SEMI F74
NMHC	nonmethane hydrocarbons	SEMI F67, F68
NMR	nuclear magnetic resonance	SEMI C67, C68, C74, C75, C76, C80, C81
no.	number	SEMI C1
NO	normally open	SEMI E56, E69
NOHD	nominal ocular hazard distance	SEMI S2
NP	nonparametric	SEMI C64
NPD	nitrogen/phosphorus thermionic ionization detector	SEMI MF1982
NR	non-return signal format	SEMI G79, G80
NRM	nonvolatile residue monitor	SEMI C79, C93
NRZ	nonreturn to zero	SEMI E144
NST	nonscheduled state	SEMI E10, E79
NTC	normal test condition	SEMI PV69
NTD	neutron transmutation doped	SEMI M59
NTP	Network Time Protocol	SEMI E168, E168.2, E168.3
NU	non-uniformity	SEMI 3D6
NV	network variable	SEMI E54.16
NVD	National Vulnerability Database	SEMI E188
NVI	network variable input	SEMI E54.16
NVO	network variable output	SEMI E54.16
NVR	nonvolatile residue	SEMI C93, F114
OA	open area	SEMI MS13

Term	*Meaning*	*Standard(s)*
OAS	outer surface alignment system	SEMI MS1, MS3
OASIS®	Open Artwork System Interchange Standard	SEMI P39, P44, P45
OASIS.MASK	Open Artwork System Interchange Standard (OASIS®) specific to mask tools	SEMI P44, P45
OBEM	object based equipment model	SEMI E81, E98
OCS	object communications specification	SEMI E54.15
O.D.	outside diameter	SEMI C1, F8, F9, F11, F12, F52
ODL	object definition language	SEMI E96
OEE	overall equipment efficiency	SEMI E79, E124
OEM	original equipment manufacturer	SEMI E33, E35, E54, E140, E149, E176, F51
OFE	overall factory efficiency	SEMI E124
OHB	overhead buffer	SEMI S17
OHS	over head shuttle/overhead shuttle	SEMI E82, E156, S17
OHT	overhead hoist transport	SEMI E82, E101, E109, E154, E156, E158, E159, E168.2, E168.3, E181, E181.1, E181.2, E181.3, E181.4, E182, E184, G92, G95, M80, S17
OHT	optical homogeneity testing	SEMI HB10
OMA	object management architecture	SEMI E81, E96
OMT	object modeling technique	SEMI E54, E54.2
OLE	object linking and embedding	SEMI F97
OOC	out of control	SEMI C64
OOK	on off keying	SEMI E144
OOS	out of specification	SEMI E10
OP	output port	SEMI E88
OP	opto-electronic	SEMI M55
OPC	optical particle counter	SEMI C79, C82, C89, F75, F110, F111
OPC	OLE for process control	SEMI F97
OPC	open circuit potential	SEMI F120
OPM	optical particle measurement instrument	SEMI F104
OP-Mode	operating mode	SEMI F97
OPP	optical precipitate profiler	SEMI M59
OPV	organic photovoltaic	SEMI PV57, PV69, PV76, PV80, PV89
OQC	outgoing quality control	SEMI 3D14
OROEE	optimized-recipe overall equipment efficiency	SEMI E79
ORTHT	optimized-recipe theoretical production time per unit	SEMI E79
OS	operating system	SEMI E149, E169
OSAT	outsourced subassembly and test	SEMI 3D14
OSF	oxidation-induced stacking fault	SEMI M59
OSI	open systems interconnect	SEMI E54, E54.4, E54.9, E54.13, E54.16

Term	*Meaning*	*Standard(s)*
OSI	Open Systems Interconnection	SEMI E54.8, E54.12, E54.14, E54.15, E54.17, E54.19, E54.20, E54.21, E54.23, E188
OSS	Object Services Standard	SEMI E54, E54.9, E54.13, E54.16, E58, E98
OTS	object transaction service	SEMI E96
OTV	overhead hoist transport	SEMI S17
OU	operational uptime	SEMI E35
P	pressure gauge	SEMI C82, C89, F110
P_1	inlet pressure	SEMI F64
P1	gauge pressure at upstream pressure tap, kPa	SEMI F100
P_2	outlet pressure	SEMI F64
p	pico (10)	SEMI C1
P	precision (units of flow)	SEMI E56
P	(kPa) pressure in kiloPascal	SEMI F59
P	pressure transducer or pressure gauge	SEMI F104
P	phosphorus	SEMI M59
Pa	pascal	SEMI F74
PAC	programmable automation controller	SEMI F31
PAH	particles added during handling and transport	SEMI E146
PAT	particles added during static or dynamic test	SEMI E146
PBET	performance-based equipment training	SEMI E150
PBI/FR	polybenzimidazoles/flame resistant	SEMI S12
PBKDF2	Password-Based Key Derivation Function 2	SEMI E132.2
PC	programmable controller	SEMI F31
PC	personal computer	SEMI A1.1
PC_A	pressure coefficient of actual flow per pressure change at a set point	SEMI F64
PCB	printed circuit board	SEMI A2, A3, D62, E149, G93, T13
PCBECI	printed circuit board equipment communication interface	SEMI A3
PCL	perceptual contrast length	SEMI D75
PCL	Predictive Carrier Logistics	SEMI E171
pCMP	post-chemical mechanical planarization	SEMI C101
PC_O	pressure coefficient of indicated flow per pressure change at zero flow	SEMI F64
PCR	pad cut rate	SEMI C103, C104
PC_S	pressure coefficient of span flow per pressure change	SEMI F64
PCS	part coordinate system	SEMI 3D22
PCS	process control system	SEMI E133
PCS job	process control system job	SEMI E133
PCT	pressure cooker test	SEMI PV72
PCTFE	polychlorotri-fluoroethylene	SEMI F57
PCW	process cooling water	SEMI S23
PCW-C	chiller-cooled process cooling water	SEMI S23
PCW-D	dual-cooled process cooling water	SEMI S23

Term	*Meaning*	*Standard(s)*
PCW-T	tower-cooled process cooling water	SEMI S23
PDE	process definition element	SEMI E139
PDF	probability density function	SEMI E35, M59
PDID	pulsed discharge ionization detector	SEMI PV24
PdM	predictive maintenance	SEMI E10
PDM	packaged or sealed device mark	SEMI T19
PDMAT	pentakis dimethylamino tantalum (or pentakis dimethylamido tantalum)	SEMI C95
PDO	process data object	SEMI E54.20
PDU	protocol data unit	SEMI E54.8, E54.13, E54.14
PE	pattern element	SEMI E30.1
PE	polyethylene	SEMI F51, PV10, PV50
PE	professional engineer	SEMI S7
PEB	post exposure bake	SEMI P31
PEC	Process Execution Collective	SEMI E171
PECVD	plasma enhanced chemical vapor deposition	SEMI MS10
PEE	production equipment efficiency	SEMI E79
PEEK	polyether-etherketone	SEMI F57
PERC	passivated emitter and rear cell	SEMI PV58
PET	polyethylene terephthalate	SEMI PV72
PEV	primary exhaust ventilation	SEMI S18
PFA	perfluoroalkoxy	SEMI C90, C93, E45, E49, F40, F57, F100, F108, PV10, PV49, S25
PFA	tetrafluoroethylene perfluoroalkylvinyl-ether copolymer	SEMI F52, F65, F99
PFC	process flow context	SEMI E81
PFC	perfluorocompounds	SEMI F5
PFCs	perfluoro compounds	SEMI S29
PFI	process flow iterator	SEMI E81
pg	pictogram(s)	SEMI C1
PGME	propylene glycol mono methyl ether	SEMI C72
PGMEA	propylene glycol mono methyl ether acetate	SEMI C72
PGV	person guided vehicle	SEMI E82, E83, E88, E98, E101, E109, E153, G92, G95, S17
PHA	pulse height analyzer	SEMI E104
PHY	physical layer	SEMI E54.8, E54.14, E54.17, E54.19, E54.20, E54.21
PID	potential-induced degradation	SEMI PV75
PID-s	potential-induced degradation of the shunting type	SEMI PV75
PI/O	parallel input/output interface	SEMI E101, E109
PIO	parallel input/output interface	SEMI E87
PJ	process job	SEMI E170, E174
PJG	process job group	SEMI E174
PL	photoluminescence	SEMI PV51, PV56

Term	*Meaning*	*Standard(s)*
PLC	programmable logic controller	SEMI A1.1, A2, E188, F31, F97
PLC	power line communication	SEMI E176
PLHS	process liquid heating system	SEMI S3
PLIN	plane of incidence	SEMI PV15
PLP	panel level packaging	SEMI 3D20, 3D23, E181, E181.1, E181.2, E181.3, E181.4, G98, G99, G100, G101, G102, G103, G104
PLY	parametric limited yield	SEMI E35, E140
PM	preventive maintenance	SEMI E10, E149, S12
Pmpp	maximum power	SEMI PV38
P/N	part number	SEMI F8, F9, F11, F12
PNH	particle number after handling and transport	SEMI E146
PNI	particle number initial	SEMI E146
PNT	particle number after static or dynamic test	SEMI E146
P.O./PO	purchase order	SEMI E137, E149
POC	point of connection	SEMI F22, F59, F107, F63
POD	point of distribution	SEMI F75, F63
POD	point of discharge	SEMI F98
POE	point of entry	SEMI F63
POE	polyolefin elastomer	SEMI PV62
POM	point of measurement	SEMI F63
POP	PRC opoeration	SEMI E170
POP	point of process	SEMI F63
POR	process of record	SEMI C100
POTW	publicly owned treatment works	SEMI F98
POU	point of use	SEMI C98, F5, F22, F38, F48, F67, F68, F98, F63, F116
powd.	powdered	SEMI C1
PP	polypropylene	SEMI C90, F57, F108, PV10
ppb	parts per billion	SEMI C1, E49, F30, F51, MS14, S25
ppb	mole/mole × 10^9	SEMI C3
ppb	molar parts per billion (nmole/mole)	SEMI C91, F27, F29, F33, F58, F112, F118
ppb	part(s) per billion (ng/mL)	SEMI E180
ppb	parts per billion by mass (ng/g)	SEMI F48
ppb	parts per billion, volume basis	SEMI F67, F68
ppba	mole/mole × 10^9 atomic	SEMI C3
ppba	parts per billion atomic	SEMI M59
ppbv	parts per billion by volume	SEMI F55
ppbw	weight/weight × 10^9	SEMI C3
ppbw	parts per billion by weight	SEMI M59
ppbw	part per billion weight	SEMI PV74

Term	*Meaning*	*Standard(s)*
PPE	personal protective equipment	SEMI S12, S13, S19, S21, S24, S30
ppf	pixel per frame	SEMI D65
ppm	parts per million	SEMI C1, E66, F30, M59, MS14
ppm	mole/mole × 10^6	SEMI C3
ppm	molar parts per million (µmole/mole)	SEMI C91, F27, F29, F33, F58, F118
ppm	parts per million by mass (µg/g)	SEMI F48
ppm	Parts per million, volume basis	SEMI F67, F68
ppm	parts per million by volume	SEMI F105
ppma	parts per million atomic	SEMI M59
ppmv	parts per million by volume	SEMI F55, F43
ppmw	parts per million by weight	SEMI M59
ppmw	part per million weight	SEMI PV74
PPP	progress program parameter	SEMI E126
ppt	part(s) per trillion (pg/mL)	SEMI E180
ppt	molar parts per trillion (pmole/mole)	SEMI C91, F27, F33, F58, F112, F118
ppt	parts per trillion	SEMI S25
ppt.	precipitate	SEMI C1
PR	photo resist	SEMI 3D6
PR	power rack	SEMI PV65
PRC	production recipe cache	SEMI E170
PRC	predicted response curve	SEMI M53
PRD	productive state	SEMI E10, E79
prepn.	preparation	SEMI C1
P-ROA	polynomial referenced ROA	SEMI M59, M77
protobuf	Protocol Buffers	SEMI E179
PRF	pseudorandom function family	SEMI E132.2
PRY	product yield	SEMI E35, E140
PS	position start	SEMI PV32
PSA	pressure sensitive adhesive	SEMI C102
PSC	perovskite solar cell	SEMI PV57, PV76, PV80, PV89
PSD	particle size distribution	SEMI C79, C98
PSD	power spectral density	SEMI M59, PV23, PV38, PV44
PSDA	particle size distribution analyzer	SEMI C79, C93
psi	pounds per square inch	SEMI C1, F28, F43, F59, F67, F68, F101
psia	pounds per square inch absolute	SEMI C3, C88, E56, E66, E69, E77, E80, F28, F32, F43, F53, F56, F59, F67, F68, F101, F117
psid	pounds per square inch differential	SEMI E66, F28, F32, F43, F59, F101

Term	*Meaning*	*Standard(s)*
psig	pounds per square inch gauge	SEMI C3, E66, F28, F38, F43, F53, F56, F59, F67, F68, F74, F101
PSL	polystyrene latex	SEMI C77, C79, C82, C89, F110, M59
PSR	pad surface roughness	SEMI C103
PSS	patterned sapphire substrate	SEMI HB14
P/T	precision-to-tolerance (ratio)	SEMI E35, E89
PTFE	polytetrafluoroethylene	SEMI C1, C27, E45, E49, F51, F57, F65, F99, F100, F108, M59, PV49, PV90, S18, S25
PTM	product time measurement	SEMI E168
PUA	percent usable area	SEMI M59
PV	photovoltaic	SEMI E35, PV2, PV9, PV15, PV22, PV23, PV38, PV56, PV61, PV62, PV79, PV83, S19
PV	position value	SEMI PV32
PVC	polyvinylchloride	SEMI F57, F108
PVD	physical vapor deposition	SEMI E113, E114, E115, E135, E143, F51
PVDF	polyvinyldifluoride	SEMI E49, F57
PVDF	polyvinylidene fluoride	SEMI C90, C93, E45, F108, S25
PVECI	photovoltaic equipment communication interface	SEMI PV2
PWP	particles per wafer pass	SEMI E137, M59
PY	process yield	SEMI E35
PZT	piezoelectric transducer	SEMI MS3, MS4
Q	volumetric flow rate	SEMI F32, F100
QA	quality assurance	SEMI E49
QC	quality control	SEMI C103, E49
QFP	quad flat package	SEMI G89
Q_{FS}	rated full scale flow	SEMI F64
Q_I	indicated flow	SEMI F64
QMS	quadrupole mass spectrometer	SEMI S29
Q_N	nominal actual flow during steady state conditions	SEMI F64
Q_R	steady state actual flow while inlet pressure is being ramped	SEMI F64
Q_{SP}	set-point flow	SEMI F64
QSSPC	quasi steady state photoconductance	SEMI PV13, PV22
R	red	SEMI PV65
R2R	run-to-run	SEMI E98, E133, E174
R2R Control	run-to-run control	SEMI E126
Ra	surface roughness	SEMI 3D6
R_a	roughness average	SEMI E49, F43, F67, F68
Ra	roughness average of surface profile	SEMI F19
RAM	reliability, availability, and maintainability	SEMI E10, E58, E79, E150

Term	*Meaning*	*Standard(s)*
$R_{a,max}$	surface roughness maximum	SEMI F67, F68
RaP	recipe and parameter management	SEMI E139, E139.3, E149
RB	read block	SEMI A1.1
RBAC	role-based access control	SEMI E169
RC	response curve	SEMI M53
R-C	resistance-capacitance	SEMI E129
R&D	research and development	SEMI S30
RD	reference device	SEMI PV57, PV69, PV76, PV80, PV89
RDL	redistribution layer	SEMI 3D6, 3D16
Read	read data from the tag	SEMI E144
RF	radio frequency	SEMI E113, E135, E136, E143, E144, E176, F51, F53, F107, M59, PV13, S7
RFID	radio frequency identification	SEMI D54, E152, E154, E158, E159, E176, E181, E181.1, E181.2, E181.3, E181.4, E182, E184, E185, G92, M80, T15
RFP	request for proposal	SEMI E81
RFU	reserved for future use	SEMI E144
RGD	reduction gas detector	SEMI PV24
RGD-GC	reduction gas detector-gas chromatograph	SEMI F30
RGT	rail guided transport	SEMI E82, E109
RGV	rail guided vehicle (moving on the floor)	SEMI E101
RGV	rail guided vehicle	SEMI E109, S17
RH	relative humidity	SEMI E66, E78, E129
RIE	reactive ion etching	SEMI MS5
RITdb	Rich Interactive Test Database	SEMI E183
RM	reactive maintenance	SEMI E10
RM	routine maintenance	SEMI E54.18
R_m	tensile strength	SEMI PV18, PV19
Rmax	max surface roughness variation	SEMI 3D6
Rmax	roughness maximum	SEMI E66, F43
RMS	root mean square	SEMI E33, E176
RMS	recipe management system	SEMI E81, E170
RMS	Recipe Management Standard	SEMI E98
rms	root mean square	SEMI F53, PV15, PV79
RO	reverse osmosis	SEMI F75, F98, PV3
RO	read only	SEMI E54.16
R/O	read only tag	SEMI E144
ROA	edge roll off amount	SEMI M59, M77
ROEE	reference overall equipment efficiency	SEMI E79
ROP	RMS operation	SEMI E170
RPC	reference particle counter	SEMI E104
RPC	remote procedure call	SEMI E54.14

Term	*Meaning*	*Standard(s)*
RPD	repeatability of the DUT (%)	SEMI E56
RPD	reference plane deviation	SEMI 3D4, M59
RPM	rotation per minute	SEMI C103, C104
RPS	repeatability at a set point (%)	SEMI E56
RR	removal rate	SEMI C103, C104
RS	radiated susceptibility	SEMI F53
RSD	relative standard deviation	SEMI PV57, PV69, PV76, PV80, PV89
RSF	relative sensitivity factor	SEMI M59
RSP	reticle SMIF pod	SEMI E109
RSS	root sum of squares	SEMI E89
RTD	resistance temperature detector	SEMI E136
RTHT	reference theoretical production time per unit	SEMI E79
RTO	return to one signal format	SEMI G80
RTP	rapid thermal process	SEMI E79, F51
RTx	return to zero, one or complement signal format	SEMI G79
RTZ	return to zero signal format	SEMI G80
RVP	roughing vacuum pump	SEMI E54.18
RVP	Recipe Variable Parameter	SEMI E172
RVPB	roughing vacuum pump booster	SEMI E54.18
R/W	read/write tag	SEMI E144
RW	read/write	SEMI E54.16
RX	receiver	SEMI E144
RxM	prescriptive maintenance	SEMI E10
Ry	maximum peak-to-valley roughness height of surface profile	SEMI F19
s	second(s)	SEMI C1, F59, F67, F68
S	sensor (A CDM object)	SEMI E54.2
S	total number of packaged-products in a stack	SEMI PV44
s	slope (unit-less)	SEMI E56
S	set point (units of flow)	SEMI E56
S	saturation	SEMI PV65
Sa	average of set point (units of flow)	SEMI E56
SA	source address	SEMI E54.23
SAC	sensor actuator controller (object)	SEMI E54.2, E54.4, E54.9, E54.13, E54.14, E54.15, E54.16, E54.20
SAI-GENSen	Sensor Analog Input-GENSen	SEMI E54.24
SAN	Sensor/Actuator Network	SEMI E54, E54.2, E54.4, E54.8, E54.9, E54.12, E54.13, E54.14, E54.15, E54.16, E54.17, E54.19, E54.21, E54.23
SANCS	Sensor/Actuator Network Communications Standard	SEMI E54.2
SAP	service access point	SEMI E54.8, E54.14
SASB	self authentication service body	SEMI T22
SASmax	the maximum span attitude sensitivity between two attitudes	SEMI E80

Term	*Meaning*	*Standard(s)*
SASnm	span attitude sensitivity between attitudes n and m	SEMI E80
satd.	saturated	SEMI C1
SAXS	small angle X-ray scattering	SEMI C89
Sb	antimony, an *n*-type dopant in silicon.	SEMI M59
SBC	surround by complement signal format	SEMI G80
SBIR	site backside ideal focal plane range	SEMI 3D12
SBIR	site flatness back surface ideal range	SEMI M92
SBx	surround by zero, one or complement signal format	SEMI G79
SBY	standby state	SEMI E10, E79
SC	stocker controller	SEMI E88
SC	section, of brick	SEMI PV32
SCAP	Security Content Automation Protocol	SEMI E188
SCBA	self contained breathing apparatus	SEMI S12
sccm	standard cubic centimeters per minute	SEMI E56, E69, E77, E80, F55, F62, F67, F68, F101
SCE	saturated calomel electrode	SEMI C1
SCF	standard cubic feet	SEMI C3
scfm	standard cubic feet per minute	SEMI E66, F28, F38, F43, F59, F101, M59
SCL	substrate center line parallel with long reference edge	SEMI D52
SCoS	stacked chip on substrate	SEMI 3D14
SCPT	standard configuration parameter type	SEMI E54.16
SCR	spatial contrast ratio	SEMI D64
SCW	slurry copper waste	SEMI F98
SDA	send data with acknowledge	SEMI E54.8
SDM	Specific Device Model	SEMI E54, E54.2, E54.4, E54.8, E54.9, E54.12, E54.13, E54.14, E54.15, E54.16, E54.17, E54.19, E54.20, E54.21, E54.23, E54.24
SDN	send data with no acknowledge	SEMI E54.8
SDO	service data object	SEMI E54.20
S-DS	s-device supervisor object	SEMI E54.13
SDS	safety data sheet	SEMI C96, S5, S30
SDT	scheduled downtime state	SEMI E10
SECS	SEMI Equipment Communications Standard	SEMI A3, A4, E99.1, E118.1, E172, E179, HB4, HB13, M59, PV2
SECS-II	SEMI Equipment Communications Standard 2	SEMI M59, E148, E149, E151, E160, E168.1, E172, E179
SEDD	SECS Equipment Data Dictionary	SEMI E172
SEM	scanning electron microscope	SEMI E33, E176, F37, HB14
SEM	scanning electron microscopy	SEMI 3D5, C102, F19, F37, F73, F63
SEM	specific equipment model	SEMI E30.5, F37

Term	*Meaning*	*Standard(s)*
SEM-EDX	scanning electron microscopy-energy dispersion x-ray spectrometry	SEMI F51, PV17
sepn.	separation	SEMI C1
SESC	supplier ergonomics success criteria	SEMI S8
SEV	secondary exhaust ventilation	SEMI S18
SFC	supply mass flow controller	SEMI E66
SFQR	site fronside least squares focal plane range	SEMI 3D12
SGML	standard generalized markup language	SEMI E121
SH	shore hardness	SEMI C100
SHA	Secure Hash Algorithm	SEMI E132.1, E132.2
SHA-256	Secure Hash Algorithm-256	SEMI E125.2
Si	silicon	SEMI M59, PV72
SI	International System of Units	SEMI E43, E145
SIMOX	separation by implanted oxygen	SEMI M59
SIMS	secondary ion mass spectroscopy	SEMI M59
SIP	system in package	SEMI T13, T19
S_l	set point, down cycle (units of flow)	SEMI E56
SL	standard liters	SEMI F28, F43
SL	scan line	SEMI PV70, PV71
SLED	superluminescent light emitting diode	SEMI 3D4
slm	standard liters per minute	SEMI C88, E56, E66, E69, E77, F43, F70, F70.1, F117, S5
SLOSM	substrate location object state model	SEMI E127
slpm	standard liters per minute	SEMI C91, E80, F28, F38, F43, F58, F59, F62, F67, F68, F101, F112, F118
SLS	stray light sensor	SEMI E54.10
SM	storage modulus	SEMI C100
SMD	surface mount device	SEMI D62, MS3
SME	semiconductor manufacturing equipment	SEMI E137, E154, E182, E184, G95, S3, S17, S23, S28
SMIF	standard mechanical interface	SEMI E98, E163, S28
SML	SECS message language	SEMI E151
SMN	SECS-II Message Notation	SEMI E30, E172, E173, HB13
SMPS	switched-mode power supply	SEMI E176
SMT	surface mount technology	SEMI A2, A5, MS3, T13
SMTP	simple mail transfer protocol	SEMI T13
SMTR	Smelter's test report	SEMI E49
SMU	source measurement unit	SEMI PV57, PV69, PV76, PV80, PV89
SNVT	standard network variable type	SEMI E54.16
SNR	signal-to-noise ratio	SEMI E89
SOAP	simple object access protocol	SEMI E121, E125.1, E128, E132.1, E134.1, E139.3, E178, T12.2, T13.2, T20.3

Term	*Meaning*	*Standard(s)*
SOC	substance of concern	SEMI S2
SoE	servo profile over EtherCAT	SEMI E54.20
SOF	start of frame	SEMI E144
SOI	silicon on insulator	SEMI M59, MS3, MS8, MS10, MS13
soln.	solution	SEMI C1
soly.	solubility	SEMI C1
SOP	small outline package	SEMI G89
SOP	standard operating procedure	SEMI S25
SPC	statistical process control	SEMI E49, E66, E133, F60, M59, PV46
SPCT	single-path cluster tool	SEMI E10, E79
SPE	supply pressure effect	SEMI F101
SPID	standard program ID	SEMI E54.16
SPOC	single point of control	SEMI E170
SPOWM	single point of wafer management	SEMI E174
SQL	Standard Query Langauge	SEMI E125
SQL	Structured Query Language	SEMI E183
SQLite	Single File Database	SEMI E183
SR	surface roughness	SEMI 3D11, 3D16
SR	sampling rate	SEMI E35
SR	spectral response	SEMI PV57
SR	spectrum response	SEMI PV69
SR1	spectral response	SEMI PV69
SR2	spectral responsivity	SEMI PV69
SRC	standard reporting condition	SEMI PV69, PV76, PV80, PV89
SRD	short-term reproducibility of the device (%)	SEMI E56
SRD	send and request data with reply	SEMI E54.8
SRE	short reference edge	SEMI 3D23, D44, D48, D49, D52
SRS	short-term reproducibility at a set point (%)	SEMI E56
SRV	service	SEMI E54.8
SS	scroll speed	SEMI D65
SS	solar simulator	SEMI PV57, PV69, PV76, PV80, PV89
SS	stainless steel	SEMI S25
SSAP	source SAP	SEMI E54.8
SSCC	Safety Supervisors' Communication Council	SEMI S24
SSIS	scanning surface inspection system	SEMI E146, M59
SSL	secure sockets layer	SEMI E132.1, E132.2, E139.3
SST	specification for substrate tracking	SEMI E98
ST	seen-threshold	SEMI D65
STC	ship to control	SEMI C64

Term	*Meaning*	*Standard(s)*
STC	standard test condition	SEMI PV38, PV56, PV57, PV69, PV76, PV80, PV93
std.	standard	SEMI C1
STDF	Standard Test Data Format	SEMI A4.1, G91
STI	shallow trench isolation	SEMI M51, M59
STOP	substrate transfer path object	SEMI E127
STP	standard temperature and pressure	SEMI MS10
STPOSM	substrate transfer path object state model	SEMI E127
STS	specification for substrate tracking	SEMI E98
S_u	set point, up cycle (units of flow)	SEMI E56
SUT	sample under test	SEMI C96, C99, C101
SVG	scalable vector graphics	SEMI E149
T	theromometer	SEMI C82, C89
T	time	SEMI F64
T	tesla	SEMI F53
T	transmittance	SEMI C1
T	(K) temperature in Kelvin	SEMI F59
T	temperature	SEMI F79
TACO	total available conservation opportunity	SEMI F98
TBDB	temporary bond/debond	SEMI 3D8
TC	temperature compensated	SEMI C101
TCD	thermal conductivity detector	SEMI PV24
TCO	transparent conducting oxide	SEMI PV31
TCP	Transmission Control Protocol	SEMI A2, A5, E54.9
TCP	transport control protocol	SEMI E54.13
TCP/IP	Transmission Control Protocol/Internet Protocol	SEMI A2, A5, E132.2
TCP/IP	transmission communication protocol/internet protocol	SEMI E30.1, E30.5, E82, E88
TCS	tester control system	SEMI A4, A4.1
TD	thermal desorption	SEMI MF1982
TDC	theoretical dynamic concentration	SEMI F57
TDDB	time dependent dielectric breakdown	SEMI M59
TDLAS	tunable diode laser absorption spectrometry	SEMI PV24
TDS	total dissolved solid	SEMI F75
TEM	transmission electron microscope	SEMI E33
temp.	temperature	SEMI C1, C3
TEMS	Tester Event Messaging for Semiconductors	SEMI A4, A4.1
TEU	total effective units	SEMI E79
TEUOEE	total effective units OEE	SEMI E79
TFC	tape frame cassette	SEMI G92
TFR	total failure rate	SEMI E10
TFRB	tape frame release bar	SEMI G92, G95
TGA	thermal gravimetric analysis	SEMI C100
TGV	through glass via	SEMI 3D11, 3D16, 3D21, 3D22

Term	*Meaning*	*Standard(s)*
THC	total hydrocarbon analyzer	SEMI PV24
THK	thickness	SEMI 3D6
THT	theoretical production time per unit	SEMI E79
THT	theoretical production time	SEMI E124
THTP	theoretical unit throughput by recipe	SEMI E79
titrn.	titration	SEMI C1
TIR	total indicated runout	SEMI 3D4
TIR	total indicator runout	SEMI E158, E159, E181.4, M80
TIR	total indicator reading	SEMI M59
TIS	total integrated scatter	SEMI PV15
TLC	thin-layer chromatography	SEMI C1
TLS	Transport Layer Security	SEMI E132.2
TLV	threshold limit value	SEMI S18
TM	temperature monitor	SEMI PV57, PV69, PV76, PV80, PV89
TMA	thermal mechanical analysis	SEMI C100
TOA	take-off angle	SEMI F60, F72
TOC	total organic carbon	SEMI E49, E137, F40, F51, F57, F61, PV3
TOC	total oxidizable carbon	SEMI C30, F98, PV36
TOC	total organic/oxidizable carbon	SEMI C79
TOC	total organic carbon	SEMI C93, C96, F117
TOF	time of flight	SEMI F30
TP	throughput	SEMI E35, E140
TP	total organophosphorus	SEMI MF1982
TPIC	Technician Performance Improvement Council	SEMI E149, E150
TPM	total productive maintenance	SEMI E79
TPV	total pore volume	SEMI C102
TS	through-silicon via	SEMI 3D4
TSC	transport system controller	SEMI E82, E88, E168.2, E168.3
TSOM	through-focus scanning optical microscopy	SEMI 3D5
TSSC	transport and storage system controller	SEMI E153
TSV	through silicon via	SEMI 3D18
TTP	trusted third party	SEMI T21
TTV	total thickness variation	SEMI 3D4, 3D6, 3D21, 3D22, M59
TU	total utilization	SEMI E35, E140
TVP	turbo molecular vacuum pump	SEMI E54.18
TWA	time weighted average	SEMI S18
TX	transmitter	SEMI E144
TXRF	total reflection X-ray reflectance spectroscopy	SEMI M59
TZDB	time zero dielectric breakdown	SEMI M51, M59
UB	micro bump	SEMI 3D6

Term	*Meaning*	*Standard(s)*
UCB	upper confidence bound	SEMI E10
UDP	user datagram protocol	SEMI E54.14, E54.20
UDT	unscheduled downtime state	SEMI E10, E79
UFL	upper flammable limit	SEMI S3
UHP	ultrahigh purity	SEMI C92, E49, E67
UHP	ultra high purity	SEMI F57, F68, F114, F115, F119
UI	user interface	SEMI E81, E54.17, E54.19, E54.21, E149
UID	unique identifier	SEMI E144
Uid	unique identifier	SEMI E164
ULIC	ultra low irradiance condition	SEMI PV57
ULPA	ultra-low penetration air	SEMI E104
ULSI	ultra large scale integration	SEMI E45
UMG	upgraded metallurgical silicon	SEMI PV1
UML	Unified Modeling Language	SEMI E120.1, E125, E125.1, E132.1, E133.1, E134, E134.1, E139, E139.1, E139.3, E142.1, T20, T20.3
UNS	unified numbering system	SEMI F105
UPDI	ultrapure deionized	SEMI F51
UPS	uninterruptable power supply	SEMI E176
UPW	ultrapure water	SEMI C77, C79, C82, C89, C90, C93, C96, C98, E137, E180, F31, F40, F48, F57, F98, F104, F110, F115, S23
UPW	ultrapure water system	SEMI F61, F97, PV3
UR	Unload Request	SEMI E171
URI	Uniform Resource Identifier	SEMI E179
URL	universal resource locator	SEMI T20
US	Unload Stagnation	SEMI E171
USL	upper specification limit	SEMI E35, E89, M59
UTC	coordinated universal time	SEMI P44
UTF-8	Unicode Transformation Format	SEMI E183
UTV	unmanned transport vehicle	SEMI S17, S28
UUD	unit under test	SEMI E136
UUID	Universally Unique Identifier	SEMI E125.2, E132.2, E164
UV	ultraviolet	SEMI C1, F51, F116, PV47
v	voltage	SEMI F64
V	volt	SEMI C1, F53
V	valve	SEMI C89, F110, PV65
V	manual or pneumatic valve	SEMI F104
VA	visual angle	SEMI D57
VA	vinyl acetate	SEMI PV45
VAOEE	value-added in-process overall equipment efficiency	SEMI E79
VC	Vertical Communication	SEMI A1, A1.1, A2, A5

Term	*Meaning*	*Standard(s)*
VCL	virtual center line	SEMI D48
VCRC	volume color reproduction capability	SEMI D75
VCT	visual contrast threshold	SEMI D57
VFD	vertical flow down	SEMI E80
VFD	variable frequency drive	SEMI E176
VFU	vertical flow up	SEMI E80
VID	vertical inlet down	SEMI E80
VIM	International Vocabulary of Basic and General Terms in Metrology	SEMI E89
VIU	vertical inlet up	SEMI E80
VLF	very low frequency	SEMI E33, E176
VLIC	very low irradiance condition	SEMI PV57
VLSI	very large scale integration	SEMI S25
V/m	volt/meter	SEMI F53
VMB	valve manifold box	SEMI F22, F31, S18
VNA	vector network analyzer	SEMI E136, E143
VOC	volatile organic compounds	SEMI F5
vol.	volume	SEMI C1, C3
VPD	vacuum pump device	SEMI E54.18
VPD	vapor phase decomposition	SEMI M59, M85
VR	variable restrictor	SEMI F104
VSB	variable shaped beam	SEMI P44
VSWR	voltage standing wave ratio	SEMI E113, E114, E115, E135, E136, E143
VTHT	value-added in-process theoretical production time per unit	SEMI E79
W	watts	SEMI C1
W	work	SEMI E10
W	warehouse compression	SEMI PV44
WAT	wafer acceptance test	SEMI 3D6
W2W	wafer-to-wafer	SEMI 3D7, E133, E174
WB	write block	SEMI A1.1
WC	water column, inches (cm) of water	SEMI E49
WCR	window cut rate	SEMI C104
WHR	wafer handling robot	SEMI S28
WIDR	wafer ID reader	SEMI E118, E118.1
WIP	work in process	SEMI E81, E124
WIWNU	within the wafer non-uniformity	SEMI C104
WJ	Wafer Job	SEMI E174
WJMJ	Wafer Job Management Job	SEMI E174
WJMJOBJ	Wafer Job Management Job Object	SEMI E174
WJOBJ	Wafer Job Object	SEMI E174
WLI	white light interferometry	SEMI 3D4
WLGR	Western Lumber Grading Rules	SEMI E137
WLP	wafer level packaging	SEMI G98, G99, G100, G101, G102, G103, G104

Term	*Meaning*	*Standard(s)*
WSDL	Web Services Definition Language	SEMI E121, E125.1, E128, E132.1, E139.3, E134.1, E178T20.3
WSPW	wafer starts per week	SEMI F98
wt.	weight	SEMI C1, C3
W3C	World Wide Web Consortium	SEMI E120.1, E121, E125.1, E132.1, E133.1, E134.1, E138, E139.1, E139.3, E142.1, E172, E173, T20.3
WoW	wafer on wafer	SEMI 3D14
w/v	weight/volume	SEMI C3
w/w	weight for weight	SEMI S25
ww	weight/weight	SEMI C3
WWPA	Western Wood Products Association	SEMI E137
WWW	World Wide Web	SEMI E121, E134, E138
XCCDF	Extensible Configuration Checklist Description Format	SEMI E188
XLS	extended light scatterer	SEMI M59
XMI	XML metadata interchange	SEMI E121
XML	extensible markup language	SEMI E120.1, E121, E125.1, E132.1, E128, E133, E134.1, E138, E139.1, E139.3, E142.1, E145, M59, T12.2, T13.2, E149, E151, E172, E173, E186, T20.3
XPATH	XML path language	SEMI E121
XPS	X-ray photoelectron spectroscopy	SEMI E49, F19, F60
XRF	X-ray fluorescence	SEMI PV17
XSD	XML schema definition	SEMI E133.1, E173, T20.3
XSL	eXtensible stylesheet language	SEMI E121
XSLT	eXtensible stylesheet language transformations	SEMI E121
ZASmax	the maximum zero attitude sensitivity between two attitudes	SEMI E80
ZASnm	zero attitude sensitivity between attitudes n and m	SEMI E80

Table 2 Definitions

Term	*Definition*	*Standard(s)*
1/e decay time (τ_e)	the time duration from the laser pulse injection to the instant that the microwave signal decreases to 1/e of its peak value.	SEMI PV9
150 mm HB-LED cassette	used generally as a term only to identify the cassette used in fabs for 150 mm HB-LED wafers.	SEMI HB3
150 mm Multiple Reticle SMIF Pod (MRSP150)	a minienvironment compatible carrier capable of holding six 6 inch reticles in a horizontal orientation during transport and storage and is compatible with a Standard Mechanical Interface (SMIF) per SEMI E19.3.	SEMI E112, E117
150 mm Reticle SMIF Pod (RSP150)	a minienvironment compatible carrier capable of holding a 6 inch reticle in a horizontal orientation during transport and storage and is compatible with a Standard Mechanical Interface (SMIF) per SEMI E19.3.	SEMI E111, E117
200 mm Reticle SMIF Pod (RSP200)	a minienvironment compatible carrier (as defined in SEMI E100) that is capable of holding one 6 inch reticle or one 230 mm reticle in a horizontal orientation during transport and storage and is compatible with a Standard Mechanical Interface (SMIF) per SEMI E19.4.	SEMI E117

Term	*Definition*	*Standard(s)*
230 mm	the nominal edge length for the reticle generation. Also referred to as '9 inch' size.	SEMI P34
2CR filter	a profile filter equivalent to a series of two CR filter circuits. The standard transmission coefficients at cut-off wavelength are 75%.	SEMI D15
2D code	a code identifying elements such as maker, model, version, and serial number of a FOSB, by using a data matrix ECC200 symbol according to ISO/IEC 16022.	SEMI E159, M31, M80
2D code placement area	an area on the door and another area on top of the shell, where a 2D code can be placed.	SEMI E159, M31, M80
2D data trace	a two-dimensional group of points that is parallel to the *xz*- or *yz*-plane of the instrument.	SEMI MS2, MS3
2Theta (2θ)	angle between the detector position and the incident beam direction in the scattering plane.	SEMI M63
2-view autostereoscopic display	a display with two viewing zones. The viewing zone forming optics of such a display includes parallax barriers, lenticular lens arrays or directional backlight. The viewer should stay at designated eye positions to watch this kind of display. The viewing distance is specified and the lateral position is limited.	SEMI D59
300 mm Tape Frame FOUP	used generally as a term only to identify the front-opening carrier used in fabs for 300 mm wafers.	SEMI E184
3D angular luminance uniformity	LMD is positioned along the normal line of the center of screen at measuring distance. Then focus on each selected points at corresponding angles, and take the luminance by LMD.	SEMI D70
3D color gamut	color range of monocular view for stereoscopic display.	SEMI D70
3D contrast ratio	the luminance ratio of the full screen white and full screen black perceived by the viewer while watching a 3D display with its specific viewing method. 3D contrast ratio is unit-less.	SEMI D59
3D chromaticity	chromatic performance of a FPD-based stereoscopic display.	SEMI D69
3D crosstalk	extra images, seen by a certain eye of the viewer when watching a 3D display, that should not be seen.	SEMI D59
3D data set	a three-dimensional group of points with a topographical *z*-value for each (*x*, *y*) pixel location within the field of view of the instrument.	SEMI MS2, MS3
3D display	a specific kind of display, which utilizes optical means to direct different images with parallax to the left and right eyes of a viewer. The viewer fuses these images in his/her brain to perceive stereopsis. For example, stereoscopic 3D displays or autostereoscopic 3D displays.	SEMI D59
3D luminance	the luminance perceived by a viewer while watching a 3D display with its specific viewing method. Its unit is cd/m^2.	SEMI D59
3D normal luminance uniformity	LMD is set along the normal line of the screen at measuring distance when the measure luminance of each selected points.	SEMI D70
3D viewing angle	the maximum angle at which a display can be viewed with acceptable stereopsis performance using the 3D display's specific viewing method.	SEMI D59
450 BOLTS interface surface (BI)	a physical surface on the semiconductor manufacturing equipment intended to mate with a load port.	SEMI E154
450 equipment boundary (EB)	the plane parallel to the FP which defines the boundry between the load port and the SME.	SEMI G95
450 equipment boundary (EB) and Upper 450 Equipment Boundary (EB_{UPPER})	consisting of two planes, one plane parallel to the facial plane establishing the boundary between the semiconductor manufacturing equipment and the load port. And, the second plane parallel to the facial plane and above *z100* establishing the boundary between the semiconductor manufacturing equipment and the overhead transport vehicle.	SEMI E154
450 FOSB	used generally as a term only to identify the front opening shipping box (FOSB).	SEMI M80, E162

Term	*Definition*	*Standard(s)*
450 FOUP	used generally as a term only to identify the front-opening carrier used in fabs for 450 mm wafers.	SEMI E154, E156, E158
450 load boundary (LB)	a plane parallel to the facial plane establishing the boundary between the load port and the fab aisle.	SEMI E83, E154, G95
450 load height	the distance from the horizontal plane to the fab floor.	SEMI E154, G95
450 load port	the interface location on a semiconductor manufacturing equipment, where a 450 FOUP can be loaded and unloaded.	SEMI E154, G95
450 MAC	used generally as a term to identify the multi application carrier used for wafer manufacturing, wafer storage, and wafer shipping.	SEMI E159
450 spacing	individual spacing of load ports on semiconductor manufacturing equipment in the case where it has more than two load ports. It defines individual spacing of the bilateral planes.	SEMI G95
450 spacing	the distance from the bilateral plane of one load port to the bilateral plane of an adjacent load port on a semiconductor manufacturing equipment.	SEMI E154
450 stocker load boundary (LB)	a plane parallel to the facial plane establishing the boundary between the stocker load port and the fab aisle.	SEMI E156
450 TFC	used generally as a term only to identify the TFC used in fabs for 450 mm wafers.	SEMI G92, G95
450 TFC	tape frame cassette for 450 mm wafer.	SEMI G95
5th generation	a term quoted as typically used at LCD industry to define glass substrate size.	SEMI PV4
5-point thickness T5GU	mean of the thickness measured at the center of the CSW (*TCG*) and at 4 additional points.	SEMI HB6
5-point thickness variation T5GV	difference between the maximum and minimum thickness measured at the 5-points of *T5GU*.	SEMI HB6
90% depth major diameter	the major diameter of the TSV opening being characterized, measured in the horizontal plane at 90% of the depth of the TSV.	SEMI 3D1
90% depth minor diameter	the minor diameter of the TSV opening being characterized, measured in the horizontal plane at 90% of the depth of the TSV.	SEMI 3D1
90th percentile test	a nonparametric test methodology for determining if reference and test data sets differ in the Annual Review Process.	SEMI C64
(clipped) feature area	enclosed area defined by the edges of the (clipped) feature, i.e., area in the (clipped) feature contour, mentioning as mandatory information: description of the nominal feature including type, dimensional information, tone, surrounding area, and orientation relative to the coordinate system. Additionally if clipped: region of interest, clipping details.	SEMI P43
(clipped) feature area difference	(clipped) feature area gain minus (clipped) feature area loss. This is also equal to the (clipped) feature area of the actual feature minus the (clipped) feature area of the nominal feature. The value of the (clipped) feature area difference may be positive or negative accordingly. Same mandatory information as in *(clipped) feature area gain*.	SEMI P43
(clipped) feature area gain	area in the actual (clipped) feature contour outside of the nominal (clipped) feature. Additional mandatory information: relative position of actual and nominal feature. Note that the value of the *(clipped) feature area gain* is always positive.	SEMI P43
(clipped) feature area loss	(clipped) area outside of the actual feature, still inside of the nominal feature. Same mandatory information as in *(clipped) feature area gain*. Note that the value of the *(clipped) feature area loss* is always positive.	SEMI P43
A	oscillation amplitude while imaging the sample, in nanometers (nm) measured at the same frequency as the free oscillation amplitude.	SEMI C78
A Type	substrates of this type have a convex shape. The substrate shape is named ‘A type.’ A type mode consists of lift at center location and two sags at the left and right edges.	SEMI D40

Term	*Definition*	*Standard(s)*
A0	free oscillation amplitude in air (e.g., when the tip is not in contact with the sample), in nanometers (nm) measured at or up to a maximum of 5% less than the resonance frequency.	SEMI C78
abatement equipment	equipment used to modify the effluent from a process in order to reduce emissions of hazardous materials.	SEMI S30
abatement system	a system used to modify the effluent from a process in order to reduce emissions of hazardous materials to levels that do not present unacceptable risk.	SEMI S18
abnormality	a condition or behavior different from normal or predetermined state that can result in an incident or accident.	SEMI S24
abort switch	a switch that, when activated, interrupts the activation sequence of a fire detection or fire suppression system.	SEMI S2
absolute (clipped) feature area deviation	the sum of the values of (clipped) feature area gain and (clipped) feature area loss. Note that the value of the absolute (clipped) feature area deviation is always positive. Same mandatory information as in (clipped) feature area gain.	SEMI P43
absolute pressure	the pressure measured relative to zero pressure (perfect vacuum).	SEMI E28, F113, PV81
absorber film stack	stack of film layers deposited on top of the multilayer film stack to block reflection of the light, with optional buffer layer for use in some absorber repair operations.	SEMI P37
absorber film stack	stack of film layers deposited on top of the multilayer film stack to block reflection of EUV light in desired areas, with optional buffer layer for use in some absorber repair operations.	SEMI P48
abstract interface	an interface defined outside any component that generalizes common features of the CIM Framework. The abstract interfaces are intended for use in multiple components via interface inheritance mechanisms.	SEMI E81
abstract interface	an interface specified only for inheritance rather than for implementation in order to standardize common features shared by all specializations of the interface.	SEMI E97
abstract object type	an object supertype that is not instantiated directly but only through one of its subtypes.	SEMI E98
accelerated life cycle test	the process by which the device under test (DUT) is subjected to cycles between its minimum and maximum rated full scale range.	SEMI F113
accelerating rate calorimetry (ARC)	an analytical technique in which the temperature and pressure changes of a sample are measured adiabatically as the temperature is raised at a controlled rate.	SEMI S30
accelerating voltage	the mean kinetic energy of primary electrons converted into voltage.	SEMI P30
acceleration cost	additional costs incurred to complete the project sooner than the original schedule baseline plan.	SEMI E70
acceptable equipment-induced electrostatic levels	acceptable static charge levels related to the major technology nodes of product and reticle feature sizes.	SEMI E78
acceptable risk	a risk of Low or Very Low, as defined by SEMI S10 or SEMI S14.	SEMI S30
acceptance	acknowledgement by a purchaser's authorized representative to the supplier that a system, subsystem, assembly, subassembly, or component part has satisfied the negotiated technical requirements. It also may be referred to as sign-off.	SEMI E149
acceptance test	a test conducted on each component, subsystem, or system produced. It is the basis for acceptance or rejection by the purchaser. The purpose of acceptance testing is to provide a check to ensure that the component, subsystem, or system has been properly assembled or manufactured.	SEMI F1
acceptor	an impurity in a semiconductor that accepts electrons excited from the valence band, leading to hole conduction.	SEMI M59
access	a means of approaching or touching.	SEMI S22
access control	the restriction of access to an information asset via mechanisms used to verify authenticity and authority.	SEMI E169

Term	*Definition*	*Standard(s)*
access control	the restriction of access to an information asset via mechanisms used to authenticate and authorize the entity.	SEMI E187
access mode	a mode in which passive equipment knows which AMHS equipment (i.e., RGV, AGV, and OHT/OHV) or operator is permitted to make a material handoff. In the case of interbay AMHS, this is a mode in which the passive equipment knows which AMHS equipment (i.e., OHS and stockers equipped with transfer devices) is permitted to make a material handoff.	SEMI E84
access traceability	traceability using the access logs when the authentication code for license plate is read in the distribution point and when the authentication code in ASB is accessed for verification.	SEMI T22
accessible	having or allowing access, see definition of access.	SEMI S22
accredited testing laboratory	an independent organization dedicated to the testing of components, devices, or systems that is recognized by a governmental or regulatory body as competent to perform evaluations based on established safety standards.	SEMI S2, S22, S28
accredited testing laboratory (ATL)	an independent organization dedicated to the testing of components, devices, or systems; competent to perform evaluations based on established safety standards; and recognized by a governmental or regulatory body.	SEMI F107, S3, S7, S14, S30
accumulation condition	the region of the capacitance-voltage (C-V) curve for which a 5 V increment toward a more negative voltage for *p*-type material, or toward a more positive voltage for *n*-type material, results in a change of less than 1% in the maximum capacitance, C_{max}.	SEMI M59
accuracy	the closeness of agreement between an observed value and the true value; the total uncertainty of an observed value, including both precision and bias.	SEMI E56, E69, PV81
accuracy	closeness of agreement between a test result or the mean of a group of test results made on an object and its true value.	SEMI E89, MS14
accuracy	closeness of the agreement between the result of a measurement and a true value of the measurand.	SEMI E151
accuracy curve	the curve fitted through the average measured values over the specified range of the device under test (DUT).	SEMI E56, E69
accuracy device	the total uncertainty over a specified range of the device. Device accuracy over a range is stated as the worst case accuracy taken over all tested set points in this range.	SEMI E56, E69
accuracy of size	the closeness of agreement between the ascertained size of the detected particle and its real size.	SEMI E104
acid	a corrosive material whose chemical reaction characteristic is that of an electron acceptor.	SEMI F21, F51
acid	a corrosive chemical whose chemical reaction characteristic is that of an electron acceptor.	SEMI S4
acid blank	a solution of acid used to establish the background spectrum and trace metal contamination of the acid mixture used in the procedure.	SEMI PV49, PV64
activated carbon	a media filter used to remove oxidizing agents, like chlorine and chloramines, and remove (adsorb) certain TOC compounds.	SEMI F61
activation	the process of initially preparing the purifier media to be chemically reactive with gas impurities.	SEMI F67, F68
activation temperature	temperature at which DUT was initially prepared.	SEMI F67, F68
active area	the area of a display that is useful for viewing.	SEMI D69
active area	the physical surface of the display that exhibits information via electrically generated images.	SEMI D81
active area, of a LC	a circular area inside the rim on a LC where lamellas can be placed.	SEMI E177
active area, of capacitive probe	the area of the capacitive probe over which the signal is collected.	SEMI PV41

Term	*Definition*	*Standard(s)*
active device	semiconductor device with active function (e.g., IC, transistor, diode) as opposed to a passive device (e.g., inductors, capacitors).	SEMI G35
active equipment	equipment that loads a cassette onto the cassette stage of another piece of equipment or unloads a cassette from the cassette stage of another piece of equipment.	SEMI E23, E84
active interbay transport system	an interbay transport system that transfers the carrier to and from the stocker interbay loadport itself using robotics that are located on the transport.	SEMI E85
active OHS vehicle	an active OHS vehicle that contains a device that loads or unloads the carrier from once piece of equipment to another.	SEMI E84
active time	the time segments when a physical service or action is performed upon the product unit. This includes times during which the product unit is actively being moved, processed, measured, or inspected.	SEMI E168
active transfer partner	(opposite of passive transfer partner) a transfer partner is considered active when it physically participates in the micro level portion of the transfer, either by moving the transfer object or by moving impediments within the transfer envelope (e.g., doors, clamps, etc.). This term refers to the micro level transfer phase only and not to any setup activities prior to the transfer (e.g., a port door may be opened during setup phase by passive partner).	SEMI E32
active transport system	a transport system that transfers a carrier to and from a load port using robotics located on the transport.	SEMI E156
active vehicle	a vehicle in the transport system that contains a robot or other transfer agent for providing the acquiring (loading) and depositing (unloading) actions.	SEMI E82
activity	work performed as part of the manufacturing operations of a factory. Activities may be specified formally by a predefined type of job specification (e.g., Production Job, Transport Job or PM Job), or they may be represented by identifying the minimal set of resources and material needed to allow subsequent completion of the job specification. An activity is the result of dispatching or scheduling.	SEMI E105
actual feature	feature as it is on the mask. In practical cases this will include deviations in feature widths, lengths, shape and position from the nominal feature.	SEMI P43
actual flow	the output value of the master reference standard.	SEMI E17
actual flow	the gas flow as measured by an external standard, not the electrical output of a mass flow meter.	SEMI E27, E56
actual flow	the flow rate as determined by the flow standard used in the test procedure.	SEMI E77, E80
actual flow	the output value of the reference flowmeter.	SEMI F55
actual flow	flow value measured by the flow standard.	SEMI F56
actual flow	flow as indicated by flow standard.	SEMI F64
actual throughput rate	the finished units out divided by the total time (shows how fast finished wafers flow out of the factory).	SEMI E124
actual unit output	the number of units processed by the equipment during production time.	SEMI E79
actuator	an analog or digital output device that is used to affect changes in the physical environment.	SEMI E98
actuator	a device that performs mechanical work using electric energy, chemical energy, or other energy forms.	SEMI MS3
acyclic data ASE	a service element used to communicate over the CC-Link IE on a transient basis.	SEMI E54.23
acyclic transmission	transient transmission.	SEMI E54.23
adaptation period	time when the single-component adhesive after the container is opened or the two-component adhesive is mixed until the consistency increases to the point where it is not suitable for construction or finishing.	SEMI PV98
adapter plate	a subsystem of the process equipment that contains connections to the chassis as well as to the facility connectors. The adapter plate is intended to be installed and connected to facility connectors before placement of the chassis.	SEMI F107

Term	*Definition*	*Standard(s)*
adapter plate hookup	connection of facilities connectors to equipment connectors that are included in the adapter plate.	SEMI F107
additional exhaust ventilation (AEV)	airflow that is not present during normal operation but is provided to extract substances of concern during maintenance or in the case of an abnormal release from primary containment.	SEMI S18, S30
additional film type attenuated phase shift mask	an attenuated phase shift mask having an additional film for light shielding and/or improving a resolution enhancement.	SEMI P29
additional film type opaque ring	an opaque frame composed of light shield materials other than the shifter. An opaque frame constructed with an additional stacked film on a shifter film.	SEMI P29
adhesion	silver layer adhesion with silicon bulk after firing.	SEMI PV54
adhesion	aluminm layer adhesion with silicon bulk for aluminum paste after firing.	SEMI PV58
adhesive strength	the measure of the maximum tensile stress needed to detach or unstick a chip from an adhesive tray.	SEMI 3D19, G97
adhesive stringer	any detectable protrusion from the edge of the adhesive.	SEMI P5
adhesive tape	the tape to be used for adhering to the components of the BLU to each other.	SEMI D36
adhesive trays	trays which have adhesion layer to hold thin chips. Adhesive trays are used for manufacturing, shipping and storage of thin chips.	SEMI 3D19, G97
adjacent character misalignment	the vertical distance, *r*, between the character baselines of two adjacent characters on the same line.	SEMI T5
adjacent character misalignment, R_{adj}	the vertical distance between the character baselines of two adjacent characters on the same line.	SEMI M12, M13
adjacent work area	a work area that shares a common boundary with the work area being considered. The common boundary may separate the areas horizontally (e.g., the areas are on opposite sides of a wall) or vertically (e.g., one work area is in a cleanroom and the other in the subfab directly underneath it).	SEMI S24
adjust	to change the condition or performance of the equipment within specifications by changing the mechanical, electrical, and/or software settings of the equipment (e.g., align, calibrate, configure).	SEMI E149
administration	the process of configuring equipment client identities, associated credentials, and setting authorizations.	SEMI E132
administrative control	specification of a behavior or a work practice.	SEMI S10
administrative control	a modification or restriction of the way in which a task is performed that is not realized through characteristics of equipment, other than labels and other instructions.	SEMI S30
administrative controls	administrative controls modify the way in which a job is performed without involving equipment design. They are non-engineering controls which include: job rotation, job enlargement, work-rest scheduling, micro-breaks, and stretching exercises. Engineering controls are preferred over administrative controls.	SEMI S8
advanced notice model (ANM)	a descriptive model that predicts a future failure event or performance degradation using a set of equipment system conditions that have been determined to act as predictors. Along with the prediction of the event, an ANM provides a prediction time element that includes an indication of how far in the future the failure is expected as well as an indication of the certainty of that prediction and the prediction horizon. The model could also predict the need for actions, such as scheduling preventive actions, to prevent the failure event or performance degradation.	SEMI E10
advanced process control (APC)	techniques covering both feedforward and feedback control and automated fault detection, applied both by the equipment (in situ) and by the factory (ex situ).	SEMI E98
advanced process control (APC)	the manufacturing discipline for applying control strategies and/or employing analysis and computation mechanisms to recommend optimized machine settings and detect faults and determine their cause.	SEMI E133, E174
aerosol	a suspension of fine solid particles or liquid droplets in air or another gas.	SEMI F38

Term	*Definition*	*Standard(s)*
aerosol electrometer	an instrument that converts the charge flow in an aerosol stream to an electrical current signal.	SEMI F54
aerosol standard	an aerosol containing particles of a known size and concentration.	SEMI F54
agent	an intelligent system within a factory that provides one or more service resources and uses the services of other agents. A generalization of host, equipment, cell, cluster, cluster module, station controller, and work station. Agents are associated with a physical system or a collection of physical systems, including computer platforms.	SEMI E40, E41, E42
aggregation object	an object that is composed (made up) of other objects. An aggregation may lose some degree of integrity if one of its components is missing.	SEMI E39
air atmosphere	air heated to specified temperature which, when cooled to ambient, will normalize to one standard atmosphere.	SEMI G35
air reference spectrum	an absorption spectrum obtained with only nitrogen, dry air, or a vacuum in the beam of the spectrometer. In FT-IR spectrometers, also called background spectrum.	SEMI M59
air-operated valves (AOV)	are those which require pneumatic energy to initiate or terminate flow or to change flow path (e.g., normally closed, partially open, double acting).	SEMI F22
alarm	related to any abnormal situation on the equipment that may endanger people, equipment, or material being processed. Such abnormal situations are defined by the equipment manufacturer based on physical safety limitations.	SEMI E30, E41, E58
alarm&event history	functionality inside a FMCS to store alarms and events in a persistent storage (e.g., a database). Focus is to later retrieve alarms and events for investigation purposes.	SEMI F97
align	to properly position one part in relation to another part or parts, or in relation to a reference point or points outside the equipment.	SEMI E149
align	to put into proper relative postion or orientation.	SEMI E30.1
alignment	a procedure in which a coordinate system is established on a substrate or a portion of a substrate.	SEMI E30.5
alignment	a procedure in which a coordinate system is established on a substrate.	SEMI E30.1, E91, E130
alignment	corrects coordinates for positions and specimen stage. Matching the coordinates of a wafer and a specimen stage in order to address measured patterns formed on a wafer.	SEMI P30
alignment bar, of a data matrix code symbol	a solid line of contiguous filled cells abutting a line of alternately filled and empty cells.	SEMI D26, PV29, T7, T8, T9, T14, T19, T24
alignment control projection	a protrusion (idiomatically called ‘rib’) created within the display pixel on the color filter film surface for the purpose of controlling alignment direction of the liquid crystal.	SEMI D13
alignment error	distance from the pattern center to screen center after alignment. This is the maximum distance between the screen center and a target pattern after addressing by its coordinates and completing alignment.	SEMI P30
alignment location	location that individual packaged units are placed at the process-site (e.g., electrical test).	SEMI E123
alignment mark	a feature on a substrate selectively used for alignment.	SEMI E30.1, E30.5
alignment mark design	the information related to wafer alignment marks placed on the reticle for exposure on the wafer.	SEMI P42
alignment mark ID	identifier for each wafer alignment mark.	SEMI P42
alignment mark information	information related to alignment marks.	SEMI P42
alignment precision	pattern displacement in first mask photolithography process.	SEMI M61

Term	*Definition*	*Standard(s)*
alignment precision, in buried epixial wafer technology	pattern displacement in first mask photolithography process.	SEMI M59
alignment site	a point within a feature on a substrate selectively used for alignment.	SEMI E30.5
alignment USE Mark	information of alignment marks in the layer used for wafer alignment.	SEMI P42
alignment, of an FPD substrate	the mechanical positioning of reference points on FPD substrates (‘alignment marks’ or ‘alignment targets’) to reference points on the reticle(s). The measure of alignment is the overlay at the positions on the FPD substrate where the alignment marks are placed.	SEMI P18
alignments	alignment of two coordinates systems.	SEMI 3D22
alpha error	the error that occurs when a conforming item is incorrectly reported as non-conforming. This is also called Type I error.	SEMI E35, M59
alpha probability, α	the probability of an alpha error, also called the alpha error rate.	SEMI E35, M59
alphanumeric characters	both numbers (0–9) and uppercase alphabetic characters (A–Z) drawn from ISO 646 (not including lower case characters, nonprinting characters or punctuation marks).	SEMI T20.1
Alternate Port	a Port that dynamically changes as Send Port or Receive Port.	SEMI A1
alternating pattern of a Data Matrix code symbol	a line of alternately filled and unfilled cells indicative of the cell spacing along one of the major axes of the Data Matrix symbol.	SEMI T10
ambient background	radiation resulting from sources outside of sample recorded by detector.	SEMI PV10
ambient contrast	the contrast of the display measured under ambient lighting conditions.	SEMI D56
ambient pressure	the absolute pressure of the medium surrounding the mass flow controller (MFC).	SEMI E28
ambient temperature	the temperature of the medium surrounding the device.	SEMI E18
ambient temperature	the temperature of the medium surrounding the device. Under ordinary laboratory benchtop conditions, ambient temperature is the temperature of the room.	SEMI F55
ambient temperature (T_A, in degrees Celsius.)	The ambient temperature is the temperature of the air at a specified location in the vicinity of the microelectronic device under test (DUT).	SEMI G38
ampacity	the current, in amperes, that a conductor can carry continuously under the conditions of use, without exceeding the design limits for the temperature rating of the insulation, the conductor and the wire termination.	SEMI S22
AN MS	a station that accesses and exchanges data by polling its assigned Networked-Slave stations. Even if this may be physically located on the network, this may not be seen logically on the network.	SEMI E54.17
AN SS	a station that is managed and accessed by AN MS.	SEMI E54.17
analog data	one of three categories of data: measured values such as voltage or current obtained when test equipment measures a semiconductor device’s electrical characteristics, parameter values which are test parameters when measuring, and limit values which are decision parameters if test results are pass or fail.	SEMI E107
analysis area	an area on the height map of a wafer inside of which height variations are used to calculate nanotopography.	SEMI M78
analysis engine (AE)	a process that utilizes data and possibly operational instructions to produce a response.	SEMI E133
analysis map	a map where the value at any coordinate represents the metric-determined nanotopography for an analysis area centered on that coordinate in the height map.	SEMI M78
analytical environment	environment where all analytical measurements are taking place.	SEMI E108
analytical environment	environment where all analysis measurements are carried out.	SEMI E146

Term	*Definition*	*Standard(s)*
analytical equipment	an instrument which carries out analysis measurements on silicon wafers.	SEMI E146
analytical line	the optical emission line used for analyzing the specimen.	SEMI PV64
analyze	the second step in the performance improvement process. There are several possible procedures that can be used during this step, but these are the ones that Performance-Based Equipment Training (PBET) considers to be essential: job analysis, (business) goal analyses, task analyses, target performer (audience) analysis, writing performance objectives, and creation of a learning hierarchy.	SEMI E150
anchor	the portion of the test structure, in a surface-micromachining process, where a structural layer is intentionally attached to its underlying layer.	SEMI MS3, MS4
anchor lip	in a surface-micromachining process, the extension of a structure around the edges of the anchor.	SEMI MS3
anchor point	a location or device which receives the load in a fall arrest or restraint system and to which the other components of that system are connected.	SEMI S2
angle of incidence, θ_I	polar angle between the central ray of the incident flux and the z_B axis, normal to the sample surface.	SEMI ME1392, PV15
angle of incidence, of projected light line	the angle between the line of sight of the projector and the surface normal (of the wafer).	SEMI PV40, PV42
angular misalignment	the condition that exists when the tubing angle is changed at the weld.	SEMI F78, F81
anion	a negatively charged ion that is attracted to an anode in electrolysis.	SEMI F51
anion	a negatively charged ion.	SEMI F61
anisotropic	exhibiting different physical properties in differing crystallographic directions.	SEMI M59, MS13
anisotropic etch	a selective etch that exhibits an accelerated etch rate along specific crystallographic directions used to determine crystal orientation, to fabricate micromechanical structures, and to facilitate dielectric component isolation.	SEMI M59
anisotropic etch	a selective etch used to fabricate micromechanical structures that exhibits an accelerated etch rate along a specific direction.	SEMI MS13
anisotropic etching	process exploiting the occurrence of differing etch rates in different crystallographic directions in a material.	SEMI MS3
annealed wafer	wafer that has a defect (COP) free zone near the surface resulting from high temperature annealing under a neutral or reducing atmosphere.	SEMI M57, M59
annealing	a high temperature process that alters the characteristics of the wafer.	SEMI M59
annealing point	temperature of the glass when its viscosity is approximately 10^{13} dPa·s. The annealing point is the temperature at which internal strain can be relieved in 15 minutes.	SEMI D9
annual review process	the process by which STC Limits are reviewed annually for possible change.	SEMI C64
annualized	calculated or estimated on a per-year basis.	SEMI S23
annualized reporting	reporting the annualized usage of one or more utilities or materials for a piece of SME.	SEMI S23
anomaly	an occurrence on a substrate that has been judged to be unexpected. Something abnormal, incongruous, or inconsistent.	SEMI E30.1
anthropometric considerations	design considerations based upon anthropometric (e.g., size and strength) limitations of user personnel.	SEMI S8
anthropometry	description of the physical measurement of humans (e.g., size, strength).	SEMI S8
anti-counterfeiting	efforts or items to prevent distribution of unauthorized fraudulent replicas of semiconductor products in specific or global markets.	SEMI T20
anti-counterfeiting authentication system	a whole system or a part of a system in a specific technology field for reducing or eliminating the presence of unauthorized fraudulent replicas of products in the marketplace.	SEMI T20

Term	*Definition*	*Standard(s)*
antifouling	the process of removing or preventing the adhesion of contamination such as smear, smudge, grime and blot.	SEMI D67
apex	the blunt, but not necessarily linear, segment of an edge profile, oriented approximately perpendicular to the reference line and located between the front and back shoulders.	SEMI M59
apex angle, of an edge profile	the angle between the *z*-axis and the front or back apex; the sign of the apex angle is positive if the *q*-coordinate increases with increasing magnitude of |*z*|.	SEMI M59
apex chip	any material missing from the edge of a wafer having at least two distinct interior boundaries which form one or more distinct intersections.	SEMI M10
apex length, of an edge profile	the distance along the *z*-axis between the front and back shoulders of the edge profile, usually divided into two distances from the reference line to the front and back shoulders.	SEMI M59
APL contrast ratio	the contrast ratio obtained using a pair of test patterns with APL specified both for the region under test and the background region.	SEMI D64
appearance test	the test for appearance inspection of the BLU.	SEMI D36
application	for software, this is a working series of computer instructions that provide end user services.	SEMI E54
application	(1) one or more programs consisting of a collection of interoperating objects which provide domain specific functionality to an end user or other applications. (2) functionality provided by one or more programs consisting of a collection of interoperating objects.	SEMI E81, E96
application	software used to record, analyze, or visualize equipment data which in turn will be used to control the equipment processes. Examples of these applications are: Advance Process Control, maintenance, cell controllers, database, and storage software systems.	SEMI E151
application	a software program that performs a specific function directly for a user and can be executed without access to system control, monitoring, or administrative privileges.	SEMI E169, E187
application framework	a framework that constitutes an application or a set of applications for a domain area.	SEMI E81
application interface	the interface provided by an application or application program.	SEMI E81, E96
application latency	the interval of time between the time data is received and the time data results are applied by the application.	SEMI E151
application object	an object implementing an application interface.	SEMI E81, E96
application program interface (API)	in the case of TCP/IP, a set of programming conventions used by an application program to prepare for or invoke TCP/IP capabilities.	SEMI E37
application service element	an encapsulation abstract similar to an object definition.	SEMI E54.23
application software	the software performing the specific task of the equipment or the host.	SEMI E4
applications model	a formal description of the software elements and interactions that perform an end user task.	SEMI E54
aqueous	comprised of water or materials dissolved or suspended in water.	SEMI S30
AR glass	glass with a decreased reflectance and an increased transmittance of sunlight, and applicable to crystalline silicon photovoltaic modules.	SEMI PV47
arc second	there are 3600 arc seconds in 1° angle.	SEMI M63
architecture	the structure of the components of a program/system, their interrelationships, and principles and guidelines governing their design and evolution over time.	SEMI E81, E96
area	geometrical area of the TGV opening in a particular horizontal plane.	SEMI 3D1, 3D11
area contamination	any foreign matter on the surface in localized areas that is revealed under the inspection lighting conditions as discolored, mottled, or cloudy appearance resulting from smudges, stains, or waters, etc.	SEMI M92

Term	*Definition*	*Standard(s)*
area variation	the variation between the defined and actual plated area.	SEMI G62
argon annealed wafer	annealed wafer produced under argon atmosphere.	SEMI M57
array	an ordered list of numeric values. A valid data type for table row entries.	SEMI E127
ASB name	a globally unique identifier of an ASB.	SEMI T20.1
as-built	documentation describing the actual configuration and dimensions at the end of construction.	SEMI E70
aspect ratio	ratio of the depth of a TSV opening to its top major diameter.	SEMI 3D1
aspect ratio	the ratio of the diameter to the thickness of the wafer, or the ratio of the longest length to the thickness of the substrate, for instance the longest length of a rectangle is the diagonal.	SEMI 3D12
aspect ratio	the ratio of the long dimension to one of the other dimension(s) (width or length) of a two- or three-dimensional structure.	SEMI MS3
assay	determination of the content of a specific component with no evaluation of other components.	SEMI C3
assay	a chemical analysis of a substance; it is a chemical testing carried out to determine the composition of a substance or the concentration of its components. It can also be a sample of a material for analysis.	SEMI F39
assembly	two or more component parts and/or subassemblies joined together to perform a specific function and capable of being disassembled.	SEMI E10
assembly	two or more component parts and/or subassemblies joined together to perform a specific function and capable of disassembly.	SEMI E149, E165
assembly site	the sub-contractor, supplier's facility or department that will be responsible for the assembly of IC devices.	SEMI G84
assessment	method of acquiring information related to a process that is intended to be performed or the effectiveness of an action that has been completed.	SEMI S12
assist	an unplanned interruption that occurs during an equipment cycle where all three of the following conditions apply: The interrupted equipment cycle is resumed through external intervention (e.g., by an operator or user, either human or host computer). There is no replacement of a part, other than specified consumables. There is no further variation from specification of equipment operation.	SEMI F47
asynchronous messaging	a style of communication based on the exchange of atomic messages separated in time and implemented with one-way message deliveries.	SEMI E128
atmosphere	one atmosphere is defined as being equal to 1000 millibars (= 100 kPa), often referred to as a technical atmosphere.	SEMI MS10, PV81
atmospheric pressure ionization mass spectrometer (APIMS)	an instrument consisting of an atmospheric pressure ion source where gas phase impurities are ionized via charge exchange reactions with the bulk gas. These ions are directed into a vacuum chamber where they are then separated by a mass analyzer and detected by an electron multiplier.	SEMI F67, F68
atomic force microscope (AFM)	a device which precisely measures surface shape by gauging the reciprocal active force between atoms through use of a probe.	SEMI D29, D30
atomic force microscopy (AFM)	a sensitive laboratory instrument typically requiring a high skill level that can reconstruct a three dimensional image of a surface based on the mechanical interaction of a nanometer sized probe tip, using very small forces and small scan areas.	SEMI C78
atomic transfer	the basic unit of movement. The transfer of a single transfer object from Equipment A directly to Equipment B where only one change in ownership occurs.	SEMI E32
attached silver particles	small silver particles which are attached to the normal plated surface during the plating process.	SEMI G62
attack	an attempt to gain unauthorized access to system services, resources, or information, or an attempt to compromise system integrity.	SEMI E169

Term	*Definition*	*Standard(s)*
attenuated phase shift mask	a photomask designed to increase resolution and DOF through the control of light transmittance and phase angle. This is done against a transparent part by replacing a conventional opaque pattern with a partially transmitted film (attenuated shifter film) that controls light phase angle and transmittance. Also referred to as 'halftone phase shift masks' and also referred to as 'attPSM' for short.	SEMI D84, P29
attenuated phase shift mask blanks	mask blanks for making attenuated phase shift masks.	SEMI D84, P29
attitude	for mass flow controllers and mass flow meters, the relationship between the base mounting plane of the mass flow controller (MFC), and the gas flow direction and the gravity vector. It may be stated as horizontal (base down), vertical (inlet up), vertical (inlet down), horizontal (upside down), or horizontal (either side down).	SEMI E29
attitude	the mounting position of the MFC with respect to the surface of the earth.	SEMI E80
attribute	an attribute is a markup construct that resides within the start tag of an element to provide additional information about the element.	SEMI E36
attribute	a data item associated with an object. An attribute may be referenced by zero or more data reports.	SEMI E53
attribute	externally visible information concerning an object.	SEMI E54, E54.1, E54.10
attribute	an identifiable association between an object and a value. An attribute may have functions to set and retrieve its value.	SEMI E81, E96
attribute	information about or associated with some entity or object.	SEMI E118
attribute	a parameter of an XML node.	SEMI PV55
attribute name	the formal name of the attribute that is used to identify it. The names (and data types) of public attributes are included with the object's definition and are unique for that object.	SEMI E39
audit	an independent review and examination of records and activities to determine the adequacy of system controls and to ensure compliance with established policies and operational procedures.	SEMI E169
authenticated communications	communications with equipment compliant to this specification to establish an authenticated session, to grant authorizations and for administration. This includes any communications over the authenticated session. Note that authenticated communications are not necessarily encrypted.	SEMI E132
authenticated session	also referred to as session in this document, this is an application-level concept defined by this specification and is independent of any physical or logical connection or communication protocol 'session' layer used in the actual exchange of messages. An authenticated session or session follows the session establishment procedure, state models, and the defined services as described in this specification.	SEMI E132
authentication	the process of determining whether a user or process is, in fact, who or what it is declared to be. In private and public computer networks, authentication is often achieved through the use of passwords. Knowledge of the password is assumed to guarantee that the user is authentic. This Standard refers only to the authentication of application processes, and does not support or address authentication of human users.	SEMI E132
authentication	verifying the identity of an entity as a prerequisite to allowing access to resources in an information system.	SEMI E169, E187
authentication code	encrypted serial number issued by an ASB in response to a request from a brand owner for marking its product.	SEMI T20
authentication code	encrypted symbol generated by an ASB that is unique within that ASB.	SEMI T20.1
authentication code	unique and discontinuous code issued by ASB for identifying a device or license plate. The authentication codes consist of authentication codes for devices and authentication codes for license plates for packages and delivery labels.	SEMI T22
authentication code for device	unpredictable, unique, and discontinuous code issued by ASB for allocating it to each semiconductor device.	SEMI T22

Term	*Definition*	*Standard(s)*
authentication code for license plate	unpredictable, unique, and discontinuous code issued by ASB for allocating it to each outer case, intermediate box, and device tray.	SEMI T22
authentication service body	a company or an organization providing anti-counterfeiting authentication service that has registered with the registry and has met the specified qualifications.	SEMI T20
authenticity	the property of being genuine, verifiable, and trusted; confidence in the validity of a transmission, a message, or a message's originator.	SEMI E169
authority	the property of being permitted access to specific information.	SEMI E169
authorization	the process of granting the privilege to perform a specific action to a user or process. Note that the user or process must be authenticated before authorization may take place.	SEMI E132
authorization	verifying the access privilege of an entity to ensure authority.	SEMI E169
authorization	the process of granting the privilege to perform a specific action to a user or process.	SEMI E187
authorized employee	a person trained and proficient in performing a hazardous energy isolation procedure on an energy source ensuring that the energy isolating device and the equipment being controlled cannot be operated until the locking device is removed.	SEMI S19
authorized user	a user who can be identified to an agent as having the level of authority required for a particular activity, such as certifying a recipe for that equipment.	SEMI E42
autodoping, of an epitaxial layer	incorporation of dopant originating from the back or front surfaces and edges of the substrate, other substrates in the reactor, the susceptor, or other parts of the deposition assembly substrate into the epitaxial layer. Also called *self-doping*.	SEMI M59
autogenous weld	a fusion weld made without filler metal.	SEMI F78, F81
autoignition temperature (AIT)	the temperature at which a solid in contact with air, or a liquid or gas (including a vapor) mixed with air, ignites without contacting a surface of higher temperature or there being an explicit source of ignition, such as a spark or flame.	SEMI S3, S30
automated guided vehicle (AGV)	a vehicle guided by something other than rail, but traveling on the floor.	SEMI S17
automated material handling system (AMHS)	an automated system to store and transport materials within the factory.	SEMI E87, E88, E109, E171
automated material handling system (AMHS)	a factory system used to transport and store carriers. AMHS has two major types of components: an automated transport system and one or more storage systems (stockers).	SEMI E98, E187, F107
automated material handling system (AMHS)	system that moves load automatically by means of a robot, a vehicle, or a conveyor, etc., without being touched by someone's hand.	SEMI S17
automated material handling system (AMHS) equipment	a piece of equipment which has a carrier transfer robot that transfers carriers from and to passive equipment. It includes rail guided vehicles (RGV), automated guided vehicles (AGV), overhead hoist transports (OHT), overhead shuttles (OHS), and stockers.	SEMI E84
automated operation	system operation under full pre-programmed control of the computer controller.	SEMI S17
automated reticle handling system (ARHS)	a specific type of automated material handling system to store and transport reticles and reticle pods within the factory.	SEMI E109
automated transport system	the component of AMHS used to transport carriers between stockers and/or production equipment.	SEMI E98
automatic access mode	a mode in which AMHS equipment performs a material handoff rather than an operator.	SEMI E84
automatic arc welding downslope	the time during which the welding current is reduced continuously from the final level until the arc is extinguished.	SEMI F78, F81
automatic docking	contact motion is controlled or limited by the design of the cart or interface.	SEMI E64

Term	*Definition*	*Standard(s)*
automatic guided vehicle (AGV)	a floor based vehicle, with or without robotic manipulators, used for transporting loads and operating without the need for assistance by factory personnel. AGVs travel without mechanical guidance.	SEMI S17
automatic operation method	the operation method controlled by a computer automatically, after an operator sets a carrier on the equipment. The computer follows the commands written in a recipe. Uses a recipe on a computer.	SEMI P30
automatic pattern determination method	the pattern selection method based on the automatic pattern recognition system.	SEMI P30
automatic pattern edge determination	there are several methods, such as the threshold method, the linear approximation method, and the curve fitting method. This is the method used to determine the edge position automatically by calculating from the line profile signal of the secondary or back scattered electrons. The calculations are performed using the aforementioned three algorithms.	SEMI P30
automatic shutoff valve (ASO)	a mechanically, electrically, or pneumatically activated valve which has the sole purpose of terminating flow if a predetermined condition is exceeded. For cryogenic supply systems, ASO's are used in conjunction with a low temperature sensing device.	SEMI F22
automation	the degree to which activities of machines or production systems are self-acting. Automation provides methods that will reduce the amount of operator intervention required.	SEMI E87, E109
automation	the capability of managing material and data within the factory.	SEMI E88
autostereoscopic display	a kind of 3D display that uses a pair or multiple sets of 2D images as the image sources for the viewer's eyes. On the display, optical means or opto-electronic means are used to separate the images. The viewer doesn't need to wear special 3D glasses; however, the viewer needs to stay at a specifically designated location to watch stereoscopic images with depth perception.	SEMI D59
availability	the probability that the equipment system will be in a condition to perform its intended function when required.	SEMI E10, PV96
availability	the probability that the system will be in a condition to perform its intended function when required.	SEMI E150
availability efficiency	the fraction of total time that an equipment system is in a condition to perform its intended function when required.	SEMI E79, E124
average cycle time	the (unweighted) average of cycle time over all of the units of production in finished units out.	SEMI E124
average cycle time	the (unweighted) average of cycle time over all of the units of production in finished units out.	SEMI E124
average luminance	average value of measured luminance.	SEMI D36
average observed concentration of counts (XM, XB)	the average concentration of counts.	SEMI F23, F24, F25, F26
average picture brightness	the brightness value obtained by applying color appearance model to equivalent luminance reflecting Helmholz-Kohlraush effect.	SEMI D61
average picture level (APL)	the average level of the picture signal during active scanning time integrated over frame period; defined as a percentage of the range between blanking and reference white level.	SEMI D64
average picture level (APL)	there are two kinds of APL, pre-gamma APL (Type 1 APL) for gamma corrected input signal (R, G, B) and post-gamma APL (Type 2 APL) for gamma de-corrected panel display signal(R', G', B'). APL without any notice usually indicates the post-gamma APL because APL is used for panel load processing. The post-gamma APL means the average of the total R, G and B data after gamma de-correction, not input signal (gamma corrected) values. The unit of APL is usually % and generally just APL means the post-gamma APL. The APL of input signal is greater than the post-gamma APL. The gamma de-corrected value of the input signal average is less than or equal to APL, where the equal case is only when all input data are equal or 0/100 IRE data.	SEMI D71

Term	*Definition*	*Standard(s)*
average roughness (Ra)	mean value of surface profile height deviations $Z(x)$ from the mean line taken within the evaluation length.	SEMI M59
average thickness TAGU	mean of the thickness measured at all measurement points on a CSW.	SEMI HB6
average work in process (WIP)	the average cycle time multiplied by the actual throughput rate (shows how many eventually finished units of production fill the 'pipeline' on average).	SEMI E124
averaging, aperture or local	smoothing of an estimate of the power spectral density function (PSD) by replacing its value at a given spatial frequency by its average over a local frequency range using a particular weighting function.	SEMI MF1811
averaging, data	numerical averaging of statistical estimates of the PSD, the mean-square roughness or the mean-square slope derived from different measurements, in order to obtain a single, composite result.	SEMI MF1811
axial direction	obtaining a scan along the length of a component, such as the extrusion direction of a piece of pipe.	SEMI C87
axial misalignment	the offset caused by tubing being in line but not coaxial at the weld.	SEMI F78
axial misalignment	the distance between the axes of the two parts joined by a weld, measured perpendicularly to those axes.	SEMI F81
back contact (BC)	to be used in combination with cell or module (e.g., BC Solar Cell, BC PV Module).	SEMI PV62
back contact sheet (BCS)	with an additional conductive layer also referenced to a conductive back sheet (e.g., copper, aluminum or a combination).	SEMI PV62
back cover	the device that complements fragile part of the lamp, etc. by means of utensil.	SEMI D36
back face, of CSW	that face of a CSW that is not intended for manufacturing a semiconductor device.	SEMI HB5, HB6, HB7
back pressure	a maximum allowable pressure applied to outlet of a diaphragm valve.	SEMI F65, F99, F100
back pressure regulator	a self-contained device, consisting of a mechanical or electrical sensor and control device, commonly used in the semiconductor industry to maintain a constant pressure upstream of the regulator.	SEMI F67, F68
back sheet (BS)	a sheet that forms the backside environmental barrier of a PV module.	SEMI PV62
back surface	the surface of a wafer upon which the SEMI T7 mark appears.	SEMI 3D2, 3D8, 3D9, 3D10, 3D16
back surface	the surface of a substrate upon which ID mark appears.	SEMI 3D23
back surface	the exposed surface opposite to that upon which devices have been or will be fabricated.	SEMI HB1
back surface	the exposed surface opposite to that upon which active semiconductor devices have been or will be fabricated.	SEMI M59
background	the number counts of LPC when supplying UPW.	SEMI C77
background	the average particle and other contaminant concentrations in the test system reported by OPC, PSDA, NRM, dissolved silica and total silica analyses. Background is reported when UPW flows through the test skid and spool piece (after rinsing the test skid components and spool piece to a steady-state of background contamination). Background includes contributions from the UPW and test skid components.	SEMI C79
background	the number of OPC count when feeding the water without GNP.	SEMI C82
background	the gold concentration when feeding the water without GNP.	SEMI C89
background	the contaminant concentrations in the test system reported by analyzers, such as a particle size distribution analyzer (PSDA), nonvolatile residue monitor (NRM), total organic carbon (TOC), and others. Background includes contaminant contributions from the ultrapure water (UPW) and the test equipment components.	SEMI C93
background	the number of OPC count when feeding the water without PSL.	SEMI F110

Term	*Definition*	*Standard(s)*
background count	the total number of counts registered by a specific particle counter within the time needed to sample 25 standard liters of gas under conditions where zero particles of specified size transverse the sensing volume, averaged over at least a sequence of 24 consecutive sampling periods of 25 standard liters each or eight consecutive periods of 30 minutes each, whichever is longer. The background count is to be reported as average value of obtained counts per standard liter, the number of hours on which the average is based is also reported.	SEMI C97
background counts	counts contributed by the test apparatus (including counter electrical noise) with a spool piece in place of the test object.	SEMI E66, F28, F43
background counts	particle counts contributed by the test apparatus (including false counts) with the spool piece in the place of the test object.	SEMI F70, F70.1
background spectrum	in FT-IR instruments, the single-beam spectrum obtained without a specimen in the infrared light path that is usually obtained with only nitrogen, dry air, or a vacuum in the beam.	SEMI M59
backing gas	an inert gas (or gas mixture) on the interior of the weld joint used to prevent or reduce formation of oxides and other detrimental surface substances during welding, and to provide pressure for weld profile.	SEMI F78
backlight unit	backlight unit (BLU) is a kind of light source positioned at the backside of liquid crystal panel. Since LCD is non-emissive display device it needs essentially light source.	SEMI D36
backseal	a film of silicon dioxide or other insulator placed over the back surface of a silicon wafer to inhibit outdiffusion of the majority dopant impurity.	SEMI M59
backside	not preferred, use back surface.	SEMI M59
backside conductive film stack	conductive film(s) deposited on the backside of the substrate to enable electrostatic chucking of the substrate during multilayer film and absorber film deposition and electrostatic chucking of the final mask during EUV scanner exposures.	SEMI P37
backside of EUV blank	the side of the EUV blank with the conductive layer.	SEMI P48
backside patterning	generation of images on the backside of wafers using masks.	SEMI MS3
backside transparent conductive film	a thin film formed on the glass surface on the back of the color filter substrate. Indium Tin Oxide is generally used.	SEMI D13
bag	a package used for sealing the outside of the wafer shipping box. Typically two or three types of different plastic film and aluminum film are laminated, and these are usually heat-sealed.	SEMI M26, M45
bag leak test	a helium leak testing procedure in which the system undergoing leak test is placed in a helium-filled plastic bag while connected to a functional helium leak detector.	SEMI F69
balance efficiency	the critical WIP divided by the process capacity (measures how well the equipment sets are balanced).	SEMI E124
balancing	adjustments made to airflow rate (e.g., by setting positions of dampers) after the ventilated equipment and the exhaust ventilation system are installed to assure that airflow to each piece of ventilated equipment is within design specifications.	SEMI S6
ball grid array (BGA) package	a square or rectangular substrate package with an array of metallic balls on one surface of the package. The metallic balls form the electrical and mechanical connection between the package and the PC board or socket.	SEMI G72
bandpass filtered waviness profile	a profile obtained by removing the long wavelength form components and short wavelength roughness components from a sampled real profile.	SEMI D15
bandpass ratio	ratio of the high- to low-frequency limits of the bandwidth of a given measurement technique.	SEMI MF1811
bandwidth, bandwidth limits	range of surface spatial frequencies included in a measurement or specification.	SEMI MF1811
bar end	the end surface of the carrier that has only one crossbar.	SEMI E1, HB2
bar end, of a wafer box base	the end of the box base that is next to the first pocket of the cassette inside the base or the first pocket of the base itself.	SEMI T3

Term	*Definition*	*Standard(s)*
bar radius	the radius nearest the bar end of the carrier on the crossbar.	SEMI E1
bar radius	the radius nearest the bar end of the cassette on the crossbar.	SEMI HB2
bar web	the mass of material for structural support which may or may not be present on the crossbar.	SEMI E1, HB2
bar width	the distance or thickness of the bar when measured perpendicular to the top face.	SEMI E1, HB2
barcode	the barcode that is used for identification of reticle.	SEMI P42
base	a corrosive material whose chemical reaction characteristic is that of an electron donor.	SEMI F21
base	a corrosive chemical whose chemical reaction characteristic is that of an electron donor.	SEMI S4
base build	installation of base building, services, and equipment to establish functional environmental controls and utilities to support production equipment installation.	SEMI E70
base material	a material which is intended to become a substrate for further processing.	SEMI 3D16, 3D21
base silicon substrate	the wafer used as a support for the multilayer structure of oxide and silicon that comprises an SOI wafer. In the case of SIMOX technology, it is the starting wafer into which the oxygen is implanted. Also known as *handle wafer*.	SEMI M59
base, of a wafer box	the open-top container into which wafers are placed, either in cassettes or into integrally molded pockets.	SEMI T3
base, of a wafer shipping box	the open-top container into which dicing frames carrying wafers are placed, either in cassettes or into integrally molded pockets.	SEMI 3D3
base, of brick	end of brick opposite to the top of brick.	SEMI PV32
baseline	operating conditions, including process chemistry, for which the equipment was designed and manufactured.	SEMI S2, S10, S23, S29, S30
baseline	an instrument response under steady state conditions.	SEMI C91, F58, F112, F118
baseline	straight line interpolation between points on either side of the peak of an absorbance spectrum due to an impurity such as carbon, nitrogen, or oxygen in silicon, drawn to represent the spectrum that would have been obtained in the absence of the impurity.	SEMI M59
baseline absorbance	value of the baseline at the wavenumber corresponding to the impurity absorbance peak that is used for evaluating the peak height.	SEMI M59
baseline contamination level	the level of impurity measured in the source of constituents.	SEMI F39
baseline cost of ownership	a constrained version of cost of ownership (COO) that only includes equipment yield (i.e., defect limited yield and parametric limited yield are not included).	SEMI E35, E140
basic cell	an arrangement of features or groups, as defined by this document, based upon a specific, nominal-feature dimension.	SEMI P19
basic distance (D)	the distance between a pair of straight parallel grooves, respectively, CS and CR.	SEMI PV32
basic insulation	provides a single layer of protection against electric shock.	SEMI S22
batch	an accumulation of material produced during and at the end of the process of blending.	SEMI F39
batch	a group of substrates or lots intended for a process sequence versus single substrate processing.	SEMI E30.1
batch	a group of substrates to be processed in a process resource simultaneously.	SEMI E90
batch analysis	a measurement analysis that results in a single reported result for the specified property for the product batch in question. This result is assumed to apply to multiple shipping units when a production batch is divided into multiple product lots and batch sampling is appropriate as opposed to sampling each individual lot.	SEMI C64
batch blending	the process of chemical blending where the chemical constituents are added and mixed in a tank before being made available for use.	SEMI F39
batch container	a supporting structure that is used to hold substrates for processing, and it may visit multiple locations in equipment with substrates in it.	SEMI E90

Term	*Definition*	*Standard(s)*
batch location	locations in the equipment where substrates visit as a group of substrates for storage or processing.	SEMI E90
bead	non-standard term for *weld bead.*	SEMI F78, F81
bead overlap	in a pulsed weld the amount of coverage of a weld pulse of the previous weld pulse, usually measured in percentage of the diameter of the pulse.	SEMI F78, F81
bead variation	the amount of change of ID bead width from one area to another.	SEMI F78
bead width	the width of the weld bead on the ID, normally measured in units of *T*, where *T* is the nominal tube wall thickness.	SEMI F78, F81
beam coordinate system, x_B y_B z_B	a Cartesian coordinate system with the origin on the central ray of the incident flux at the sample surface, the x_B axis in the plane of incidence (PLIN) and the z_B axis normal to the surface.	SEMI ME1392, PV15
behavior	the manner in which something functions; how an object acts and reacts, in terms of its state changes and message passing.	SEMI E53
behavior	a specification of how an object acts. Actions result from different events the object detects, such as receiving service request, detecting internal faults, or elapsing timers.	SEMI E54, E54.1, E54.10
behavior	generic object behavior is specified by the LonMark Application Layer Interoperability Guidelines. Additional object-specific behavior is specified by means of functional profiles.	SEMI E54.16
behavior	the effects of performing a requested service including its results.	SEMI E81
behavior	the effects of performing a requested service, including its results (e.g., changes in the state of an object).	SEMI E96
bend radius	the distance from the center of an imaginary circle on which the arc of the bent tube falls to a point on the arc.	SEMI F9
best fit bounding box	bounding box best fitting the feature, with user-defined criteria of best fit.	SEMI P35
best fit linewidth	width of constrained best fit bounding box.	SEMI P35
best focus	a position of the processed image surface such that the best compromise of focus across the whole of the processed image is obtained, as defined by the application requirements upon the processed image. The best focus is a single numerical value for the processed image surface displacement. The best compromise may be such as to optimize the possible defocus range or may optimize the line width variations or may minimize the deviation from some target width or may relate to some other processed image parameter.	SEMI P25
best focus position, of laser triangulation sensor	the position where the laser from the laser triangulation sensor produces the smallest laser spot. Laser triangulation sensor is usually designed such that the laser light is imaged onto the center of the array of light receiver at the best focus position.	SEMI PV70, PV71ignore
best-case cycle time	the larger of the theoretical cycle time and the quotient of the average WIP divided by the bottleneck throughput rate (shows the best cycle time that the factory can do given the WIP loading).	SEMI E124
best-case throughput rate	the smaller of the bottleneck throughput rate and the quotient of the average WIP divided by the theoretical cycle time (shows the best throughput rate that the factory can do given the WIP loading).	SEMI E124
best-fit straight line (BFSL)	the line positioned by minimizing the sum of the squares of the differences between the measurement values and the ideal values.	SEMI F113
beta error	the error that occurs when a nonconforming item is incorrectly reported as conforming. This is also called Type II error.	SEMI E35, M59
beta probability, β	the probability of a beta error, also called the beta error rate.	SEMI E35, M59
bevel angle (α), of a bevel-polished wafer section	the smaller of the angles between the wafer surface and the section plane on the bevel polished specimen.	SEMI M59

Term	*Definition*	*Standard(s)*
bevel angle, of an edge profile	the angle between the median plane and the front or back bevel of the edge profile.	SEMI M59
bevel, of an edge profile	the segment of the edge profile located between the surface line and the shoulder.	SEMI M59
beveling	grinding out or shaping substrate edges by lapping or grinding.	SEMI D9
bias	the difference, at a set point, between the measured value and the sum of the setpoint value and the zero offset. The measured values of a flow standard include its total uncertainty.	SEMI E56, E69
bias	difference between the population mean of the test results from a measurement process and the true (accepted reference) value of the property being measured.	SEMI E35, E89, M59
bias	the potential applied to the sample with respect to a reference electrode.	SEMI M46
bias error	average deviation between an estimate of a statistical quantity and its true value.	SEMI MF1811
bias temperature stress (BTS)	voltage applied to the top surface of a dielectric layer on a silicon wafer whose temperature is maintained at a defined level for a specified time.	SEMI M59
bidding	obtaining sealed quotes for a defined scope of work.	SEMI E70
bidirectional load port	a load port used for loading and unloading carriers.	SEMI E88
bidirectional reflectance distribution function, BRDF	a description of the distribution of light scattered by a surface, it is the differential radiance normalized by the differential irradiance, and is approximated by the scattered power per unit projected solid angle divided by the incident power.	SEMI M59, ME1392, PV15
bifacial (BIFI)	used in combination with cell or module. A bifacial cell or module that has an open structure on the backside of the cell and module to allow light to enter into the cell from the back.	SEMI PV62
bilateral datum plane	a vertical plane that equally bisects the substrate and that is perpendicular to both the horizontal and facial datum planes.	SEMI D17, D18
bilateral datum plane	a vertical plane that bisects the wafers and that is perpendicular to both the horizontal and facial datum planes.	SEMI E1.9, E47.1, E57, E62, E63, E92, E110, E185, M31
bilateral datum plane	a vertical plane that bisects the tape frames and that is perpendicular to both the horizontal and facial datum planes.	SEMI G77, E119, E131
bilateral datum plane (BDP)	a vertical plane, defining *x=0* of a system with three orthogonal planes (HDP, BDP, FDP), coincident with the nominal location of the rear primary KCP, and midway between the nominal locations of the front primary KCPs.	SEMI E184
bilateral plane	a vertical plane, defining *x=0* of a system with three orthogonal planes (HP, BP, FP), coincident with the nominal location of the wafer center and perpendicular to the H-bar of the cassette when positioned in the equipment load position.	SEMI HB3
bilateral plane (BP)	a vertical plane, defining *x=0* of a system with three orthogonal planes (HP, BP, FP), coincident with the nominal location of the rear primary KCP, and midway between the nominal locations of the front primary KCPs.	SEMI E83, E154, E156, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, G92, G95, M80
bilateral reference plane	a vertical plane that bisects the reticle and is perpendicular to both the horizontal and facial reference planes. The bilateral reference plane is coplanar with the bilateral datum plane defined in SEMI E57.	SEMI E100
bilateral reference plane	a vertical plane which bisects the RSP150 and is perpendicular to both the horizontal and facial reference planes and passes through the center of the 150 mm SMIF as defined in SEMI E19.3.	SEMI E111

Term	*Definition*	*Standard(s)*
bilateral reference plane	a vertical plane which bisects the MRSP150 and is perpendicular to both the horizontal and facial reference planes and passes through the center of the 150 mm SMIF as defined in SEMI E19.3.	SEMI E112
bilateral reference plane (BRP)	a vertical plane that bisects the baseplate and is perpendicular to both the horizontal and facial reference planes. The bilateral reference plane is coplanar with the bilateral datum plane defined in SEMI E57.	SEMI E152
bimetallic actuator	a device that creates motion by exploiting the (usually thermal) properties of structures having two metallic layers (bimetal).	SEMI MS3
bin	categorized data of die as a result of measurement.	SEMI E91
bin (of a particle of measurement instrument	a subset of the total size range of particles counted during particulate contamination measurements with an analytical equipment. Also called channel.	SEMI E146
binary	a string of bit values (zeroes and ones), with a format that is either left unspecified or specified by bit position, with the most significant bit first. The total length of the string is a multiple of eight. Messaging protocol may impose restrictions on length.	SEMI E42
binary value	a mark in the substrate surface indicates the binary value of one. The absence of a mark, or a smooth surface surrounding a cell center point, indicates the binary value of zero.	SEMI T10
binary value	a value to evaluate a cell of data matrix code symbol. A dot in the data matrix code symbol indicates the binary value 1. The absence of a dot indicates the binary value 0.	SEMI T19
binary values	a dot in the wafer surface indicates the binary value 1. The absence of a dot, or a smooth surface surrounding a cell center point, indicates the binary value 0.	SEMI T7, T8, T9, T14, T14.1, T24, PV29
binding	network variables on the same or different devices may be associated together by means of a network management service known as binding. Binding is permitted only if all the network variables in the set are of the same data type. The values of network variables that are bound together are propagated over the network by the LonTalk protocol.	SEMI E54.16
binding	a specific choice of platform technologies and other implementation-specific criteria.	SEMI E81, E96
BioMEMS	MEMS for biological, biomedical or certain analytical applications.	SEMI MS3
bistability	ability to hold the image without applied power.	SEMI D68, D72
bit field	a simple data structure used to store multiple bits, where each bit has a separate logical meaning. Each bit is limited to the values 1 for ‘on’ and 0 for ‘off’. Individual bits are sometimes referred to as ‘flags’.	SEMI E172
black defect	black dot-shaped defect existing in the quality area that can be detected using transmitted light.	SEMI D13
black matrix (BM)	layer which blocks light transmission. It provides a boundary between color filter pixels, preventing the transmitting light between adjacent pixels.	SEMI D13
black silicon	an imperfectly etched material that may be seen in the larger pad areas, commonly called black silicon or ‘grass’.	SEMI MS13
black spot	a dot like defect that appears dark at the wafer surface in visual inspection due to presence of pit, pinhole, embedded particle etc.	SEMI HB9
blank	extraction fluid which does not see the sample to be tested. It follows the entire procedure and is handled in the same manner in order to show the background of the lab or test area.	SEMI C90
blank (sample)	a high purity silicon sample having oxygen content below the sensitivity of the apparatus, such as float zone electronic grade silicon, used to establish the background signal of the detectors.	SEMI PV43
blank bow	any curvature (second order) of the blank, which can arise from the films deposited upon the backside and frontside of the substrate.	SEMI P37
blank test	a measurement without the object photoresist which is performed under the standard procedures.	SEMI P32

Term	*Definition*	*Standard(s)*
blank wafer	a thermally-treated wafer desorbed of any surface organic contaminants.	SEMI MF1982
blanking device	a device used to seal flanged mating surfaces.	SEMI S1
bleed out, back side	plating on the back of leadframe caused by seepage of the plating solution beyond the mask.	SEMI G62
bleed out, epoxy	the separation of the resin component from the filled epoxy resin such that it creeps on the die pad beyond the outline of resin fillet.	SEMI G62
bleed out, side	plating occurring on the sides of leadframe features.	SEMI G62
bleed out, surface	seepage of the plating solution beyond the mask on the top surface of the leadframe increasing the plated area.	SEMI G62
blending	combining two or more chemicals to create a mixture which contains specific chemical properties or desired ratio of constituents.	SEMI F31
blending	the process in which two or more materials are combined to create a mixture which contains a desired proportion and quantity. A dilution process by this definition is also a blending process. However, blending is a more general case where UPW is not always one of the constituents.	SEMI F39
blending (or dilution)	the combination of two or more chemicals (one of which may be DI water) to create the desired solution mixture.	SEMI F46
blind via (BV) opening	a hole or recess in a glass substrate that begins at the top surface and does not extend fully through the substrate from one surface or to the other. It may contain a conductor or additional layers.	SEMI 3D11
blister	an enclosed localized separation of the plating from its base metal or an underplated layer that does not expose the underlying layer.	SEMI G44
blister	any enclosed localized separation of the plating from the base material or from another layer of plating which can be depressed by a sharp instrument.	SEMI G53
blister (bubble) ceramic	an enclosed, localized separation within or between the layers of a ceramic package that does not expose an underlying layer of ceramic or metallization.	SEMI G22, G33, G39, G50, G61
blister (bubble) metal	any enclosed localized separation within the metallization or between the metallization and ceramic which does not expose underlying metal or ceramic material.	SEMI G1, G22, G33, G39, G50, G58, G61
blister (metal)	an enclosed, localized separation of a metallization layer from its base material (such as ceramic or another metal layer) that does not expose the underlying layer.	SEMI G8
blister (metal)	an enclosed, localized separation of the plating metallization from the base material or from another layer of plating which can be depressed with a sharp instrument.	SEMI G62
blistering	a localized delamination within the metal that has an appearance of chipped or flaked-off areas.	SEMI F19
block	header plus up to 244 bytes of data.	SEMI E4
block	a physical division of a message used by the message transfer protocol.	SEMI E5
block	stacked sample cells for the purposes of vibration testing.	SEMI PV38
block	a stacking package of sample cells.	SEMI PV56
block diagram	a modified schematic diagram in which each group of maintenance-significant components that together perform one or more functions is represented by a single symbol or block. The block or symbol representing the group of component parts and assemblies shows simplified relevant input and output signals pertinent to the subject diagram.	SEMI E149
block length	the number of bytes sent in the block transfer protocol.	SEMI E4
block number	a 15-bit field in the header for numbering blocks in a message.	SEMI E4
blur	any erosion of the surface; generally cloudy in appearance, it sometimes exhibits an apparent color.	SEMI D9
bm (black matrix) pin hole or pinhole	a dot-shaped defect located within the BM pattern.	SEMI D13

Term	*Definition*	*Standard(s)*
bm (black matrix) spot	a dot-shaped defect caused by extraneous BM material deposited within the quality area, not related to the BM pattern.	SEMI D13
board manufacturer	organization that integrates various devices into a functional assembly.	SEMI T23
boiling point	the temperature at which the vapor pressure of a liquid equals 101.32 kPa (1 atmosphere, 14.7 psia).	SEMI S3
BOLTS	used generally as a 'term' only within this Standard to identify the interface between a load port and the semiconductor manufacturing equipment.	SEMI E154, E182, E184
BOLTS	used generally as a 'term' only within this Standard to identify the interface between a load port and the LEDME.	SEMI HB3
BOLTS interface surface	a physical surface on the semiconductor manufacturing equipment intended to mate with a load port.	SEMI E182, E184
BOLTS interface surface	a physical surface on the LEDME intended to mate with a load port.	SEMI HB3
BOLTS plane	a plane parallel to the facial datum plane near the front of the tool where the box opener/loader is attached.	SEMI E63, E101, E131
BOLTS/light exclusion volume	a volume reserved by equipment or loadport unit to put BOLTS/Light compliant box opener/loader.	SEMI E92
BOLTS/light plane	a vertical plane that interfaces BOLTS/Light compliant box opener/loader and equipment.	SEMI E92
bond finger	a region of refractory metallization within the package cavity intended for wirebonding to a microcircuit die pad.	SEMI G39, G50
bond strength	the material's resistance against crack propagation measured in units of energy per unit area.	SEMI MS3, MS5
bonded interface	the plane where the bonding between two handle and device wafers takes place, also called *bonding interface*.	SEMI M59
bonded SOI wafer	an SOI wafer made by bonding two silicon wafers with an insulating layer that is typically thermally grown silicon dioxide between them.	SEMI M59
bonding	a process of joining irreversibly two substrates face-to-face.	SEMI MS3
bonding (bonded)	the permanent joining of metallic parts to form an electrically conductive path that ensures electrical continuity and the capacity to conduct safely any current likely to be imposed. See *protective earthing system.*	SEMI S22
bonding aligner	a tool that positions patterned substrates prior their being bonded.	SEMI MS3
bonding area	coined area on bond fingers within a distance of 0.762 mm (0.030 in.) from lead tips.	SEMI G2
bonding, anodic	a technique for bonding a glass substrate, which contains movable ions, to an electrically conducting substrate (e.g., silicon, metal).	SEMI MS3
bonding, diffusion	joining materials by heating them below their melting points while pressing them together to achieve solid state adherence by interdiffusion of their atoms.	SEMI MS3
bonding, eutectic	joining of mutually soluble (usually metallic) materials by an alloy of both having a melting point lower than that of either material.	SEMI MS3
bonding, glass frit	a process of adhering two or more wafers using a low melting point glass powder (frit) as an intermediate layer.	SEMI MS3
bonding, low temperature	wafer bonding process by surface activation, during which the temperature stays below 150°C.	SEMI MS3
bonding, thermal compression	a process using heat and pressure to cause plastic flow of materials for bonding.	SEMI MS3
bonding, thermosonic	a process using pressure, elevated temperature, and high frequency vibrational energy for wafer bonding.	SEMI MS3
bonding, ultrasonic	a process using pressure and high frequency vibrational energy for wafer bonding.	SEMI MS3
bonding, wafer	a process that creates permanent face-to-face attachment between two.	SEMI MS3

Term	*Definition*	*Standard(s)*
Boolean	may take on one of two possible values, equating to TRUE or FALSE.	SEMI E39, E40, E41, E53, E58, E90
Boolean	a binary bit representing 0 and 1 corresponding to FALSE and TRUE or DISABLE and ENABLE respectively.	SEMI E54.1, E54.10, E54.22
border column	the outermost column of a data matrix code symbol. This column is a portion of the finder pattern.	SEMI D26, T7, T8, T9, T14, T14.1, T19, T24, PV29
border row	the outermost row of a data matrix code symbol. This row is a portion of the finder pattern.	SEMI D26, T7, T8, T9, T14, T14.1, T19, T24, PV29
Bosch process	a proprietary silicon micromachining technique using alternating DRIE and deposition to create deep structures with vertical walls, such as high aspect ratio holes or posts.	SEMI MS3
bottleneck throughput rate	the upper bound on the factory throughput rate imposed by the current bottleneck equipment set. If a process change for a product causes this metric to change, the product before and after the process change should be considered different products for the purposes of performing these computations.	SEMI E124
bottom critical dimension	critical dimension (length of minor diameter) of the TSV opening at the bottom wafer surface. Use of this term implies that the TSV opening is a full thickness TSV.	SEMI 3D1
bottom critical dimension	the lateral feature dimension at the bottom of the etched feature.	SEMI MS13
bottom feed	equipment utility supply lines enter the equipment from its underside typically through the floor.	SEMI E76
bottom interface plane	an interface means between the equipment and box opener/loader.	SEMI E92
bottom level cell	a cell which contains no placements of other cells.	SEMI P44
bottom major diameter	the major diameter of the TSV opening being characterized, measured at the bottom surface of the wafer.	SEMI 3D1
bottom minor diameter	the minor diameter of the TSV opening being characterized, measured at the bottom surface of the wafer.	SEMI 3D1
bottom roundness	roundness at the bottom surface of the wafer.	SEMI 3D1
bottom side	the bottom side of the substrate as defined in the corresponding Appendix.	SEMI E142, G81
bottom surface	an arbitrarily defined external surface of a wafer stack.	SEMI 3D8, 3D9, 3D10
bottom surface	the substrate surface opposite the top surface.	SEMI 3D11
bottom-side	the bottom of the strip as defined by the customer based on the customer master manufacturing drawing.	SEMI G84
bottom-type (double-layer) phase shift mask	an attenuated phase shift mask including an opaque area inside the exposure area. A phase shifter film is stacked on bottom of an opaque film.	SEMI D84
boundary	a change in the timing single state.	SEMI E84
bounding box	a user-specified feature model with a planar face lying in the reference plane and with user-specified orientation in the reference plane, intended to represent the position and size of the feature. The bounding box need not be rectangular.	SEMI P35
bow	curvature of the leadframe strip in the vertical plane.	SEMI G2
bow	relative flatness of the perform to the lid after spot welding.	SEMI G53

Term	*Definition*	*Standard(s)*
bow	of a semiconductor slice or wafer, a measure of concave or convex deformation of the median surface of a slice or wafer, independent of any thickness variation which may be present. Bow is a bulk property of the test specimen, not a property of an exposed surface. Generally, bow is determined with a test specimen in a free, unclamped condition. Units of bow are generally micrometers or inches.	SEMI M9
bow	of a semiconductor wafer, a measure of concave or convex deformation of the median surface of a wafer, independent of any thickness variation which may be present. Bow is a bulk property of the test specimen, not a property of an exposed surface. Generally, bow is determined with a test specimen in a free, unclamped condition. Units of bow are generally micrometers.	SEMI M79
bow	of a semiconductor wafer, a measure of concave or convex deformation of the median surface of a wafer, independent of any thickness variation which may be present. Bow is the deviation of the center point of the median surface of a free, unclamped wafer from a median-surface reference plane established by three points equally spaced on a circle with diameter a specified amount less than the nominal diameter of the wafer. Unit of bow is generally micrometers.	SEMI M86
bow	the deviation of the center point of the median surface of a free, unclamped wafer from a median-surface reference plane established by three points equally spaced on a circle with diameter a specified amount less than the nominal diameter of the wafer.	SEMI 3D4, HB1, M59
bow (of a semiconductor wafer)	the deviation of the center point of the median surface of a free, unclamped wafer from a median-surface reference plane established by three points equally spaced on a circle with diameter a specified amount less than the nominal diameter of the wafer. Contrast flatness.	SEMI M23
bow, back surface, of a wafer	the positive or negative deviation of the center point of the back surface of an unconstrained, horizontally positioned wafer from a back-surface reference plane established by three points within the boundary of the fixed quality area.	SEMI HB1
bow, front surface, of a wafer	the positive or negative deviation of the center point of the front surface of an unconstrained, horizontally positioned wafer from a front-surface reference plane established by three points within the boundary of the fixed quality area.	SEMI HB1
Bow_{3P}	the algebraic difference between the corrected median surface at the center of the wafer to a 3-point reference plane.	SEMI MF1390
Bow_{BF}	the algebraic difference between the corrected median surface at the center of the wafer to a least squares reference plane.	SEMI MF1390
box	a protective portable container for a cassette and/or substrate(s).	SEMI E1.9, E15, E19.4, E45, E47, E47.1, E57, E62, E63, E92, E101, E119, E146, E159, M80
box	an environmentally controlled enclosure for a cassette containing wafers or disks. For purposes of this Standard, a box has features that conform to the specified interface. A box includes a box door and box latches.	SEMI E19
box	a protective portable container for a carrier and/or substrate(s).	SEMI M31
box bottom	a lower half of an outer box.	SEMI M29
box door	a removable bottom for the box that contains a means (such as registration holes) for properly positioning the wafer cassette.	SEMI E19, E19.4
box latch	a mechanical latch that holds the box door in position until activated by the latch mechanism pins. Upon activation, a portion of each box latch engages a latch cavity and smaller, thereby locking the box to the port plate.	SEMI E19, E19.4
box opener/loader	the equipment component that opens wafer carriers (if needed) and presents the carriers to the equipment's Substrate Handler for unloading and loading wafers.	SEMI E101

Term	*Definition*	*Standard(s)*
box opener/loader	the equipment component that opens wafer carriers (if needed) and presents the carriers to the equipment's wafer handler for unloading and loading wafers.	SEMI E63, E92
BOX pin-hole	electrically conductive path through the BOX.	SEMI M59
box top	an upper half of an outer box.	SEMI M29
box wrap	the wrapping or bagging applied over the wafer box to comprise the product package.	SEMI T3
Bragg angle	the angle for diffraction of x-rays from a set of crystallographic planes, as defined by Bragg's Law.	SEMI M63
brand owner	an entity, including independent or captive device manufacturers, fab-less suppliers, and authorized distributors, but excluding foundries, that is legally responsible for the integrity and performance of a product for sale to buyers.	SEMI T20
braze	an alloy with a melting point equal to or greater than 450°C, and equal to or greater than 600°C.	SEMI G5, G22, G39, G50
braze	in semiconductor packages, an alloy used to attach pins, leads, seal rings, and heat sinks/ studs to the package.	SEMI G61
breakage	the separation of a wafer into two or more pieces due to wafer breaking.	SEMI HB9
break-in	preliminary conditioning process to normalize pad and disk surface topology.	SEMI C103
breaking strength	the stress acting in a solid material at the moment when it is broken by external force.	SEMI MS3
breakthrough	the point in time when an individual impurity level in the purifier effluent exceeds the level specified by the manufacturer. Typically in the range of 1–100 ppb.	SEMI F67, F68
breathing zone	imaginary globe, of 600 mm (2 ft.) radius, surrounding the head.	SEMI S2
brick	one or more squared, cropped, and ground sections from an ingot.	SEMI PV9, PV22
brick	a squared, cropped section of an ingot.	SEMI PV32
brick ID	a part of the wafer ID containing information about the brick.	SEMI PV32
brick slice code	a pattern of grooves on a sidewall of a brick containing information about the brick and identifying the position of individual wafers within the brick.	SEMI PV32
bright grain boundry, on a Si wafer	grain boundaries that appear as bright lines on a dark background in a PL image. They usually occur close to the wafer edges in edge impurity areas or in wafers from the bottom or the top of an ingot.	SEMI PV51
brightness	the attribute of a visual perception according to which an area appears to exhibit more or less light.	SEMI D61
brightness	the attribute of a human visual sensation according to which an area appears to emit more or less light.	SEMI D75
broadcast polling method	polling to each station and the data communication are executed by the same packet, and the data is transmitted to all of the stations in this method.	SEMI E54.12
broker	a message routing entity which supports a publish subscribe communications network.	SEMI E183
bubble	void in the interior of the glass substrate.	SEMI D20
bubble	a gaseous inclusion.	SEMI D9
bubble	a crystal defect that exists in single crystal sapphire that presents itself as a void in the crystal, and includes gaseous and vacuum voids.	SEMI HB10, HB11
buffer	a solution with pre-determined pH that is used to determine the slope of the pH probe.	SEMI C101
buffer	a set of one or more locations for holding carriers at the production equipment.	SEMI E82, E88
buffer	a set of one or more locations for holding carriers at/inside the production equipment.	SEMI E87, E171, E174
buffer	a set of one or more locations for holding reticles at/inside the production equipment.	SEMI E109
buffer layer	a transition layer epitaxially-formed between a substrate and the first epitaxial layer.	SEMI M92
buffer port	special buffer port location on a stocker output shuttle. Contains carrier presence sensors so that the host can be notified when a carrier is situated at this position.	SEMI E88

Term	*Definition*	*Standard(s)*
buffered oxide etchant	any combination of ammonium fluoride and hydrofluoric acid in which the concentrations are expressed in terms of the equivalent relative volumes of 40% ammonium fluoride solution and 49% hydrofluoric acid. In the expression, the relative volumes shall be reduced to a ratio of the smallest whole numbers which properly describes the composition.	SEMI C23
built-in self test (BIST)	a test methodology in which the stimulus generator and/pr response analyzers is built into the same integrated circuit as the block that is tested.	SEMI G91
built-in self test (BIST) controller	a logic block that coordinated the test of the memory block that it tests.	SEMI G91
bulk	able to contain 454 L (volume of 0.5 US tons of water) or more.	SEMI S18
bulk micro defects (BMD)	defects within the wafer such as dislocations, stacking faults, and oxide precipitates, that may be observable as etch pits.	SEMI M90
bulk micromachining	a MEMS fabrication process that removes the substrate at specified locations.	SEMI MS2, MS3, MS4
bulk recombination lifetime (τ_b)	the lifetime in the case that surface recombination is negligible and depends only on defects and impurity densities in the crystal bulk.	SEMI M59
bulkhead connector	a pipe, tube, or duct that ends in a common industry fitting or end condition. The pipe, tube, or duct section is secured to the adapter plate.	SEMI F107
bump	a small protuberance on the glass substrate.	SEMI D9
bumper	a shock absorber for a UTV. A bumper is typically equipped with a contact switch or sensor on it. And if the bumper switch or sensor is activated, the UTV will stop immediately.	SEMI S17
burdened/ unburdened	identification of costs included or excluded from contractual labor rates.	SEMI E70
buried layer	a diffused region in a substrate that is, or is intended to be, covered with an epitaxial layer.	SEMI M61
buried layer, in buried epitaxial wafer technology	a diffused region in a substrate that is, or is intended to be, covered with an epitaxial layer.	SEMI M59
buried oxide layer	the silicon dioxide layer between SOI layer and base silicon substrate.	SEMI M59, MS13
burnt deposit	plated surface is too rough.	SEMI G62
burr	a fragment of excess parent material, lid, perform, or foreign particle, either horizontal or vertical, adhering to the component surface. In ceramic packages, this type of characteristic is called a fin.	SEMI G1, G2, G3, G9, G22, G26, G27, G34, G39, G41, G47, G50, G53, G58, G61
burr	a fragment of excess material etiher horizontal or vertical adhering to the leadframe.	SEMI G51
burr	a fragment of excess material either horizontal or vertical adhering to the component surface.	SEMI G28
burr height	maximum height of burr above the plane which it protrudes.	SEMI G70
burst pressure	the gas pressure at which the MFC may rupture.	SEMI E28
burst pressure	a pressure at which rupture or uncontrolled leakage of one or more of the pressure retaining components of the cylinder valve occurs.	SEMI F4
bus ribbon	bus ribbon is used to connect the strings and also to carry the current.	SEMI PV19
business goal analysis	a procedure used during ‘Analyze’ of the performance improvement process to (a) identify, where possible, one or more new tasks or steps to be performed from vaguely worded business goals, and/or (b) modify the conditions and standards of existing performance objectives to accommodate the meaningful components, where applicable, of business goals.	SEMI E150

Term	*Definition*	*Standard(s)*
buyer	an entity that buys a product. A buyer may be part of a supply chain or an end user.	SEMI T20
bypass flow rate	that portion of the total flow rate that bypasses the OPM.	SEMI F104
bypass FM	flow meter (FM) for measuring the bypass flow rate. This device may have the capability of controlling flow as well.	SEMI F104
byproduct	a material, other than the material the process is intended to produce, that is formed during operation, maintenance, or service.	SEMI S30
by-products	chemicals which are formed from reactions during the process.	SEMI S12
byte	a string of eight adjacent bits, interpreted as a unit and often representing a character.	SEMI E54, E54.1, E54.10
cabinet	a kind of enclosure for electronics to keep from exposure of electrodes and/or subcomponents, and/or to give some means of human operation.	SEMI T13
cable assembly	the section of cable (transmission line), including the connectors, used to connect various parts of the RF power delivery system.	SEMI E113, E114, E135, E136, E143
Cache Full	the required recipe cannot be written in the cache because the cache does not have enough space to write the specified recipe.	SEMI E170
Cache Hit	the required recipe is found in the PRC.	SEMI E170
Cache Miss	the required recipe is not found in the PRC.	SEMI E170
calculated concentration of particles (XC)	the concentration of particles in the pipeline gas obtained by correcting the observed concentration in the pipeline gas for the observed concentration in the background.	SEMI C97
calculated concentration of particles (XC)	the concentration of particles in the system gas obtained by correcting the observed concentration in the system gas for the observed concentration in the background.	SEMI F23, F24, F25, F26
calibrate	to measure and correct the accuracy of the equipment using an instrument that is periodically compared and certified to a certified reference material (e.g., standard).	SEMI E149
calibrated leak	a calibrated leak is the standard equipment leak rate that is used for calibrating the leak detector. The standard equipment divides into the permeation type and the capillary type; the permeation type is based on the gas permeation properties of fused quartz and the capillary type uses very thin stainless steel pipes.	SEMI F106
calibration	set of operations that establish the relationship between values of quantities indicated by a measurement system (MS) and the corresponding values assigned to reference materials to eliminate or reduce bias in the measurement system relative to the reference base.	SEMI M59
calibration	set of operations that establish the relationship between values of quantities indicated by a measurement system (MS) and the corresponding values assigned to reference materials.	SEMI E89
calibration	set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards.	SEMI E141, P35
calibration fixture	any electromechanical fixture required to perform system calibration. The calibration fixture may consist of multiple components with different part and serial numbers.	SEMI E122
calibration gas	for mass flow controllers and mass flow meters, the gas which is flowed while the device is being calibrated.	SEMI E29
calibration of a pH meter	electronic characterization of a pH meter performed at the site of probe manufacture.	SEMI C101
calibration standard	a calibration standard shall be as close as practical to specification and may not exceed ten times (10×) the specification unless specifically excepted in procedure.	SEMI C3
calibration temperature	the ambient temperature at which the mass flow controller was calibrated.	SEMI E18

Term	*Definition*	*Standard(s)*
calibration temperature	for mass flow controllers and mass flow meters, the ambient temperature at which the device is calibrated.	SEMI E29
callback message	a message that communicates supplemental information resulting from performance of an action initiated by a related request/reply conversation.	SEMI E128
calorimeter	an RF power measurement instrument using differential temperature and mass flow rate to determine true heating power.	SEMI E136
camber	curvature of the leadframe strip edge in the horizontal plane.	SEMI G2, G9, G27, G28, G41, G47
camber	curvature of the leadframe strip edge.	SEMI G19, G51
camber	curvature of the tape strip edge.	SEMI G76
camber	the camber describes the ribbon straightness.	SEMI PV18, PV19
camber (ceramic)	arching of a nominally flat ceramic body.	SEMI G1, G58
camelCase	the practice of writing compound words or phrases in which each word is capitalized and all spaces, hyphens, and underscores are removed. When abbreviations are included, they retain the all-capitals form (e.g., AMHSPort).	SEMI E164
canister	a metal (usually stainless steel) container in which a liquid precursor is supplied. Canisters are also known as ‘ampoules,’ ‘shuttle drums,’ ‘tanks,’ etc.	SEMI F96
cantilever	a MEMS test structure that consists of a freestanding beam that is fixed at one end.	SEMI MS3, MS4
cap block	a seal-specific component fixture specially made to mate with a respective seal-system substrate block for testing purposes.	SEMI F74
cap wafer	standard wafer, oxidized, to be incorporated into a bonded wafer pair.	SEMI 3D13
cap wafer	the top wafer of the bonded wafer pair (BWP) that is typically unpatterned (i.e., not etched). If overlay fiducials are used in the bonding process the cap wafer shall have etched fiducials.	SEMI 3D17
capabilities	operations performed by semiconductor manufacturing equipment. These operations are initiated through the communications interface using sequences of SECS-II messages (or scenarios). An example of a capability is the setting and clearing of alarms.	SEMI E30
capability based sampling	any method that uses the process capability as a factor in determining the required sampling.	SEMI M59
capacitance voltage CV measurements	electrical measurements where the capacitance of a rectifying barrier is measured as a function of applied bias and is a measure of the net fixed ionized charge per unit volume.	SEMI M46
capacitive probe	a probe with an exposed planar metal surface area (the active area) that acts as one plate of a capacitor. It is used to measure the capacitance between the probe and a surface of a conducting or semiconducting object, which acts as the other plate of a capacitor. The distance from the probe to the other planar surface can be calculated if within a calibrated range.	SEMI PV41
capacity	the number of frames that a Tape Frame FOUP holds.	SEMI E185
capital equipment	equipment that is depreciated according to tax guidelines for durable goods. Generally has a value greater than $1,000.00 and a useful life greater than 5 years.	SEMI E70
captive hardware	screw or nut that is intended to fasten and release other hardware (e.g., a flanged spade lug) by being loosened, but without being removed.	SEMI S22
capture	entrainment of undesirable elements (gases, fumes, vapor, and particles) in the exhaust ventilation stream for removal.	SEMI S6
capture rate (CR)	the probability that an SSIS detects an LLS of latex sphere equivalent (LSE) signal value at some specified SSIS operational setting.	SEMI M59

Term	*Definition*	*Standard(s)*
capture velocity	the air velocity that at any point in front of the exhausted hood or at the exhausted hood opening is necessary to overcome opposing air currents and to capture the contaminated air at that point by causing it to flow into the exhausted hood.	SEMI S2
carbon steel reference material	carbon steel sample known hydrogen content (%, m/m) with certification.	SEMI PV88
carbon thickness	the thickness of carbon on the initial surface, determined from the depth composition profile as the sputter etch depth at which the carbon concentration decreases to ½ its maximum value.	SEMI F72
carcinogen	confirmed or suspected human cancer-causing agent as defined by the International Agency for Research on Cancer (IARC) or other recognized entities.	SEMI S2
cardinal set point	a specific set point to assess the accuracy of the device under test (DUT).	SEMI E56, E69
carriage	a hand cart for carrying one or two gas cylinders.	SEMI S18
carrier	a container that is used to transport one or more pieces of work-in-process at a time.	SEMI A1
carrier	any cassette, box, pod, or boat that contains wafers.	SEMI E64, E83, E99, E118
carrier	any cassette, box, or pod that are used to transport substrates.	SEMI E101, E146
carrier	any cassette, box, or pod that is used to transport and store substrates.	SEMI E159, M80
carrier	a device for holding wafers, dies, packaged integrated circuits (ICs), or reticles for various processing steps in semiconductor manufacturing.	SEMI E78, E129, E163, S28
carrier	a container with one or more fixed positions for holding substrates. Examples of carriers include FOUPs and open cassettes.	SEMI E82, E88, E153
carrier	any cassette, box, pod, or FOUP that contains wafers. Also known as wafer carrier.	SEMI E84
carrier	a container, such as a FOUP or open cassette, with one or more positions for holding substrates.	SEMI E87, E99, E170, E171, E174
carrier	any cassette, box, pod, or boat that contains wafers (as defined in SEMI E1.9). Also known as wafer carrier.	SEMI E92
carrier	a container with one or more fixed positions at which material may be held.	SEMI E30.1, E98, E168.2, E168.3
carrier	an open structure that holds one or more substrates.	SEMI E119, M26, M31
carrier	(1) *charge carrier*; (2) *wafer carrier*. When the context is not sufficient to clearly indicate which meaning is to be used, it is appropriate to utilize the full term.	SEMI M59
carrier bottom domain	volume (below *z*6 above the horizontal datum plane) that contains the bottom of the carrier.	SEMI E119, E185, M31
carrier capacity	the number of substrates that a carrier holds.	SEMI D17, D18, E1.9, E47.1, E62, E63, E92, E119, M31
carrier concentration	the net fixed ionized charge per unit volume. Equal to the free carrier concentration if the dopant is fully ionized and the material is free of traps.	SEMI M46
carrier density	number of majority charge carriers per unit volume in an extrinsic semiconductor. The symbol *n* is used for electron density (although it sometimes is used more generally as carrier density), and the symbol *p* is used for hole density. These quantities are usually given in number/cm^3 although the SI unit is number/m^3.	SEMI M59

Term	*Definition*	*Standard(s)*
Carrier Exchange Window (CEW)	a time slot which is allowed for a load port to unload a used carrier and then load a new carrier between AMHS without disturbing the continuous wafer processing of the equipment. Internal Buffer Equipment may have a CEW with multiple load ports to unload multiple used carriers and load multiple new carriers.	SEMI E171
carrier flow	a stream of carriers which are loaded into the equipment, used by the equipment, and unloaded from the equipment.	SEMI E171
Carrier Flow Job (CFJ)	a control action to manage multiple CLJs, which constitute one or more carrier flows, so that the equipment can continue processing seamlessly. Equipment may have multiple Carrier Flow Jobs.	SEMI E171
carrier ID	the name to identify a specific substrate carrier.	SEMI E90
carrier ID	an identifier for a carrier. A value that uniquely identifies a given carrier in a factory. The identifier may be represented physically with any one of various technologies.	SEMI E99
carrier ID reader	a unit (subsystem) that detects and decodes data from the ID tag.	SEMI E99
carrier ID reader/writer	a unit (subsystem) with the functionality of both a Carrier ID reader and a Carrier ID writer.	SEMI E99
carrier ID tag (tag, ID tag)	a physical device for storing carrier ID and other information. There are two basic types of tags, read-only tags and read/write tags.	SEMI E87, E99
carrier ID writer	a unit which encodes data for and writes it to the Carrier ID tag.	SEMI E99
carrier job	a task commanded by the FICS to the MCS to move a carrier from one location to another.	SEMI E168.2
carrier location	a physical place within the equipment capable of holding a carrier.	SEMI E30.1
carrier location	a location in the AMHS which may correspond to a *physical location* or a *virtual location*.	SEMI E153, E168.2, E168.3
Carrier Logistics Job (CLJ)	a control action which manages entire logistics operation of one carrier from Load Queued to Unload Request. CLJ requests loading of a carrier, holds the carrier for use, and requests unloading of the carrier.	SEMI E171
carrier ready to unload (CRTU)	the state in which a carrier is ready to be unloaded from the equipment.	SEMI E87
carrier sensing pads	surfaces on the bottom of the carrier for triggering optical or mechanical sensors.	SEMI E119, E185, M31
carrier side domains	volumes (from *z*6 above the horizontal datum plane to *z*15 above the top nominal wafer seating plane) that contain the mizo teeth or slots that support the wafer and the supporting columns on the sides and rear of the carrier.	SEMI E119, M31
carrier slot	physical location capable of holding a substrate within cassette type carrier.	SEMI E90
carrier slot map	the registry of substrates to the substrate carrier slots.	SEMI E90
carrier substrate location	a substrate location within a substrate carrier capable of holding a substrate.	SEMI E90
carrier top domain	volume (higher than *z*15 above the top wafer) that contains the top of the carrier.	SEMI E119, E185, M31
carrier wafer	a silicon or glass wafer used for temporary bonding to another wafer.	SEMI 3D8, 3D9, 3D10
CarrierID	a readable and unique identifier for the carrier.	SEMI E171, E174
CarrierID read	the process of the equipment reading the CarrierID from the carrier.	SEMI E87
CarrierID/carrier ID	a readable and unique identifier for the carrier.	SEMI E87. E88
cart	a floor-based carrier transfer vehicle.	SEMI E64, E83, E101
case	an enclosed container for storing one mask substrate.	SEMI D42

Term	*Definition*	*Standard(s)*
case temperature, T_C,	in degrees Celsius. The case temperature is the temperature at a specified accessible reference point on the package in which the microelectronic chip is mounted.	SEMI G30, G43
case top temperature measured in air environment, T_t	in °C, The temperature at the specified accessible reference point on the package in measured in air environment.	SEMI G68
cassette	a plastic or metal device to hold wafers and/or masks during transport or processing.	SEMI E23, E45, E47
cassette	a container with one or more substrate locations.	SEMI E30.1
cassette	an open structure that holds one or more substrates.	SEMI E1.9, E15, E19.4, E47.1, E48, E57, E62, E63, E92, E99, E118, E146, E159, M29, M80
cassette	an open structure that holds one or more substrates (wafers, masks, etc.).	SEMI E47
cassette	an open structure that holds one or more substrates. Also know as open cassette (OC).	SEMI E84
cassette	a physical object containing one or more substrate locations.	SEMI E91, E130
cassette	an open structure that holds one or more wafer substrates.	SEMI E101
cassette	open wafer carrier which stores multiple substrates in a vertical stack for transport between process equipment.	SEMI HB2
cassette	an open structure that holds one or more wafers.	SEMI S28
cassette	a kind of container of electronics materials or parts for the purpose of carrying capability, grouping operation, replaceability at inlet/outlet port or similar objectives.	SEMI T13
cassette bottom domain	volume (below z4 above the horizontal datum plane) that contains the bottom of the cassette.	SEMI D17, D18
cassette bottom domain	volume (below z6 above the horizontal datum plane) that contains the bottom of the cassette.	SEMI E1.9
cassette bottom opening	an opening through the cassette bottom domain that provides access to the glass substrates for external roller drive mechanisms to move substrates into/from the cassette.	SEMI D18
cassette bottom plate	the bottom plate of the cassette. It is parallel to the substrate plane. It is physically different from the cassette top plate for purposes of machine interface and for mechanical positioning by operators.	SEMI D11
cassette centroid	a datum representing the theoretical center of a stack of wafers in a cassette formed by the pocket centerline and the ‘center’ pocket as defined by the location associated with dividing dimension B3 by two.	SEMI E15
cassette envelope	a rectangular volume with vertical sides which completely contains a cassette, even if the cassette is tilted.	SEMI E15
cassette front	the area between the cassette top and bottom domains through which substrates pass during loading and unloading.	SEMI D17, D18
cassette front	the area between top and bottom cassette plates through which substrates pass during loading and unloading.	SEMI D11
cassette load position (equipment)	location on the load port which receives the cassette and where the wafers in the cassette are horizontal and parallel with the HP of the equipment.	SEMI HB3
cassette load position (operator)	location on the load port which receives the cassette manually loaded by an operator where the wafers in the cassette are near vertical.	SEMI HB3
cassette loading position	center point at under-surface of a cassette after loading by transport equipment.	SEMI D28

Term	*Definition*	*Standard(s)*
cassette module	a two-port module. One port accepts or presents a cassette of wafers or possibly, in an automated factory, an individual wafer for intertool transport; the second port accepts or presents a single wafer within the module for intratool transport.	SEMI E21
cassette placement sensing pads	surfaces on the bottom of the cassette for triggering optical or mechanical sensors.	SEMI D17, D18
cassette plate opening	an opening in the cassette top and bottom plate that provides access to the glass substrates for external roller driver mechanisms to move substrates into/from the cassette.	SEMI D11
cassette rear	the area between top and bottom cassette plates opposite the cassette front.	SEMI D11
cassette rear	the area between the cassette top and bottom domains opposite the cassette front.	SEMI D17, D18
cassette rear domains	volumes (from z4 above the horizontal datum plane to z9 above the top substrate) that contain rear columns which prevent the substrates from exiting the cassette rear.	SEMI D17, D18
cassette rotation device	manual or automated device integrated into the load port which transfers the cassette between the ‘operator’ and ‘equipment’ cassette load positions.	SEMI HB3
cassette sensing pads	surfaces on the bottom of the cassette for triggering optical or mechanical sensors.	SEMI E1.9
cassette side domains	volumes (from z4 above the horizontal datum plane to z9 above the top substrate) that contain the mizo teeth and mizo plates that support the substrates.	SEMI D17, D18
cassette side domains	volumes (from z6 above the horizontal datum plane to z15 above the top nominal wafer seating plane) that contain the mizo teeth or slots that support the wafer and the supporting columns on the sides and rear of the cassette.	SEMI E1.9
cassette stage	a stage on a piece of equipment on which a cassette is placed or from which it is removed that allows the cassette transfer.	SEMI E23
cassette top domain	volume (higher than z9 above the top substrate) that contains the top of the cassette.	SEMI D17, D18
cassette top domain	volume (higher than z15 above the top wafer) that contains the top of the cassette.	SEMI E1.9
cassette top plate	the upper plate of the cassette. It is parallel to the substrate plane. It is physically different from the cassette bottom plate for the purpose of machine interface and for mechanical positioning by operators.	SEMI D11
cassette transfer robot	a robot that transfers cassettes.	SEMI E23
castellation	metallized semi-circular channels on chip carrier edges which provide contact between internal package metallization traces and the external test pads. These castellations provide for improved solder fillets during attachment to a circuit board.	SEMI G61
category	data indicating the type of electric failure or rank of characteristics of die tested by the test equipment.	SEMI E107
category 0 stop	the stopping of moving parts by immediately removing drive power to the drive actuators and activating all brakes and mechanical stopping devices.	SEMI S28
category 1 stop	a controlled stop with drive power available to achieve the stop, followed by removing the drive power.	SEMI S28
cathetus length	the shortest distance between a wafer corner and an adjacent chamfer corner point.	SEMI PV46
cathetus, of a nominally square or pseudo-square Si wafer	a line segment between a wafer corner and an adjacent chamfer corner.	SEMI PV46
cation	a positively charged ion; an ion that is attracted to the cathode in electrolysis. These are typically ions of metallic elements.	SEMI F51
cation	a positively charged ion.	SEMI F61
cavity	the plastic body formed by either the top or bottom mold cavities.	SEMI G54
cavity	(void): a vacancy or hole in the wafer.	SEMI M10

Term	*Definition*	*Standard(s)*
cavity-down package	package where the die surface faces the mounting board.	SEMI G61
cavity-to-frame offset	will be measured prior to any trimming operation. Offset will be defined as the difference in bottom cavity position with respect to a leadframe datum. The offset measurement will exclude leadframe tolerances.	SEMI G14, G16, G36, G37
cavity-up package	package where the die surface faces away from the mounting board.	SEMI G61
CBI_{ij}	the color breakup index (CBI) of color transition pattern with color *I* to color *j*. Color *I* and color *j* could be white(W), black(K), redI, green(G), blue(B), cyan(C), magenta(M), and yellow(Y).	SEMI D65
CD-SEM magnification referenc	a CD-SEM magnification reference is defined as a standard for calibrating magnifications of a said CD-SEM through mounting the standard on the specimen stage, measuring the dimensions of reference patterns formed on the standard, determining the difference between the measurement value and the true or reference value of the reference patterns, and adjusting the CD-SEM parameters to bring the difference zero.	SEMI P36
ceiling limit I	an occupational exposure limit (OEL) for the maximum concentration to which a worker may be exposed at any time.	SEMI S6
cell	a term used to represent the mapping item on a strip-unit, package, device, multi-chip module, etc.	SEMI G84
cell	a named object in a layout hierarchy, containing native geometric information, annotation information, and/or placements of other cells.	SEMI P39
cell	test sample assembled should be included seal, and package	SEMI PV76, PV80, PV89
cell center point, of a data matrix symbol	the point at which the centerline of a matrix row intersects the centerline of a column.	SEMI T10
cell center point, of an array	the point at which the centerline of a row intersects the centerline of a column.	SEMI T7, T8, T9, T14, T14.1, T24, PV29
cell handling	manipulation or treatment of biological cells.	SEMI MS3
cell of a data matrix code symbol	the area within which a dot may be placed to indicate a binary value.	SEMI PV29
cell size	width and height of cell that is defined by S_BOUNDING_BOX of PROPERTY record. S_BOUNDING_BOX must be axis-aligned and the minimal area within which all points lie.	SEMI P44
cell size, of a data matrix symbol	the number of image pixels within a Data Matrix symbol cell. Since the cell is generally rectangular in shape, the resolution is specified in both the horizontal and vertical directions of the cell.	SEMI T10
cell spacing	the (equal) vertical or horizontal distance between the cell center points of contiguous cells.	SEMI PV81
cell spacing, of a data matrix symbol	the vertical or horizontal distance between the cell center points of contiguous cells.	SEMI T10
cell spacing, of an array	the (equal) vertical or horizontal distance between the cell center points of contiguous cells.	SEMI T7, T8, T9, T14, T14.1, T24, PV29
cell structure	(block structure): malformations attributable to crystal inhomogeneities and that have their origins in the crystal growth process.	SEMI M10
cell temperature	the temperature (°C) of solar cell.	SEMI PV57, PV69
cell temperature	the temperature (°C) of cell.	SEMI PV76, PV80, PV89

Term	*Definition*	*Standard(s)*
cell, of a data matrix code symbol	the area within which a dot may be placed to indicate a binary value.	SEMI D26, T7, T9, T14, T14.1, T19, T24
cell, of a Data Matrix symbol	the area within which a marking may be placed to indicate a binary value. The cell is the smallest element of a two-dimensional Data Matrix symbol. The cell shape is generally quadrilateral, typically rectangular and ideally square.	SEMI T10
cell-logical-address	gives the electrical location of a memory cell in a die.	SEMI E107
cell-logical-io-number	number identifying the IO data which can be simultaneously electrically accessed within a memory device.	SEMI E107
cell-physical-address	gives location of a memory cell in a die on two-dimensional plane.	SEMI E107
censored data	data whose measured value or non-measurable value has been replaced by a limit such as an MDL.	SEMI C64
center	the center of a TSV opening in any horizontal plane is the centroid (‘center of gravity’) of the area of the TSV.	SEMI 3D1
center	the center of a TGV opening in any horizontal plane is the centroid (‘center of gravity’) of the area of the TGV.	SEMI 3D11
center line (CL)	a straight line bisecting a brick surface or a square or pseudo-square wafer surface. It is equidistant from opposing sides of the brick or wafer surface.	SEMI PV32
center line (CL)	an imaginary straight line bisecting a square or pseudo-square wafer surface. It is equidistant from opposing edges of the wafer surface.	SEMI PV40, PV41, PV42
center line shrinkage	a profile-reducing defect or discontinuity normally formed by shrinkage during solidification.	SEMI F78, F81
center line, of a CSW	an imaginary line through the wafer center traverse to the saw mark direction.	SEMI HB5, HB7
center line, of a row or column	the line positioned parallel to, and spaced equally between, the boundary lines of the row or column.	SEMI T7, T8, T9, T14, T14.1, T24, PV29
center of brightness (COB) line	a line fitted through a multiple pixel image representing the weighted average of the pixel values transverse to the projected line direction.	SEMI PV42
center point	the position corresponding to the center of active area of BLU.	SEMI D36
center point of the major diameter	the point on the major diameter equidistant from its ends.	SEMI 3D1
center referenced	property of a measurement or calculation with the radial measurement position established using the wafer center as the origin.	SEMI M77
center scan line	a scan line nominally aligned to the center line of the wafer.	SEMI PV41
center thickness TCGU, of CSW	thickness of a CSW at the center-point of the wafer.	SEMI HB6
centerline	a reference line that is equidistant from opposite edges of a feature.	SEMI P28
centerline	(a) the locus of the centroids of successive line segments, in the limit as the segment length vanishes. (b) a line or surface midway between opposing feature edges.	SEMI P35
centerline (CL)	a horizontal line centered vertically on the carrier door used as the reference for z dimensions of door features.	SEMI E158, E159, E185, M80
centerline (CL)	a horizontal line centered vertically on the Panel FOUP door used as the reference for z dimensions of door features.	SEMI E181, E181.1, E181.2, E181.3, E181.4,
centerline roughness (CLR)	the perpendicular point-to-point deviation of the feature’s *centerline* from the *feature model*’s centerline.	SEMI P35

Term	*Definition*	*Standard(s)*
centerline, of a row or a column	the line positioned parallel to, and spaced equally between, the boundary lines of the row or column.	SEMI T10
center-referenced (adj.)	property of a measurement, calculation, or coordinate system with the position established using the wafer center as the origin, such as in the wafer coordinate systems of SEMI M20.	SEMI M59
central area, of a cell	the area enclosed by a circle centered at the cell center point; used by code readers to sense the binary value of the cell.	SEMI T7, T8, T9, T14, T14.1, T24, PV29
central limit theorem (CLT)	a probability theorem which allows the approximation of normality for any distribution. The central limit theorem (CLT) applied to chemical blending states that if a sufficient number of random samples are taken from the distribution of all chemical produced by chemical blending equipment, then the average measurement of these samples can be approximated to follow a normal distribution. A rule of thumb for the 'sufficient number of batches' is ten or greater.	SEMI F39
centroid	the geometrical center of an object. The coordinates of the centroid of an object are $C_u = \iiint u\, dV \Big/ \iiint dV$, where the integral is over the volume V of the object and u can be x, y, or z.	SEMI P35
centroid measurement uncertainty	parameter that characterizes the dispersion of the values that could reasonably be attributed to the position of the centroid or the placement of an object in the reference plane coordinate system.	SEMI P35
certificate of analysis (CoA)	a document describing the physical and chemical characteristics and specifications of a product delivered to the user.	SEMI C96, C99, C101
certificate service body (CSB)	profit and nonprofit body which is issuing certificate.	SEMI T21
certified anchor point	an anchor point that a qualified person certifies to be capable of supporting the forces foreseen to be applied to it by fall arrest or fall restraint system.	SEMI S2
certified deposition, in surface scanning of silicon wafers	a reference sphere deposition on an unpatterned wafer with the same surface films and finish as the wafers to be examined by a calibrated SSIS with specific property values certified by a technically valid procedure, accompanied by or traceable to a certificate that is issued by a certifying body.	SEMI M59
certified reference material (CRM)	reference material, one or more of whose property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation issued by a certifying body.	SEMI E89, E149, PV64
certified reference material (CRM)	reference material one or more of whose property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation issued by a certifying body and for which each certified value is accompanied by an uncertainty at a stated level of confidence.	SEMI M59
certified reference material (CRM)	a NIST traceable single or multi-element solution standard.	SEMI PV49, PV74
certifying body	organization that is recognized to have the ability to carry out a technically valid procedure or procedures to establish property values of a reference material traceable to an accurate realization of the unit in which the property values are expressed.	SEMI M59
chaining	the process of execution over multiple lots or runs with the same Process Program and the same handler operating conditions.	SEMI E123
challenge	the feed the water including GNP and ligand to test filter.	SEMI C82, C89
challenge	the water and PSL particle that are supplied to the test filter.	SEMI F110
challenge gas	a gas mixture containing high levels of gas impurities. Typically, a challenge gas has impurities of between 500 ppm to 1% which is used to shorten the test duration; however, challenges in the range of 1–10 ppm for the impurities is more representative.	SEMI F67, F68

Term	*Definition*	*Standard(s)*
chamfer length, of a nominally square or pseudo-square Si wafer	the shortest distance between adjacent intersections of the chamfer line and the adjacent edge lines.	SEMI PV46
chamfer line, of a nominally square or pseudo-square Si wafer	second order polynomial line fit to the corner chamfer of a wafer.	SEMI PV46
chamfered edge	a beveled angle of approximately 45° in respect to the surface and cut edge surface. One characteristic is that part of the cut edge surface remains. For this reason, R-beveled edges have come to be used in conjunction with chamfered edges in liquid crystal applications. Chamfered edges with particularly small widths are also referred to as 'string bevels.'	SEMI D9
change order	a document defining a formal change in drawings, specifications, and/or scope of work.	SEMI E70
channel	single physical or logical link of an input or output application object of a server to the process.	SEMI E54.14, E54.20
channel related diagnosis	information concerning a specific element of an input or output application object, provided for maintenance purposes.	SEMI E54.14
character	a byte sent on the SECS-I serial line.	SEMI E4
character	a text symbol, letter, digit, or mark used to represent, control, or organize information that is one byte in length.	SEMI E54, E54.1, E54.10
character baseline	a straight line connecting center points of characters with equal size.	SEMI PV29
character height	the vertical distance between the lowest and the highest centerpoints of a character.	SEMI T5
character separation	the horizontal distance between the adjacent boundaries of any characters.	SEMI M13, T5
character separation	the horizontal distance between the adjacent boundaries of any two adjacent characters.	SEMI D32, M12
character separation, vertical	the vertical distance between the adjacent boundaries of any two adjacent characters.	SEMI D32
character skew	the angle between the character baseline and a line parallel with the bottom of the character window.	SEMI T5
character spacing	the horizontal distance between the character centerlines of two adjacent characters.	SEMI D32, M12
character spacing	the horizontal distance between the character spacing reference lines of the adjacent characters.	SEMI M13, T5
character string	a text string.	SEMI E54, E54.1
character value	a groove parallel to the adjacent CR in the brick ID encoding a digit.	SEMI PV32
character width	the horizontal distance between the most left and the most right centerpoint of a character.	SEMI T5
character window	the rectangular window within which all characters must be contained.	SEMI M12, M13, T5
characterize	to describe the quality of.	SEMI C83
charge carrier	an entity capable of carrying electric charge through a solid, for example, valence holes and conduction electrons in semiconductors.	SEMI M59
chassis	the subsystem or subsystems of the equipment to which utilities would be connected were an adapter plate not used.	SEMI F107
check valve	a mechanical gas system component which prevents reverse flow.	SEMI F22
check-in	an action to register a recipe into repository in RMS or equipment. Normally, uniqueness management of the recipes in repository is done upon check-in.	SEMI E170
check-out	an action to copy a recipe from repository in RMS or equipment. Normally, security management of recipes in repository is done upon check-out.	SEMI E170

Term	*Definition*	*Standard(s)*
checksum	a 16-bit number used to detect transmission errors.	SEMI E4
checksum	a single unique value calculated from a sequence of data (a file, a string, etc.) that uniquely identifies that data. It is sometimes called a 'digital fingerprint' or a 'message digest.'	SEMI E139
chemical	a liquid or gas used in a process for its ability to react with or displace other substances.	SEMI S4
chemical dispense system	the module/system or physical process used for filtering and for dispensing chemical into the distribution piping network which may be referred to by a number of manufacturer's specific designations: CDM, CDU, and MDU.	SEMI F31
chemical distribution system	the collection of subsystems and components used in a semiconductor manufacturing facility to control and deliver process chemicals from source to point of use for wafer manufacturing processes.	SEMI F107, S2
chemical durability	a measure of corrosion or attack of a glass surface when subjected to a specific reagent, such as acid, base, or water at a specific concentration for a specific time and temperature.	SEMI D9
chemical health hazard	the ability, for which there is process knowledge or verifiable evidence, based on established scientific principles, of a chemical to cause acute or chronic health effects in exposed persons. Health hazards include those of chemicals which are carcinogens, toxic or highly toxic materials, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.	SEMI S12
chemical machining	a process that forms structures of desired geometry, dimensions, and surface conditions by concentrating or limiting chemical dissolution in specific locations on a material.	SEMI MS3
chemical mechanical planarization (CMP)	a process which removes topographical structures from a surface by a combination of chemical action and mechanical forces.	SEMI C101
chemical property	a measure of corrosion or attack of a smooth and unattached surface when subjected to a specific reagent, such as acid, base, or water at a specific concentration for a specific time and temperature.	SEMI F51
chemical reaction	a process that involves change in the structure of ions or molecules.	SEMI F51
chemical reprocessing unit	a subsystem which reclaims or recycles a chemical. Chemical reprocessing can also include neutralization, separation, waste reduction, or mitigation of hazardous waste.	SEMI F31
chemical transfer	the technique used to move chemical between different points in the distribution system.	SEMI F31
chemical vapor deposition (CVD), in semiconductor technology	a process in which a controlled chemical reaction produces a thin surface film, such as growth of an epitaxial layer.	SEMI M59
chemically assisted elastomeric degradation	the breakdown process of a seal surface caused by polymer degradation that involves a change of the polymer properties due to a chemical reaction with the polymer's surroundings	SEMI F51
chem-mechanical polish	a process for the removal of surface material from the wafer that uses both chemical and mechanical actions to achieve a mirror-like surface for subsequent processing; also known as *chemo-mechanical polish* or *chemical mechanical polish*.	SEMI M59
chi	the angle which tilts the sample about an axis in the plane of the sample and in the scattering plane.	SEMI M63
chiller-cooled process cooling water (PCW-C)	process cooling water from which heat is removed through a heat exchanger to a chilled water system.	SEMI S23
chip	a region of material missing from the edge of the glass substrate, which is sometimes caused by processing or handling.	SEMI D9

Term	*Definition*	*Standard(s)*
chip	region of material missing from a component (e.g., ceramic from a package, or solder from a perform). The region does not progress completely through the component and is formed after the component is manufactured. Chip size is defined by its length, width and depth from a projection of the design platform.	SEMI G58, G61
chip	region where material has been unintentionally removed from the surface or edge of the wafer.	SEMI M59, PV39
chip (chip-out)	a region of ceramic missing from the surface or edge of a package which does not go completely through the package. Chip size is given by its length, width, and depth from a projection of design plan form.	SEMI D9, G1, G3, G22, G26, G33, G34, G39, G50, G53
chip window	a drawing area of mask tools.	SEMI P44
chips	(edge chips, peripheral chips, peripheral indents, surface chips): areas of material mechanically removed from the surface or edge of a wafer.	SEMI M10
chips, polysilicon	irregularly shaped pieces of polysilicon with a largest dimension less than approximately 50 mm.	SEMI PV17
chlorosilane	any substance designated in Table 1 (of SEMI S18) as being corrosive.	SEMI S18
chopper	a rotating blade or ther device used to modulate a light source.	SEMI PV69
chord	a straight line that extends from one point on the sidewall of the TSV opening in a specific horizontal plane to another such point in the same plane.	SEMI 3D1
chord	a straight line that extends from one point on the sidewall of the TGV opening in a specific horizontal plane to another such point in the same plane.	SEMI 3D11
chromatic white light sensor	a chromatic white light sensor (CWS) is based on the principal of confocal optics and relies on chromatic scanning. A lens is used that refracts white light differentially based on its wavelength in order to carry out distance measurements. Resolution depends on the intensity of reflected light.	SEMI 3D4
chromatic white light sensor (CWS)	a noncontact method based on the principal of confocal optics, which relies on chromatic scanning.	SEMI 3D12
chromaticity	the indication of the suitable color for the mark of same color, namely the spectro-distribution-chart (λ) of the measured light source. The light source color is indicated by the 3 measured stimulus factors X, Y, Z (the quality of stimulus evoking the primary color sense) at the sensitivity of eye (2°).	SEMI D36
chromaticity	ratios of tristimulus values that do not contain any magnitude information.	SEMI D83
chromium enriched layer thickness	the depth within the passive oxide layer for which the chromium atomic concentration is greater than the Iron atomic concentration, determined from the depth composition profile as the depth from the initial surface to the point where the chromium atomic concentration equals the iron atomic concentration, if an Iron enriched layer is not present. If an iron enriched layer is present, then its thickness must be subtracted from the above value to calculate the chromium enriched layer thickness.	SEMI F72
chromium enriched layer thickness	the depth within the oxide passive layer for which the Chromium concentration is greater than the Iron concentration, determined from the depth profile analysis as the depth from the surface to the point where Chromium concentration = the Iron concentration, if the Chromium concentration is > the Iron concentration at the surface. If an Iron enriched oxide layer is present then the Chromium enriched layer thickness is the depth at which the Chromium concentration, decreasing from a maximum value, intersects the Iron concentration, which is increasing to its maximum (bulk) value, minus the Iron enriched oxide layer thickness.	SEMI F60
chuck	the physical apparatus in the tools upon which the mask is mounted.	SEMI P40
chuck	the primary stage for processing a substrate.	SEMI E130
chuck marks	any physical mark on either surface of a wafer caused by a chuck or wand.	SEMI M10
chunks, polysilicon, also called lamps	lumpy polysilicon of nonspherical shape with irregular surface features. The polysilicon chunks have dimensions typically up to 250 mm.	SEMI PV17

Term	*Definition*	*Standard(s)*
CIELAB	a uniform color space defined by the CIE in 1976, officially known as CIE L*a*b*. L* stands for luminance, a* is the red-green axis, and b* is the blue-yellow axis.	SEMI D82
circuit module	an implemented electric circuit with active/passive elements in a cell, on a substrate or packaged together.	SEMI T13
circularity	circularity considers the degree to which a shape deviates from a perfect circle. Circularity of solder spheres is measured using any one of several methods. One measurement reviews the difference between the diameters of the circumscribed and inscribed circles. Another method compares the ratio of x-axis to y-axis using a 3-point measurement method.	SEMI G93
clamp	a part to fix a box top and a box bottom mutually.	SEMI M29
clamshell wafer shipping container	a type of stackable wafer shipping container that consists of a base and connected lid that holds a single wafer on a dicing frame.	SEMI 3D3
clarifier	a piece of water treatment equipment, typically used at municipal drinking water plants, to remove suspended solids from surface water and/or to soften surface water.	SEMI F61
class	a specific type or classification of objects.	SEMI E54.1
class	a set of objects that all represent the same kind of system component. A class is a generalization of an object. All objects in a class are identical in form and behavior, but may contain different attribute values.	SEMI E54.4. E54.13
class	a set of objects that represent the same kind of system component. A class is a generalization of an object. All objects in a class are identical in form and behavior, but may contain different attribute values as well as additional attributes and services.	SEMI E54.9
class	the shared common structure and common behavior of a set of objects. Class often implies an implementation of the common structure and behavior while interface represents a specification of those common features.	SEMI E81
class	the shared common structure and common behavior of a set of object implementations.	SEMI E96
class	classes represent the most coarse view of the test results. At a minimum, there should be two classes defined for each process program: one class representing good units and another class representing failed units.	SEMI E122
class 100	a cleanroom designation defined by Federal Standard 209E (ISO 14644-1,2,4 equivalent) which designates that each cubic foot (SI equivalent cubic meter) of air can have no more that 100 particles at a size of 0.5 μm or larger.	SEMI F74
classification accuracy	the ratio to the total number of machine (SSIS) classified defects for which human and machine classification results agree to the total quantity of human classified defects.	SEMI M52
classification accuracy	the ratio of the total number of machine-classified defects for which human and machine classification results agree to the total quantity of human-classified defects.	SEMI M91
classification of emissions	understanding the composition of process exhausts.	SEMI F5
classification purity	the ratio of the total number of machine (SSIS) classified defects for which human and machine classification results agree to the total quantity of defects classified as a specific class by the machine.	SEMI M52
classification purity	the ratio of the total number of machine-classified defects for which human and machine classification results agree to the total quantity of defects classified as a specific class by the machine.	SEMI M91
clean dry air (CDA)	filtered air filtered to 0.02 mm and dried to a dew point of at least −80°C.	SEMI F29
clean oven	a device that heats a specimen through circulation of heated air through an air filter.	SEMI D29
clean sampling	a specifically designed scheme to allow for the taking of chemical samples, avoiding any contamination from the operator or background environment of the area.	SEMI F46
cleanroom	confined area in which the humidity, temperature, particulate matter, and contamination are precisely controlled within specified parameters. Cleanroom classes are defined in ISO 14644.	SEMI E70, F98
cleanroom	confined area in which the humidity, temperature, particulate matter, and contamination are precisely controlled within specified parameters.	SEMI S14

Term	*Definition*	*Standard(s)*
cleanroom	a room in which the concentration of airborne particles is controlled to specific limits.	SEMI S2, S30
cleanup	de-selection of the current Process Program and removal of all material to output locations and any equipment specific activities required to transition the equipment into the IDLE state.	SEMI E30.5
clearance distance	the shortest path between two conductive parts normally carrying current, or between a conductive part normally carrying current and a conductive part that is connected to the protective earthing system, measured through air.	SEMI S22
clearing	exception agent to decision authority reporting that an abnormal situation related to an exception condition is no longer apparent or relevant.	SEMI E41
cleavage plane	a crystallographically preferred fracture plane.	SEMI M59
client	an object that uses the services of another object by operating upon it or referencing its state.	SEMI E81
client	an object that uses the services of another object by sending messages to it or referencing its state.	SEMI E96
client	an application process that communicates with the equipment to access equipment resources. This specification uses the terms ‘client’ and ‘client application’ interchangeably.	SEMI E132
client	an application that communicates with the equipment to access equipment resources, interact, or receive data from the equipment.	SEMI E147
client/server-system	a system consisting of two different sub systems: a server system which provides services and client systems which access these services.	SEMI F97
clip	the part fixing the sheet on the frame to prevent flux and looseness of sheet.	SEMI D36
clipped (nominal/actual) feature	the part of the (nominal/actual) feature lying within the region of interest.	SEMI P43
clock	a device that is used to provide real-time date/time information that generates periodic, accurately spaced signals used for timing applications.	SEMI E148
clock	a device that is used to provide real-time date and time information.	SEMI E98
closed process equipment	equipment in which the process and chemical handling take place inside of components the interiors of which are not in communication with ambient air. Components inside the ventilated enclosures may include sealed mixing or measurement vessels and holding tanks, enclosed plumbing, and process chambers. In this type of equipment it is not normal operation for the inside of the ventilated enclosure or the secondary containment to be exposed to chemicals.	SEMI S6, S30
closed secondary containment	secondary containment that has a sealed annulus. In closed containment systems, the annular space either holds a certain pressure of gas or a certain level of vacuum. In closed containment, a change in the pressure or vacuum would be indicative of a leak in either the primary or secondary system.	SEMI F6
closed vessel	an enclosed container, typically used for the heating, mixing, or application of process liquids, containing vapors and used in an application where unintended pressurization is possible. Some sealed processing chambers and DI water heaters are examples of closed vessels.	SEMI S3
cloud	dense micro bubbles that diminish the clarity of the crystal and appear as fog when the material is illuminated with bright light.	SEMI HB10
cluster	series-connected photovoltaic cells protected by a bypass diode.	SEMI PV60
cluster tool	an equipment system made up of multiple integrated processing equipment modules, with or without nonprocessing equipment modules, mechanically linked together. The equipment modules may or may not come from the same supplier.	SEMI E10, E79
cluster tool	an integrated, environmentally isolated manufacturing system consisting of process, transport, and cassette modules mechanically linked together. The modules may or may not come from the same supplier.	SEMI E21

Term	*Definition*	*Standard(s)*
cluster tool	an integrated, environmentally isolated manufacturing system having process and transport modules mechanically linked together.	SEMI E166
CNC	condensation nucleus counter. A light scattering instrument that detects particles in a gaseous stream by condensing supersaturated vapor on the particles.	SEMI F43
code field	the rectangular window within which all characters must be contained.	SEMI T5
code issuance	a series of operations of generating a code, confirming its uniqueness, registering the code, and issuing (notifying of) the code.	SEMI T22
code reference (CR)	a groove parallel to CS at a specified distance towards CL.	SEMI PV32
code start (CS)	a groove indicating the start of a CU.	SEMI PV32
code unit (CU)	an area on a brick surface containing code for one decimal digit. It consists of the three grooves called CS, CR and CV parallel to CL.	SEMI PV32
CoE attribute	is described as object in the EtherCAT protocol specification.	SEMI E54.20
CoE attribute ID	is described as index and subindex in the EtherCAT protocol specification.	SEMI E54.20
CoE read service	is described as SDO Upload service in the EtherCAT protocol specification.	SEMI E54.20
CoE write service	is described as SDO Download service in the EtherCAT protocol specification.	SEMI E54.20
coefficient of thermal expansion	expansion is the change in length per initial length caused by a thermal change. Concretely, it is shown as $\Delta L/L0$, where $\Delta L = L2 – L1$ and L0, L1, and L2 are the lengths of the material at the temperature T0, T1, T2 respectively. Usually, the coefficient of expansion (A), means the average coefficient of expansion over the temperature range T1 to T2.	SEMI D9
coefficient of variation (COV)	the width of a distribution (in %), obtained by dividing the standard deviation of the distribution by the mean of the distribution.	SEMI E104
coefficient of variation (CV)	population standard deviation expressed as a percentage of the mean value.	SEMI E89
co-fired	in the manufacturing of some types of ceramic packages, the technology used to join together various ceramic layers and metallization patterns screened onto those layers by simultaneous firing at high temperature.	SEMI G22, G39, G50, G61
cognitive	relating to human information processing, perception, and attention.	SEMI S8
coherence	in optics, a measure of the ability of light to interfere.	SEMI MF728
coherence parameter	in microscopy, the ratio of the condenser numerical aperture to the objective numerical aperture for wide-field, bright-field, Kohler illumination.	SEMI MF728
coil set	longitudinal bowing of the leadframestrip length.	SEMI G9, G27, G41, G47, G51, G70
coil set	longitudinal bowing of the leadframe.	SEMI G19, G28
coincidence	the presence of two or more particles in the detection area of the particle detector at the same time, causing the particle detector to interpret the combined signal erroneously as resulting from one larger particle.	SEMI E104
coincidence error	the inaccuracy in a measured particle concentration caused by multiple particles in the optical sensing volume of an instrument.	SEMI F54
coincidence loss	counting loss of particles which occurs if two or more particles exist simultaneously within a particle detection area or signal processing time.	SEMI C77
coined area	that area at the tip end of the bond fingers coined and planished to produce a flattened area for functional use (wire bond).	SEMI G2, G9, G27, G41, G47, G51
coined area	that area at the tip of the bond fingers flattened to produce an acceptable surface for wire bonding.	SEMI G28
coined depth	the difference in height between the top surface of the coined area of an inner lead and the top surface of the coined area at the tip of the lead. Inner lead coining produces a flattened section of the lead that is suitable for wire bonding.	SEMI G70

Term	*Definition*	*Standard(s)*
coin-stack type shipping container	a container in which wafers are horizontally stored for shipment.	SEMI G90
coin-stack type shipping container	a container in which dicing frames carrying wafers are placed horizontally.	SEMI 3D3
coin-stack type tape frame shipping container	a container in which tape frame wafers are horizontally stored for shipment.	SEMI G94
cold cathode fluorescence lamp	the fluorescence lamp with cold cathode, in which the glow discharge is generated by the secondary emission of electrons from the cathode. With the fluorescence material coated on the inner surface of the lamp excited by the ultraviolet ray from the positive column, the lamp emits visible ray.	SEMI D36
collection	an object containing references to (collections of) other objects with services for managing them and providing access to them as a related group of objects.	SEMI E81, E96
collection event	an occurrence (or grouping of related occurrences) on the equipment that might be significant to the host.	SEMI E30
collection event	an event (or grouping of related events) on the equipment that is considered to be significant to the host.	SEMI E58, E167, E167.1, E170, E171
collection event	a detectable occurrence of interest to a service user.	SEMI E42
collection event	an event that may be used to initiate the collection and reporting of data. A collection event may trigger an event report. A collection event may also start or stop one or more trace reports.	SEMI E53, E168.1, E168.3, E172
collection event	a collection event is an event (or grouping of related events) on the equipment that is considered to be significant to the host.	SEMI E87, E109, E174
collection frequency	the rate at which the collection of one or more data values is performed. This is not the same as the frequency with which the equipment internally samples these data from its components.	SEMI E134
collection result	the set of data values obtained during trace data collection.	SEMI E134
collision/reaction cell	a system to reduce the interference that polyatomic ions cause. Interference of polyatomic ions is reduced by the interaction between ions and gas (hydrogen, helium, ammonia, etc.) introduced into a cell.	SEMI M85
colloid	a substance comprised of a dispersed phase and a continuous phase. It differs from a solution in that the dispersed phase is comprised of particles larger than molecules. Each phase can be a gas, liquid, or solid; except that gas in gas colloids do not form because neither component remains aggregated.	SEMI S25
color	the perceptual concept from hue and saturation of video signals including chrominance components. Generally the term color might be defined to include black, white and gray colors that have no chrominance component, but here color is defined as output with some chrominance components.	SEMI D71
color	the darkness of the oxidation of the weld or adjacent surfaces. Non-standard term for *discoloration.*	SEMI F78
color	a selective absorption of light caused by impurity elements or crystal internal defects (color center) that presents a different hue.	SEMI HB10
color appearance model	a color appearance model provides perceptual attribute correlates by predicting changes of color appearance of a visual stimulus under various, different viewing conditions.	SEMI D61
color breakup (CBU)	a phenomenon wherein the time sequence of colors, constructive showing some colors of the display, broken by some reasons then produces color separation visually in motion conditions.	SEMI D58
color difference	the Euclidean distance between two colors in a specific color space.	SEMI D76, D82, D83

Term	*Definition*	*Standard(s)*
color filter layer	colored layer through which light is transmitted. It is deposited in three colors—red, green, and blue—which are patterned to produce an array of contiguous, rectangular, or square-shaped pixels.	SEMI D13
color gamut	the outer surface determined by a color gamut form.	SEMI D75
color illuminator	a light source having a uniform illumination plane which radiates diffuse light onto the back surface of a sample to permit direct observation of the sample.	SEMI D19
color line	acceptance criteria of the maximum amount of discoloration allowed on the weld or adjacent surfaces.	SEMI F78
color Mura	variation in brightness or chromaticity with the quality area.	SEMI D13
color photoresist method	defined as color photoresist, it is possible to create a pattern through a direct exposure method using color pigment or dye dispersed on a photoresist.	SEMI D13
color spot	a mixing or overlapping of color materials within an RGB pixel.	SEMI D13
color temperature	the temperature of an ideal black-body radiator that has the same chromaticity as that of the light source.	SEMI D83
color volume	the volume of a color space in the three-dimensional concept of how much space it occupies correlated with a set of colors.	SEMI D61
colorimeter	the equipment that measures the luminance and/or chromaticity.	SEMI D36
coloring materials	other than the multilayer interference method, these are formed using pigments or dyes.	SEMI D13
column	synonymous with the term ‘X-coordinate.’ Columns increase along the X axis.	SEMI E130
column	a series of bits that can be enabled for access using a column address.	SEMI G91
column grid array	same as ball grid array except that metallic columns are used in place of the metallic balls for the electrical and mechanical interconnection between the package and the PC board.	SEMI G72
comb drive	an electrostatically actuated MEMS device, incorporating interdigitated fingers, used in inertial sensors and RF resonators.	SEMI MS3
combustible liquid	a liquid that will burn and has a flash point at or above 37.8°C (100°F).	SEMI S3, S14
combustible material	a combustible material is any material which does not meet the definitions in this section for noncombustible materials.	SEMI S14
combustible material	a combustible material is any material that does propagate flame (beyond the ignition zone with or without the continued application of the ignition source) and does not meet the definition in this section for noncombustible material. See also the definition for noncombustible material.	SEMI S2, S30
combustible material	a material that, in the form in which it is used and under the conditions anticipated, may ignite, burn, or release flammable vapors when subjected to fire or heat.	SEMI S4
comet	a build-up of resist in the form of a comet, generated by a defect.	SEMI P3
commands	data that gives an order to the opposite communication end point.	SEMI PV55
common cell	a cell which is placed in multiple localization areas.	SEMI P44
Common Device Model (CDM)	the root object application model for devices on the sensor bus.	SEMI E54.10
common mode saw mark	a topographic step along the sawing wire direction at the same position of both sides wafer surface.	SEMI PV70
communication block (CB)	an informational block in HC Controller, which is used to communicate data blocks between HC controllers. One A1 HC ‘Line’ has one communication block. One communication block consists of one Line CB and required number of Track CB(s).	SEMI A1.1
communication failure	occurs when an established communications link is broken. Such failures are protocol specific.	SEMI E30
communication failure	a failure in the communication link resulting from a transition to the NOT CONNECTED state from the SELECTED state.	SEMI E37
communication failure	a failure in the communication link resulting from a failed send.	SEMI E4

Term	*Definition*	*Standard(s)*
communication fault	occurs when the equipment does not receive an expected message, or when either a transaction timer or a conversation timer expires.	SEMI E30
communication frame	the communication protocol format of MECHATROLINK.	SEMI E54.19
communication frame	the minimum unit of transaction data in communication protocol format of MOTIONNET.	SEMI E54.21
communication interface	interface of an IT system to communicate with other IT systems. Usually the communication takes place via a network.	SEMI F97
communication session	a series of two-way message exchanges between a client and the equipment. A session typically begins and ends at the request of the client.	SEMI E132
communications system	the methods and technologies used to permit and support a document exchange session.	SEMI E36
comparative tracking index (CTI)	the value obtained in accordance with Method A of IEC 60112 which determines the Material Group of a printed wiring board. Where the CTI or material group is not known, Material Group IIIb should be used.	SEMI S22
comparison of analytical results with specific limits	in the comparison of an analytical result for a test with the numerical limit associated with that specification, the result shall be rounded to the number of significant figures indicated for that limit.	SEMI C3
compatibility	capability of a measurement equipment system to emulate the measurement process of other tools measurement systems.	SEMI M59
compensation	changes made in the dimensions on the master artwork other than those specified on the engineering artwork that allow for the process variables (i.e., etch factor, undercut, etc.).	SEMI G19
compensation	reduction in number of free carriers resulting from the presence of impurities other than the majority dopant density impurity.	SEMI M59
competence	an individual's demonstrated capacity to perform or accomplish a task or set of tasks to a defined level or criteria.	SEMI E150, E161, E165
complex conjugate load impedance	the complex conjugate load impedance has the same real part of the load impedance and the negative of the reactive part of the load impedance. For example, the complex conjugate of a load impedance of 2.0 – j20 ohms would be 2.0 + j20 ohms.	SEMI E115
complex device	a device which consists of more than one subcomponent device. They may be piggy backed, stacked, flipped over, soloed on additional substrate and so on. They may or may not be interconnected. SIP and Hybrid IC devices are a part of examples.	SEMI T19
component	a reusable package of encapsulated objects and/or other components with well-specified interfaces. The component is the element of standardization and substitutability in the CIM Framework.	SEMI E81
component	a reusable package of encapsulated objects and/or other components with well-specified, published interfaces. The component is the element of standardization and substitutability for the CIM Framework.	SEMI E96
component	an individual piece or a complete assembly of individual pieces, including industrial products that are manufactured as independent units, capable of being joined with other pieces or components. The typical components referred to by the specification are valves, fittings, regulators, gauges, instrument sensors, single lengths of tubing, several pieces of tubing welded together, and tubing welded to fittings.	SEMI F1
component	an individual piece or a complete assembly of individual pieces capable of being joined with other pieces or components.	SEMI F36, F74, F106
component	an individual piece or a complete assembly of individual pieces that together make up a whole machine, system, etc.	SEMI S16
component	decomposed unit of equipment. The unit here is replaceable or maintainable/manageable, and may be essential for the equipment or may be optional.	SEMI T17
component	decomposed unit of equipment. The unit may be essential for the equipment or may be optional. UML modeling component is another meaning; it is often described with italicized Arial (Helvetica) font as *component*.	SEMI T18

Term	*Definition*	*Standard(s)*
component agent	a subordinate agent that provides services to a supervisory agent.	SEMI E42
component object	an object that is part of an aggregation.	SEMI E39
component part	a constituent part, which can be separated from or attached to an assembly, not normally considered capable of independent operation. Also sometimes just called part.	SEMI E10, E35, E79, E140, E149, E165
components	devices used to convey and control the liquid chemicals in the liquid chemical distribution system and process equipment device. Such components include valves, regulators, filters, pumps, flow meters, pressure gauges, heat exchange units, etc.	SEMI F108
components for surface mount	a gas distribution system component having inlets and outlets located on the bottom of the component with the attachment mechanism accessible from the top.	SEMI C88, F82, F83, F84, F85, F86, F87, F88, F89, F90, F91, F92, F93, F94, F95, F117
composite cell	an arrangement of several basic cells.	SEMI P19
composite liquid waste sampler (COLIWASA)	specifically a hand-held device which allows the discrete sampling of stratified liquids from a vessel at different depths.	SEMI C99
composite liquid waste sampler (COLIWASA)	specifically a hand-held device which allows the discrete sampling of stratified liquids from a vessel at different depths (a.k.a. Drum Thief or Drum Sampler).	SEMI C96, C101
compound transfer	combination of two or more atomic transfers executed sequentially or concurrently to achieve a single goal (e.g., exchange carriers or move a carrier between process machines using a transfer agent).	SEMI E32
comprehensive cost of ownership	cost of ownership (COO) calculated with no constraints.	SEMI E35, E140
compressed gas	a gas that exerts a gauge pressure of 200 kPa (29.0 psig/43.8 psia) or greater at 20°C (68°F).	SEMI S18
compressed gas association (CGA)	also frequently used to refer to a fitting, as defined and specified by the Compressed Gas Association, which is used to connect a gas source cylinder to a panel inlet.	SEMI F28
computer integrated manufacturing	an approach that leverages the information handling capability of computers to manage manufacturing information and support or automate the execution of manufacturing operations.	SEMI E81, E96
computing device	an electronic device controlled by a central processing unit. It can accept software modifications or execute software to perform an operation.	SEMI E187
computing device	a device that can accept software modifications or execute software to perform an operation.	SEMI E188
concavity	a condition in which the surface of a weld is depressed relative to the surface of the tube or pipe. Concavity is measured as a maximum distance from the outside or inside diameter surface of a weld along a line perpendicular to a line joining the weld toes.	SEMI F78, F81
concentration	the number of particles per unit volume, at ambient temperature TA and pressure p.	SEMI E104
concentration	relative amount of a minority constituent of a mixture to the majority constituent (for example parts per million, parts per billion, or percent) by either volume or weight.	SEMI M59
concentration limit	the particle concentration specified by the manufacturer of the particle detector at which the error due to coincidence is 10% or less.	SEMI E104
concentration limit	the maximum concentration of particles in an aerosol at which the coincidence error is no more than 10% in an instrument.	SEMI F54
concession use	the defect does not affect the safety and expected use function, and can be used continuously.	SEMI PV101
condensable	a substance (other than water), typically having a boiling point above room temperature at atmospheric pressure, capable of condensation on a clean surface.	SEMI F21

Term	*Definition*	*Standard(s)*
condensation nucleus counter (CNC)	a discrete particle counting instrument that detects particles, in a gaseous stream, by measuring light scattered from droplets grown to measurable size by condensation of supersaturated vapor upon the particles.	SEMI F28
condenser aperture diaphragm	in microscopy, a fixed or variable opening that controls the light passing through the condenser and determines the value of the condenser numerical aperture.	SEMI MF728
condenser lens or substage condenser	in microscopy, a lens that collects light for the purpose of illuminating the specimen.	SEMI MF728
condenser numerical aperture	in microscopy, the product of the index of refraction in object space multiplied by the sine of half the angular aperture of the condenser.	SEMI MF728
condenser system	in microscopy, lenses and mirrors that collect light for the purpose of illuminating the specimen.	SEMI MF728
condition	a property of a displayed object or value (textual or numeric) that visually indicates, if applicable, whether the current state of an object or the current value violates the defined bounds of normal operational states or parameters, whether that violation is categorized as a minor exception (a caution) or a severe exception (an alarm), and provides no visual indication if no exception has occurred.	SEMI E95
conditioned power	electrical power that is manipulated to maintain specified tolerances.	SEMI E70
conditions (of an objective)	describes (a) where the performer performs the task and (b) what the performer is allowed to use ('given' to use) in order to perform the task. Conditions can include (or exclude), among other things: equipment, equipment readings and displays, documentation, tools, replacement parts, recipes, job aids, personal protective clothing, and more.	SEMI E150
conducted emission	electromagnetic signals present on wires, cables, metal parts and other conductors of equipment.	SEMI E176
conducted susceptibility (CS)	equipment vulnerability to conducted emissions.	SEMI F53
conducting boundary	a boundary between two specimen layers of the same conductivity type taken to be the point at which the spreading resistance increases to twice the local minimum value it has in the layer of lower resistivity.	SEMI MF672
conductivity (electrical)	a measure of the ease with which charge carriers flow in a clear chemical or suspended solid-based liquid material; the reciprocal of resistivity. It is often reported in units of µS/cm or mS/cm for most slurries or post-CMP chemicals present in semiconductor manufacturing operations.	SEMI C99
conductivity (electrical), σ $[(\Omega \cdot cm)^{-1}]$	a measure of the ease with which charge carriers flow in a material; the reciprocal of resistivity. In a semiconductor, the conductivity is proportional to the product of free carrier density, electron electrical charge, and carrier mobility. Most variant of all crystal properties, conductivity can range over 13 orders of magnitude. Conductivity can be locally modified by temperature, carrier injection, irradiation, or magnetic field.	SEMI M59
conductivity type	a property that identifies the majority charge carrier in the semiconductor.	SEMI M59
conduit	a part of a closed wiring system of circular or non-circular cross-section for insulated conductors and/or cables in electrical installations, allowing them to be drawn in and/or replaced.	SEMI S22
configuration	the functional and/or physical characteristics of hardware/software as achieved in the equipment.	SEMI E149
configuration properties	these are attributes of a LonMark object that are used to configure the application-specific behavior of the object, such as sensor gain and offset, linearization table, and sample rate. These attributes are typically updated when the device is installed, configured or calibrated, and are stored in non-volatile memory.	SEMI E54.16
configure	to set hardware or software for one of a set of possible options.	SEMI E149
confined space	a space that: (1) is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) has limited or restricted means for entry or exit (e.g., chambers, space in enclosures are spaces that may have limited means of entry.); and (3) is not designed for continuous employee occupancy.	SEMI S21

Term	*Definition*	*Standard(s)*
confined space	a space that: (1) is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) has limited or restricted means for entry or exit; and (3) is not designed for continuous employee occupancy.	SEMI S28
confirmed service (HSMS)	an HSMS service requested by sending a message from the initiator to the responding entity which requires that completion of the service be indicated by a response message from the responding entity to the initiator.	SEMI E37
confocal scanning laser microscope	a microscope which is able to create an image of just the focal point by concentrating light on a specimen using a confocal laser. This device can also measure surface shape by recording height information, which matches the focal point of each scans line image.	SEMI D29, D30
conformance	adherence to a standard or specification in the implementation of a product, process, or service.	SEMI E81, E96
conformance requirement	identification in the specification of behavior and/or capabilities required by an implementation for it to conform to that specification.	SEMI E81, E96
conforming authoring application	a conforming authoring application must be able to produce conforming documents. There is no requirement that all internal work in the application be performed in the markup described by Semiconductor Equipment Manufacturing Information Tagging, only that the end product, exported for interchange, must be a conforming document.	SEMI E36
conforming document	a conforming document is one that meets the markup rules and specific information models defined in Semiconductor Equipment Manufacturing Information Tagging for the class of document. This specification comprises three parts: this base document, a set of information models, and the documentation for those models. A conforming document must conform to all three parts. A conforming document created by one application must be interchangeable with a conforming application without significant information loss.	SEMI E36
conforming element	a conforming element is one that uses the names and markup rules defined in Semiconductor Equipment Manufacturing Information Tagging for the class of element. A conforming element created by a conforming application must be interchangeable with another conforming application without information loss.	SEMI E36
conforming implementation	an implementation that satisfies all relevant specified conformance requirements.	SEMI E81, E96
conforming information component	a conforming information component is one that meets the structural rules defined in the conforming system for the class of information component. A conforming information component created by one conforming system has to be able to be exchanged with another conforming system.	SEMI E36
conforming rendering application	rendering (presentation) is the process and means by which the elements in a document shall be made visually or otherwise understandable to the end user, for example, printing a document on paper, browsing a series of elements on screen, or stating a series of elements through voice synthesis. A conforming rendering application must be able to print or display conforming documents without significant loss of information. The presentation should be consistent with the intent of the originating system. A conforming rendering application may not impose structural requirements that are not required by the DTD or other document models as stated in the second part of Semiconductor Equipment Manufacturing Information Tagging.	SEMI E36
conforming system	a system that provides all the services defined in this Standard. A conforming system may be made up of numerous dispersed application components. A conforming system must be able to exchange conforming documents with other conforming systems.	SEMI E36
conjugated plane	there are two sets of principal conjugate focal planes that occur along the optical pathway through the microscope. One set consists of four field planes and is referred to as the field or image-forming conjugate set, while the other consists of four aperture planes and is referred to as the illumination conjugate set. Each plane within a set is said to be conjugate with the others in that set because they are simultaneously in focus and can be viewed superimposed upon one another when observing specimens through the microscope.	SEMI G93

Term	*Definition*	*Standard(s)*
connection	a logical linkage established on a TCP/IP LAN between two entities for the purposes of exchanging messages.	SEMI E37
connection oriented	a situation between communicating objects wherein they are connected in a mode analogous to a two-way phone conversation.	SEMI E54.2
connector block	a seal-specific substrate block fixture made to mate with a respective seal-system cap or flow-through block for testing purposes.	SEMI F74
consensus reference material	reference material one or more of whose property values have been established by a documented inter-laboratory study that is based on a technically valid test method.	SEMI M59
constant temperature oven	hot-air oven used to condition the specimens to the specified temperature.	SEMI F12
constituents	solids, liquids, or gases.	SEMI F39
constrained condition	the state of a wafer under test, when one side of the wafer is clamped to an ideally flat surface; for example, when pulled down by a vacuum onto an ideally clean flat chuck.	SEMI HB1
constrained cost of ownership	cost of ownership (COO) version with a set of defined restrictions to facilitate comparisons or to remove ambiguity.	SEMI E35, E140
construction	the set of activities that transforms plans and specifications into functional systems capable of performing to specification.	SEMI E70
construction consumable	any material used up during construction.	SEMI E70
construction management	the set of activities that define, direct, monitor, and report construction activities such as workmanship, adherence to design, cost, and schedule conformance.	SEMI E70
consumable	material that is used by or in support of the equipment system, such as dispensing glue, mold compound, epoxy, flux, container, tape, gas, liquids, wire, dopants (calcium, oxygen, boron, etc.), slurry and abrasive pads, metal sputtering targets (titanium, zinc, nickel, aluminum, many others), photoresist, deionized water, process gases (silane, ammonia, carbon dioxide, hydrogen, etc.), and etching/cleaning solvents.	SEMI E189
consumable location	location where a consumable is mounted and unmounted.	SEMI E189
consumable material	the material used by or in support of the equipment system at any time. Examples include gases (e.g., Ar, air), liquids (e.g., acids, solvents, ultrapure water, cooling water, mold compounds), solids (e.g., implant sources, bonding wire, lead frames). Examples do not include equipment component parts (e.g., consumable parts), support tools (e.g., carriers, probe cards), production substrates (e.g., wafers, die, assembly components), monitor/filler units (e.g., test wafers), and facility utilities (e.g., electricity, exhaust).	SEMI E10, E35, E79, E140
consumable part	component part of the equipment that is used up, depleted, damaged, or destroyed by the process operation of the equipment with a predictable life expectancy (e.g., of less than one year) as agreed upon between the user and the supplier. It requires periodic replacement to allow the equipment to perform its intended function.	SEMI E10, E35, E79, E140
consumable part	such consumable as bonding wire held on equipment in container or magazine, or such repeatedly used consumable on equipment as chemicals. Familiar examples in home and office are ink/toner cartridges or dot-impact ink ribbons.	SEMI T17
consumable part	such consumable as bonding wire held on equipment in container or magazine, or such limited repeating-time used consumable on equipment as chemicals periodically supplied by factory. Familiar examples in home and office are ink/toner cartridges or dot-impact ink ribbons. While it is a specific type of part, often it could be a sort of materials or jigs, components or consumable part.	SEMI T18
consumable parts	parts which are recognized by the equipment supplier as having a useful lifetime which is expected to be significantly less than the lifetime of the equipment.	SEMI S13
consumables	all parts of the ME that are worn out by the process operation and require periodic replacement.	SEMI S12
contact	a clear feature in a dark field with length:width ratio ranging from 0.5 (1 is default) to 2 maximum. The width of such feature may be measured as if it were a 1D feature, but for enhanced relevance it requires 2D assessment such as an area measurement. A large contact can be called a *window*.	SEMI P43

Term	*Definition*	*Standard(s)*
contact area	special case of feature area, in which the feature is a contact.	SEMI P43
contact area deviation	the sum of contact area gain and contact area loss. As such it becomes a special case of feature area deviation, in which the region of interest contains a contact.	SEMI P43
contact area difference	contact area gain minus contact area loss. As such it becomes a special case of feature area difference, in which region of interest contains a contact.	SEMI P43
contact area gain	special case of feature area gain, in which the region of interest contains a contact.	SEMI P43
contact area loss	special case of feature area loss, in which the region of interest contains a contact.	SEMI P43
contact diagonal widths	widths determined using the smallest rectangle encompassing the contact confined along the directions $\pm$ arctan($W_{Y,nominal}/W_{X,nominal}$), which is ±45° for square contacts.	SEMI P43
contact LMD	measurement probe of LMD is placed perpendicular to the DUT and directly in contact with the surface of it, which includes at least 500 pixels in the measurement aperture.	SEMI D83
contact pad	that metalized pattern to which the leadframe is brazed.	SEMI G39, G50
contact pad	that metalized pattern that provides mechanical or electrical connection to the external circuitry.	SEMI G5, G22, G33, G61
contact potential difference, (V_{cpd})	potential measured by a Kelvin or Monroe probe that results from the potential difference between two metals or between a semiconductor and a metal, due to their difference in work function. Also called *surface voltage (V_{surf})*.	SEMI M59
contact profilometry (CP)	an instrument used to measure a surface's profile in order to quantify its roughness. A diamond (or sapphire) stylus moves vertically while in contact with a sample as either the stylus or the sample are moved laterally for a specified distance and with a specified contact force.	SEMI C87
contact X-width (or contact Y-width)	width in X (or Y) of the smallest rectangle along X (or Y) encompassing the contact.	SEMI P43
container	a durable that is used to hold other material, including other containers, for transport, storage, or shipping. Types of containers include carriers and boxes.	SEMI E98
container	a lecture bottle, cylinder, cylinder pack, drum or any other vessel which is used to supply a specialty gas.	SEMI C52
container lid	a material used to prevent the wafers from jumping out of main body and from being contaminated.	SEMI G90, G94
container main body	bottom material on which wafers and other materials are stacked.	SEMI G90, G94
container object	an object that is intended to hold other types of objects. The contents may or may not be ordered.	SEMI E39
contaminant	an undesirable substance on the wetted surfaces of ultra high purity chemical delivery systems and components that can be transferred to the process fluid.	SEMI F114, F115
contaminant	(solvent residue, wax residue, film, mottled surface, smudge): surface feature that cannot be removed by the pre-inspection (non-etching) cleaning.	SEMI M10
contaminant signature	typical baseline performance of a specific sample point within a large distribution system with respect to its O_2 impurity concentration. This is considered to be a normal and acceptable impurity level.	SEMI F35
contaminated	having come into contact with chemicals including greases/oils, gases, and water.	SEMI S12
contamination	three-dimensional alien material adhering to a surface.	SEMI G53, G62, F73
contamination	the presence of extraneous material that renders a substance undesirable on the wafer surface.	SEMI HB9
contamination, area	a type of extended light scatterer resulting from foreign matter, such as chuck marks, finger or glove prints, stains, wax or solvent residues, etc., unintentionally added to the surface of a wafer.	SEMI M59
contamination, particulate	a particle or particles on the surface of a wafer.	SEMI M59

Term	*Definition*	*Standard(s)*
content (of a lesson)	what a performer needs to know or understand in order to practice a task successfully. Often this part of the lesson is labeled theory, information, data, description, concepts, or background.	SEMI E150
content map	ordered list of reticle identifiers corresponding to slot 1,2,3…n.	SEMI E109
contents	an object that is in a container. Examples: a wafer in a cassette, a book in a library.	SEMI E39
context	a series of attributes that uniquely identifies a manufacturing entity (e.g., wafer, lot, module, tool, reticle) and its status in the manufacturing operation.	SEMI E133
context data	data which identify a specific manufacturing process or a sub process and the substrate which is processed and its location within the manufacturing equipment.	SEMI E54.24
context management	network-accessible information (communication objects) that supports managing the operation of the system, including the application layer.	SEMI E54.14, E54.20
context matching (CM)	the process of comparing and matching the values of a set of attributes that represent the state of a system (e.g., process, product and equipment) to a set of stored or computed values. This is usually done so that a unique action can be specified by the context matching system.	SEMI E133
contingency	a reserve of funds, time, and/or material that is allocated to maintain schedule and budget. A reserve for scope changes, unforeseen site conditions, change in material prices, or unanticipated events.	SEMI E70
continuous air sampling	performing instantaneous air sampling at a frequency of at least once each fifteen minutes.	SEMI S6
continuous (in-line) blending	the process of chemical blending where the chemical constituents are combined in-line and are immediately available for use.	SEMI F39
continuous downtime event	an event that starts when an equipment system transitions into a downtime state from an uptime state or the nonscheduled state (NST) and ends when an equipment system transitions from a downtime state. For example, a transition from the productive state (PRD) to a downtime state starts a continuous downtime event. A continuous downtime event continues through state transitions from a scheduled downtime state (SDT) to an unscheduled downtime state (UDT) or vice versa.	SEMI E10
continuous handoff	successive handoffs of two carriers. Continuous handoff is in series, meaning one carrier transfer occurs and is then immediately followed by another. The continuous handoff may involve: load and load, unload and unload, or unload and load operations.	SEMI E84
contract award	notification to the successful bidder and subsequent signing of contract documents.	SEMI E70
contractor	a licensed company hired to accomplish a contractually specified scope of work.	SEMI E70
contractor	a company hired to accomplish a contractually specified scope of work, such as constructing a facility or providing service.	SEMI S24
contrast	in microscopy, the ratio of the transmittance or reflectance of two different areas on the specimen.	SEMI MF728
contrast (of a light beam), C_L	a measure of the degree of linear polarization of a light beam given by the ratio of the linearly polarized light power in the maximum direction to that in the minimum direction.	SEMI MF1763
contrast (of a polarizer), C	ratio of maximum transmission through a polarizer to minimum transmission when the polarizer is rotated in a light beam of infinite contrast.	SEMI MF1763
contrast ratio	the ratio between the maximum and minimum luminance when two polarizing films are set parallel and perpendicularly to one another while a sample to be tested is placed between them.	SEMI D63
contrast ratio	the ratio of the luminance of the brightest gray on the center point of the screen to that of the darkest gray on the same point of the screen.	SEMI D64
contrast ratio	ratio of the reflectance factor of the white state to that of the black state.	SEMI D68
contrast ratio	ratio of the device under test brightness at white state to that at black state.	SEMI D72
control	to exercise directing influence.	SEMI E30

Term	*Definition*	*Standard(s)*
control and information protocol (CIP)	the common network, transport and application layers shared by EtherNet/IP and DeviceNet.	SEMI E54.13
control connection area	an area to be used for placement of connectors for electrical signals, power supplies, and other inlets/outlets.	SEMI E92
control device (of a machine)	a device connected into the control circuit and used for controlling the operation of the machine (e.g., position sensor, manual control switch, relay, magnetically operated valve, etc.).	SEMI S22
control job	defines a unit of work on equipment for one or more carriers. The work is described by a set of one or more process jobs to be applied to the material contained in the carriers.	SEMI E94, E168.1
control message	an HSMS message used for the management of HSMS sessions between two entities.	SEMI E37
control of hazardous energy	the practice by which personnel are protected from unexpected starting and release of hazardous energy during maintenance and service.	SEMI S30
control of hazardous energy (CoHE)	the practices and procedures necessary to disable equipment, thereby preventing the release of hazardous energy (e.g., electrical, mechanical, hydraulic, pneumatic, chemical, thermal) while employees perform maintenance and service.	SEMI S19
control product	a sample component that gives consistent, stabilized counts at or below the expected counts from the test components. The product is run periodically in accordance with the test protocol to assure that the system is not contributing particles significantly different from expected levels. In the absence of a control product, a spool piece can be used as a control product of low particle emission rate.	SEMI F43
controlled condition	when related to flammable silicon compounds, a condition in which the chemical is controlled within the confines of an approved piping system with controls that can determine if the safe parameters of the piping system have failed.	SEMI S18
controlled work area	a space within a building where HPM's may be stored, handled, dispensed, or used.	SEMI F6
controller	a system that provides control (performs required operations when certain conditions occur or when interpreting and acting upon instructions) and communicates with a higher level manager. Controllers exist at all levels within a factory.	SEMI E99, E118
controller	a system that performs required operations when certain conditions occur or when interpreting and acting upon instructions and that communicates with a higher level manager.	SEMI S28
Controller Area Network (CAN)	a protocol developed by the Bosch corporation for automotive in-vehicle networking. ISO 11898-2 specifies OSI reference model layers 1 and 2, specifically the physical signaling and media access/data link protocols.	SEMI E54.4
convenience receptacle	an electrical outlet provided on the equipment, which does not have any load connected to it during the normal operation of the equipment, but is intended by the equipment manufacturer to be used to power a piece of maintenance or service equipment.	SEMI S22
conventional gas delivery system	a gas delivery system utilizing tubing and standard face-seal type weld fittings joined together with components (filters, valves, regulators, pressure transducers, MFCs etc.) using orbital tungsten inert gas (TIG) welding.	SEMI E186
Conventional Recipe Space	an existing recipe space on the equipment, which is normally used by every user, including the host, for various purposes such as equipment installation, process development and production operation.	SEMI E170
conventional system	a gas system utilizing tubing and standard face seal type weld fittings joined together using orbital TIG welding.	SEMI F74
conversation	a sequence of related messages.	SEMI E5
conversation timeout	an indication that a conversation has not completed properly.	SEMI E5
conversion factor	the ratio of the mass flow-rate of Gas A flowing through an MFC for a given setpoint to the mass flow rate of Gas B flowing through the same MFC and setpoint.	SEMI E77
conversion function	a relationship that describes the flow dependency of the conversion factor. The conversion function is graphically determined.	SEMI E77

Term	*Definition*	*Standard(s)*
conversion recipe	a recipe or portion of a recipe that describes the steps required for taking measurement data and reporting a result. This does not need to be a physically separate recipe.	SEMI E127
convexity	a condition in which the surface of a weld is extended relative to the surface of the tube or pipe. Convexity is measured as a maximum distance from the outside or inside diameter surface of a weld along a line perpendicular to a line joining the weld toes.	SEMI F78, F81
conveying surface	entire bottom surface of cassette (z15 above the horizontal datum plane), excluding the V-rail, V-groove, and float roller zones, for supporting the cassette on roller conveyors.	SEMI D17, D18
conveyor rails	features on the bottom of the cassette for supporting the cassette on roller conveyors.	SEMI D17, D18
conveyor rails	parallel edges on the bottom of the cassette for supporting the cassette on roller conveyors.	SEMI E1.9
conveyor rails	parallel surfaces on the bottom of the cassette for supporting the cassette on roller conveyors.	SEMI G77
cool plasma	the method to reduce interference of polyatomic ions of mainly argon origin by plasma generated with the low high-frequency power or high carrier gas flow quantity.	SEMI M85
coplanarity	a measure of the magnitude of how far out of an ideal plane a series of points is.	SEMI 3D12
coplanarity	the total indicator reading difference of the lead tips in the Z direction.	SEMI G2
copper core	the copper core is the base material of the connector ribbon without the solder coating.	SEMI PV18, PV19
cord connected equipment	equipment that is intended to be electrically connected to an electric supply by means of a flexible supply cord and attachment plug.	SEMI S22
corner angle, of a nominally square or pseudo-square Si wafer	the included angle between adjacent edge lines.	SEMI PV46
corner area deviation	the sum of corner area gain and corner area loss. As such it is a special case of clipped feature area deviation, in which the region of interest contains one corner of a feature.	SEMI P43
corner area difference	corner area gain minus corner area loss. As such it is a special case of clipped feature area difference, in which the region of interest contains one corner of a feature.	SEMI P43
corner area difference uniformity	the spread of the distribution of the corner area difference of all mask features selected.	SEMI P43
corner area gain	special case of *clipped feature area gain*, in which the region of interest contains one corner of a feature.	SEMI P43
corner area loss	special case of *clipped feature area loss*, in which the region of interest contains one corner of a feature.	SEMI P43
corner chamfer	the bevel found in one corner of the substrate, in excess of the edge chamfer.	SEMI P34
corner cut	removal of the corners of the substrate by either lapping or grinding. As with the orientation corner, this is defined by the X and Y dimensions, but generally, most corner cuts have a X and Y of the same length.	SEMI D9
corner defect	size of a corner defect in a contact (island) pattern, etc. is defined and expressed as 'width' and 'depth.' Depth is the distance between the intersection point formed by the bisection of the corner angle and the pattern, and the point designed.	SEMI P22
corner pull-back (CPB)	the distance between the reference corner and the actual feature contour. This may be based on the minimum distance (*minimum CPB*) or that determined along the bisectric (*bisectric CPB*). The choice of CPB technique is mandatory information.	SEMI P43
corner rounding	deviation of an actual feature corner from the nominal one.	SEMI P43
corner, of a substrate	any corner other than the orientation corner.	SEMI D12

Term	*Definition*	*Standard(s)*
corner, of nominally square or pseudo square Si wafer	the intersection of adjacent edge lines.	SEMI PV46
corona temperature stress, (CTS)	a bias temperature stress in which the bias voltage is supplied by a corona discharge of known charge and voltage applied to the top surface of a dielectric layer on a silicon wafer whose temperature is maintained at a defined level for a specified time.	SEMI M59
correction	the mathematical compensation for outside forces, such as gravitation.	SEMI 3D12
corrective maintenance	corrective (e.g., repair) actions, typically the result of troubleshooting, necessary to change the equipment from an unscheduled downtime state to another equipment state in preparation for it to be capable of performing its intended function (e.g., running production units). Also sometimes called unscheduled maintenance.	SEMI E149
correlated color temperature (CCT)	a term used to describe the color of a light source whose chromaticity lies close to the Planckian (black body) locus on a CIE 1960 chromaticity chart. Specially, it is the temperature of a black body radiator which produces the chromaticity most similar to that of the light source evaluated. It is usually expressed in degrees Kelvin.	SEMI D36
correlated color temperature (CCT)	a term used to describe the color of a light source whose chromaticity lies close to the Planckian (black body) locus on a CIE 1960 chromaticity chart. In general, it is the temperature of a black body radiator which is the most similar to chromaticity of the evaluated light source and it is expressed in degree Kelvin. CCT is used to adjust white balance.	SEMI D71
correlation	relation of measurement results obtained by repeated measurements with the same set of test specimen(s) and any two measurement systems expressed in terms of a regression curve.	SEMI M59
corrosion	electrochemical degradation of the material usually exhibited by discoloration such as rust.	SEMI G53, G62
corrosive	a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. A chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described in the U.S. Department of Transportation in Appendix A to 49 CFR 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.	SEMI S4
corrosives	a chemical that causes visible destruction or irreversible alterations by chemical action at the site of contact.	SEMI F51
cosine-corrected BRDF	the BRDF times the cosine of the scatter polar angle.	SEMI ME1392
cosine-corrected BRDF	the scattered power per unit solid angle divided by the incident power.	SEMI PV15
cost footprint	the area (A) of the smallest horizontal rectangle that contains all of the shadow footprint and half of the easement space around a tool (for use as the floor space metric in Cost of Ownership calculations).	SEMI E72
cost footprint rectangle area, Acf	the area of the cost footprint rectangle, calculated as (*Dcf* × *Wcf*).	SEMI E35, E140
cost of equipment ownership (CEO)	a factor in cost of ownership that includes all costs not associated with yield loss.	SEMI E35
cost of ownership (COO)	full cost of embedding, operating, and decommissioning in a factory environment equipment needed to accommodate the required volume of units actually processed through the equipment.	SEMI E35, E140
cost of ownership (COO)	the total lifetime cost associated with acquisition, installation, and operation of fabrication equipment.	SEMI E70
cost of yield loss (CYL)	a unit lost at the end of a given step represents the loss of the cost of the starting unit and the manufacturing to that point. In addition, units leaving a step can be lost at some later step. Calculating CYL therefore requires knowing the starting unit cost and the accumulated cost of manufacturing before the unit is lost. Therefore, CYL should be tracked as a separate cost for factory optimization.	SEMI E35, E140

Term	*Definition*	*Standard(s)*
counting efficiency	the ratio (in %) of detected concentration divided by the actual concentration of particles of a given size or range of sizes.	SEMI E104
counting efficiency	the ratio of the concentration of particles reported by the CNC to that reported simultaneously from the same aerosol by a reference instrument.	SEMI F54
counting efficiency	the ratio of the particle concentration calculated from the particle counts to the actual particle concentration in the sampled gas for particles equal to or larger than a given particle size.	SEMI F70, F70.1
counting interval	the time increment over which the number of particles is recorded.	SEMI F104
coupon	weld sample which is inspected to insure that the weld meets specifications.	SEMI F78, F81
coupon-in	first coupon prior to production welding.	SEMI F78
coupon-out	last coupon after production welding.	SEMI F78
cover glass	in microscopy, a thin glass plate that is placed over the specimen.	SEMI MF728
cover, of a wafer shipping box	the portion of the box which closes at the top of the base.	SEMI 3D3
cover, of a wafer shipping box	the portion of the box which closes the top of the base.	SEMI T3
Cr/Fe Ratio at 10 Angstroms	the ratio of the Chromium concentration to the Iron Concentration taken at 10 Angstroms from the initial surface from the depth profile analysis.	SEMI F60
Cr/Fe ratio at 10 angstroms	the ratio of the chromium atomic concentration to the Iron atomic concentration at 10 angstroms (1 nm) from the initial surface, determined from the depth composition profile.	SEMI F72
crack	a fissure located at the sheet edge area or central area.	SEMI D9
crack	a cleavage or fracture that extends to the surface of a semiconductor package or solder which may or may not pass through the entire thickness of the package or preform.	SEMI G1, G3, G22, G26, G33, G34, G58, G61
crack	a cleavage or fracture, internal or external.	SEMI G39, G50
crack	a cleavage or fracture which extends to the surface of the lid or through the preform.	SEMI G53
crack	an opening in the wafer surface due to internal strain.	SEMI HB9
crack	cleavage or fracture that extends to the surface of a slice. It may or may not pass through the entire thickness of the slice. Often cracks are caused by the improper handling of wafers.	SEMI M10
crack	cleavage or fracture that extends to the surface of a wafer.	SEMI M59, M92, PV39
crack (of leadframe)	micro cleavage or fracture on surface of outside of lead which is caused by bending.	SEMI G65
cracked reference PV module (a reference module)	PV modules in which positions na dlength of cracks are known beforehand.	SEMI PV60
crater	surface feature with irregular closed ridges and smooth central regions.	SEMI M59
creep	a measurement of the seating action of the regulator.	SEMI F101
creepage distance	the shortest path between two conductive parts normally carrying current or between a conductive part normally carrying current and a conductive part that is bonded to the protective earthing system, measured along the surface of the insulation.	SEMI S22
crevice corrosion	corrosion at a cavity between adjoining pieces or at the edge of a seal or masking paint. The chemical mechanism of crevice corrosion is similar to that of pitting, the cavity being a ‘preformed’ pit.	SEMI C92, F119
crevice corrosion	corrosion in a narrow opening between adjoining pieces or at the edge of a seal or masking paint.	SEMI F120

Term	*Definition*	*Standard(s)*
Criterion-Referenced Instruction (CRI)	the Criterion-Referenced Instruction (CRI) framework developed by Robert Mager is a comprehensive set of methods for the design and delivery of training programs.	SEMI E150
critical chamber component	any component of the processing equipment that is in line of sight to the wafer in the process environment during processing and that: (1) is in physical contact with wafer (e.g., pedestal, mechanical clamp), (2) feeds gases, reagents, or liquids to the wafer (e.g., shower heads, gas inlets, nozzles), (3) sputters materials on or implants materials to the wafer; or (4) is shielding or chamber parts that have risk of transferring contaminants (e.g., particles, metals, molecules) to the wafer.	SEMI E180
critical controls and displays	manual controls (actuators) that are intentionally provided to reduce risk to personnel, equipment, or the environment to Low or Very Low (see SEMI S10) in response to a malfunction. Examples of critical controls include, but are not limited to: EMI actuators, emergency gass off actuators, and emergency stop actuators.	SEMI S8
critical crack length	the depth of penetration of the narrow split between bonded wafers that occurs at the maximum applied load, after which, an unstable fracture process results and the propagation of this narrow split accelerates.	SEMI MS3, MS5
critical dimension (CD)	the TSV opening based on the length of the minor diameter at various depths within the TSV opening.	SEMI 3D1
critical dimension (CD)	a user defined feature width of interest, mainly used for further qualification. The critical dimension can be plural. DEFAULT CD is one width and one pitch. Mandatory information is the nominal feature width and pitch.	SEMI P43
critical dimension at 90% depth	critical dimension (length of minor diameter) at an intermediate depth of 90% of the depth of the TSV.	SEMI 3D1
critical dimension measurement SEM (CD-SEM)	selects fine patterns on a wafer and measure dimensions. Here, wafers include SEMI Standards (defined sizes) only. The operation is normally in the following ‘sequence’: Transport -> Stage travel -> Positioning -> Measuring -> Transport.	SEMI P30
critical pitting temperature (CPT)	the lowest temperature at which stable propagating pitting occurs on the test surface under the specified test conditions, as indicated by a rapid increase beyond a specified limit of the measured anodic current density of the test surface.	SEMI F77
critical pitting temperature (CPT)	the lowest temperature at which pitting occurs on the test surface under the specified test conditions.	SEMI C92, F119
critical pitting voltage	the lowest electrochemical potential at which stable propagating pitting occurs on the test surface under the specified test conditions, as indicated by a rapid increase beyond a specified limit of the measured anodic current of the test surface.	SEMI F120
critical seal area	the area bound by the shortest line from the cavity corners to the ceramic edge.	SEMI G1, G34
critical seal area (ceramic), on a semiconductor package	the area bounded by the shortest nominal design distance from the largest cavity, usually the wire bond cavity, to the edge of the package or ceramic layer forming the seal area.	SEMI G58, G61
critical seal area (metallization or metal ring)	the entire area of the seal ring; it applies to plated refractory metal or a metal ring.	SEMI G61
critical seal path	the nominal design distance across the critical seal area from the die cavity to ceramic edge.	SEMI G34
critical seal path (ceramic), on a semiconductor package	the shortest nominal design distance from the largest cavity, usually the wire bond cavity, to the edge of the package or ceramic layer forming the seal area.	SEMI G61
critical side	major side intended for patterning. The critical side has no chamfered corner(s), and has flatness requirement equal or better than the non-critical side.	SEMI P34
critical task	task that demonstrates the specific basic, intermediate, or advanced skills and knowledge required to install, operate, maintain, troubleshoot, or repair the equipment.	SEMI E149

Term	*Definition*	*Standard(s)*
critical wafer bond toughness	the material parameter used to characterize the bond strength between two materials at their interface expressed in terms of energy per unit area.	SEMI MS3, MS5
critical WIP	the theoretical cycle time multiplied by the bottleneck throughput rate (gives the WIP level that theoretically allows the factory to have the highest throughput rate with the shortest cycle time).	SEMI E124
cross	a cross consists of two bisecting lines perpendicular to each other. The large and small crosses are relative to each other in size.	SEMI P48
crossbar	the mass of material connecting the two sides of the carrier at the bar end of the carrier.	SEMI E1
crossbar	the mass of material connecting the two sides of the cassette at the bar end of the cassette.	SEMI HB2
crossbow	transverse bowing of the leadframe.	SEMI G9, G19, G27, G28, G41, G51, G70
crossed factor(s)	two factors are crossed when every level of one factor appears with every level of the second factor.	SEMI E89
cross-sensitivity	the response of a sensor to a gas other than the primary gas(es) specified on the data sheet.	SEMI MS14
Crow's foot	intersecting cracks in a pattern resembling a 'crow's foot' (*Y*) on (111) surfaces and a cross (+) on (100) surfaces.	SEMI M59
CrOx/FeOx Ratio	the ratio calculated from the peak areas of only the oxide species of each element from the high resolution data of the as-received surface.	SEMI F60
CRTU Prediction	the process that detects and reports the CRTU Prediction Event to the host.	SEMI E87
CRTU Prediction Event (Prediction Event)	the event that a carrier has been estimated to come CRTU within specified time later.	SEMI E87
cryogenic liquid	liquid with a normal boiling point below −150°C.	SEMI C3
cryogenic vacuum pump (CVP)	an entrapment vacuum pump device operating by the condensation, adsorption, and/or trapping of gas molecules on surfaces cooled to sufficiently low temperatures.	SEMI E54.18
cryptographic algorithm	a transformation of meaningful data into some meaningless data, a process called encryption. If the transformation is reversible, then the reverse process is called decryption. Typically it is computationally difficult to correctly decrypt the data without knowing both the algorithm used and some additional information, referred to as keys.	SEMI E132
crystal defect	departure from the ideal arrangement of atoms in a crystal.	SEMI M59
crystal originated particle (COP)	original, but now known to be incorrect, name for the grown-in defect on polished silicon surfaces properly called crystal originated pit (COP), which should be seen.	SEMI M59
crystal originated particle/pit (COP)	a pit of approximately 100 nm in size bounded by crystallographic planes, and formed by the intersection of the polished surface with voids in the crystal.	SEMI E146
crystal originated particles (COP)	this is one of the grown-in defects of CZ silicon wafers with an octahedral structure. It was discovered as particles appeared on the silicon surface during repetitive RCA SC-1 cleaning.	SEMI M51
crystal originated pit (COP)	a small pit with an octahedral structure or plurality of such small pits introduced during crystal growth that act as an LLS when they intersect the surface of a wafer. Because they act in some ways similarly to particles when viewed with an SSIS, this defect was originally called a crystal originated particle. Modern SSISs can, however, generally distinguish COPs from particles. Surface cleaning or light etching frequently increases the size and number of COPs observed, when they are present.	SEMI M59
crystalline silicon wafer etch	the phenomena that silicon surface material is destroyed, due to chemical reaction with around liquid in the wafer cleaning step.	SEMI PV67
crystallite	any part of the wafer, having an arbitrary orientation of its crystallographic axis in respect to the monocrystalline part of the wafer.	SEMI M55, M79, M86
crystallographic notation	a symbolism based on Miller indices used to label planes and directions in a crystal.	SEMI M59

Term	*Definition*	*Standard(s)*
cull	a hardened resin pool that remains in the resin injection port when powdered mold resin is molded by a molding machine.	SEMI G99, G102
cullet	small transparent glass particles that are adhered or fused to the glass substrate surface.	SEMI D9
cumulative distribution function (CDF)	mathematical formula that describes the probability a measurable event occurs at or below a specific value.	SEMI E35, M59
cumulative false count rate (CFCR), of an SSIS	number of false counts of size S_f, or larger, that are expected to be recorded by the SSIS at some specified operational setting as a function of S_f. CFCR may be found by averaging false counts over multiple scans.	SEMI M59
cumulative report	report showing the history of the evaluation, including initial findings, requests for further information, changes to the ME in the course of evaluation, and subsequent findings.	SEMI S27
cumulative trauma disorder	a disorder which results from the accumulation of stresses (e.g., forces, repetitive movements, etc.) to a body part over a period of time.	SEMI S8
current voltage IV measurements	electrical measurements where the current through the rectifying barrier is measured as a function of applied bias.	SEMI M46
current-voltage (I-V)	the current-voltage curve of a test sample is the superposition of the curve with the light/dark-generated current.	SEMI PV69, PV76, PV89
curvature of lattice	curvature of the principle crystal plane associated with the intended epitaxial surface of the wafer, which may differ from the surface bow. Lattice curvature consists of the orientation change of the normal of this crystal plane as a function of position on the wafer. It must be measured using X-ray diffraction (e.g., via multiple on-axis rocking curve scans), and is typically expressed as a radius of curvature, typically expressed in units of m.	SEMI M86
cushion material	an in-between material inserted main body, wafers, and lid.	SEMI G90, G94
cushions	materials placed between the wafer shipping box and secondary container in order to absorb shock during shipping and to stabilize the wafer shipping box within the secondary container.	SEMI 3D3, M45
custom.ritdb	a spec.ritdb file with custom specification definitions.	SEMI E183
customer	an individual or a company who uses this Standard.	SEMI PV23, PV38
customer information field	a 35-character field containing the customer product ID and, if desired, other customer assigned information.	SEMI T3
customer product ID	a unique combination of alphanumeric characters assigned by a customer or purchaser to identify a product.	SEMI T3
customer risk	risk of accepting material that is outside the user customer specifications.	SEMI M59
cutoff	a length selected to limit the spacing of surface irregularities. It separates a surface's roughness from its waviness.	SEMI F37
cycle	one complete operational sequence (including unit load and unload) of processing, manufacturing, or testing steps for an equipment system or subsystem. In equipment systems that process units individually, the number of cycles equals the number of units processed. In equipment systems that process units in batches, the number of cycles equals the number of batches processed.	SEMI E10
cycle	a data acquisition set for a specific set poit. There are two categories of cycles: increasing and decreasing direction with respect to the set point value. It can be visualized as ¼ of the typical definition of cycle where the start and end points are the same.	SEMI E56
cycle	a repeating sequence of setpoints applied to the MFC.	SEMI E67
cycle	a period of time in which a set of events is completed.	SEMI E151
cycle purge	a procedure which employs alternating cycles of vacuum and pressure for the purpose of evacuating a gas system or a portion of a gas system of impurities or active gases.	SEMI F76

Term	*Definition*	*Standard(s)*
cycle time	the amount of time a unit of production spends as WIP in the factory.	SEMI E124, E168
cycle time, gross installation	total time to install and commission process equipment, typically starting from dock date to release for vendor startup.	SEMI E70
cycle time, net installation	actual time devoted to construction activities related to tool hookup from dock date to ready for inspection.	SEMI E70
cyclic data ASE	a service element used to access data on a cyclic basis.	SEMI E54.23
cyclic transmission	function to transmit the data from master station to all stations periodically, then for each station to transmit the response data to master station.	SEMI E54.12
cyclic transmission	transmission performed periodically.	SEMI E54.23
cylinder	a pressure vessel designed for containing chemicals at a pressure higher than 276 kPa [40 pounds per square inch absolute (psia)] and having a circular cross-section. It does not include a portable tank, multi-unit tank car tank, cargo tank, or tank car. It also refers to non-DOT low pressure containers used for liquid product having low vapor pressure.	SEMI S4
cylinder	a pressure vessel designed for pressures higher than 276 kPa (40 psia), having a circular cross-section, and a maximum water capacity of less than 454 kg (1,000 lbs). It does not include a portable tank, multi-unit tank car tank, cargo tank, or tank car.	SEMI F4
cylinder pressure	pressure contained in a gas cylinder prior to regulation.	SEMI C3
cylinder tare weight	containers which are stamped to denote the weight of the container or the weight of the container and the valve less the product. The weight does not include the weight of any protective cylinder cap.	SEMI C3
cylinder valve	a mechanical device attached to a compressed gas cylinder that permits flow into or out of the cylinder when the device is in the open position and prevents flow when in the closed position.	SEMI F4
damage	destruction or unintentional alteration resulting in a liability.	SEMI E70
damage	a defect of the crystal lattice of a single crystal silicon specimen in the form of irreversible deformation resulting from mechanical surface treatments such as sawing, lapping, grinding, sandblasting, and shot peening at room temperature without subsequent heat treatments.	SEMI M59
damage depth (T_z)	the maximum thickness of the damage region.	SEMI M59
damage-free polishing	a method of preparing a surface of a silicon specimen without creating any mechanical damage detectable by this method.	SEMI M59
dark line defect, on a Si wafer	an area on a Si wafer with a high density of defects, mainly grain boundaries, appearing as dark lines in a PL image.	SEMI PV51
data application server (DAS)	software acting at the TEMS message server.	SEMI A4, A4.1
data block	a group of data which represents A1 HC communication signals which shall be transferred at a same time as one message for synchronization purpose.	SEMI A1.1
data cache	unit within an IT system or FMCS being responsible for buffering data usually with the focus of performance optimization.	SEMI F97
data collection plan (DCP)	the plan to acquire necessary data from the equipment.	SEMI E147
data compaction	expressions for reducing the data of repetition, modality, etc.	SEMI P44
data consumer	a software entity that manages data collection plans and collects data from the equipment through the EDA interface. In this document, the data consumer is the ‘client’ for data collection and is used interchangeably.	SEMI E147
data element node	an XML node describing a data element on the interface.	SEMI PV55
data exchange	a capability to communicate such data for a device as raw/processed sensed data and variable settings.	SEMI E54.17
data field	field (area) for adding a bar code to a product package.	SEMI G83

Term	*Definition*	*Standard(s)*
data field	a specific portion or area of a label designated to contain a human-readable interpretation, a bar code symbol, or a two-dimensional matrix code symbol.	SEMI T3
data field	a specific portion or area of a label designated to contain a human readable interpretation, and/or a Data Matrix.	SEMI T20.1
Data Handshake	a handshake to transfer General Data.	SEMI A1, A2, A5
data identifier	a specified character or character string that defines the category or intended use of data that follows.	SEMI T3, T20.1
data identifier (DI)	a specified character string that defines the specific intended use of the data that immediately follows. The identifier shall be an alphabetic character or an alphabetic character preceded by up to three numeric characters as defined by ANSI MH10.8.2 and ISO/IEC 15418. A character (or set of characters) within a machine-readable symbol that defines the general category or specific use of the data that is encoded in the same machine-readable symbol.	SEMI T20.1
data link mapping protocol machine	a protocol layer that provides an interface to the Application Layer Protocol Machines by translating service requests and responses between the Application Layer and the Fieldbus Data Link.	SEMI E54.8
data matrix code symbol	a two-dimensional array of square cells arranged in contiguous rows and columns. In certain ECC200 symbols, data regions are separated by alignment patterns. The data region is surrounded by a finder pattern. [ISO/IEC 16022]	SEMI T7, T8, T9, E118, T14, T14.1, T19, T24, PV29
data message	an HSMS message used for communication of application-specific data within an HSMS session. A Data Message can be a Primary Message or a Reply Message.	SEMI E37
data parameter	an item of data. In the context of this specification, a data parameter is a value or set of values that can be reported by the equipment to describe current status or describe an event that occurred on the equipment.	SEMI E157
data report	a data report is a list of attribute names for a single object. Data reports may be pre-defined by a factory object or defined dynamically by the service user.	SEMI E53
data report	a list of attributes for a single object. Data reports may be pre-defined.	SEMI E54.24
data source	a physical or logical entity associated with the equipment that is capable of providing data values independently of other equipment entities.	SEMI E134
data type	an unsigned short integer formatted as an enumerated byte to specify attribute data format. The intended use of this attribute type is in cases where an attribute, or set of attributes, may be defined allowing for more than one level of support (e.g., INT or REAL).	SEMI E54.1, E54.10, E54.22
data units	an unsigned integer formatted as an enumerated byte to specify attribute data units. The intended use of this attribute type is in cases where an attribute, or set of attributes, may be defined, allowing for more than one unit's context.	SEMI E54.1, E54.10, E54.22
database	a database is a system that provides data management services to the user. Those services include; data storage, data retrieval, security, and data integrity.	SEMI E36
datalog	the collection of information that is collected during the application of test. It consists of information collected from the device, the environment and the equipment that is sued to apply the test.	SEMI G91
datalog	collection of results of individual test measurements gathered during the execution of the test program.	SEMI E122
date	a data structure of four bytes used to represent a calendar date.	SEMI E54.1, E54.22
Datum Line of an Equipment Opening Plane; Y-axis	a line parallel to a front of the opening plane and tangent to the bottom of the opening plane.	SEMI D44, D48
Datum Point	intersection of IDL and IDS. Intersection of IDL1 and IDS1, or IDL2 and IDS2.	SEMI D48

Term	*Definition*	*Standard(s)*
Datum Point 1	intersection of LRE1 and SRE1 on the orientation corner side.	SEMI D44, D48
Datum Point 2	intersection of the Substrate Center Line and either SRE1 or LRE1.	SEMI D44, D48
Datum Point 2A	intersection of the Substrate Center Line and either SRE2 or LRE2 (located on the opposite side of the datum point 2).	SEMI D44, D48
day tank	a vessel that stores that amount of chemical which may be consumed without one of more days.	SEMI F31
day tank	a chemical storage vessel, of appropriate material(s), used to store a volume of product chemical that could be consumed in one or more days.	SEMI F46
dead band	the range through which a set point may be varied, upon reversal of direction, without initiating an observable change in output signal.	SEMI E56, E69
dead end distribution	a distribution circuit design that terminates without circulating the process fluid back to the point of origin.	SEMI F31
dead time	the interval of time between the set point step change and the start of the resulting observable response.	SEMI E17
dead volume	sections or volumes in a flow path where a fluid can fill but is not easily available or returned into the flow stream. The fluid in these areas becomes stagnant and purging of the fluid is very inefficient. Not the same as hold-up volume.	SEMI MS3, MS6
dead zone	areas within a component, system or ME that are inaccessible and where contaminants tend to collect.	SEMI S12
debond	a process where two bonded wafers are separated.	SEMI 3D8
decision authority	an entity requiring to be notified of significant exception condition changes and which decides how to proceed to resolve abnormal situations related to recoverable error conditions. The decision authority may be represented by a supervisory controller interacting with an operator who may ultimately choose the recovery action.	SEMI E41
decision tree	an intuitive and easily understood representation of an inductive decision procedure used during troubleshooting to determine the root cause associated with a given problem.	SEMI E149
decolorant	the absence of a color element in a normally tri-colored pixel. This may occur in a partial area of one pixel.	SEMI D13
decommission	to remove manufacturing equipment from active service.	SEMI S12
decommissioning	the process of removing equipment from service for disposition by sale, storage, or disposal.	SEMI S13
decontaminate	to reduce known hazards, primarily chemical residues, to a level that is acceptable as defined by local regulations or industry practice.	SEMI S16
decontamination	cleaning up of a BCDS, or any subsystems thereof, by introducing DIW, UPW or chemical solutions into the piping systems.	SEMI F31
decontamination	the reduction or elimination of hazardous materials from personal or real property.	SEMI S12
dedicated truck	exclusive drayage of a shipment.	SEMI E70
de-energization (for an energetic material)	the removal or conversion of residual energetic process chemicals or energetic byproducts so that acceptable risk is achieved. This could include a ‘bake-out’ step of the lines or intentionally introducing small amounts of a material that will cause a controlled reaction in order to mitigate the risks when the lines or components are opened.	SEMI S30
deep reactive ion etching	a time multiplexed process that includes etch and deposition steps that enable fast anisotropic etching of silicon.	SEMI MS13
deep reactive ion-etch (DRIE)	a dry-etch process used to create high-aspect-ratio structures in silicon.	SEMI MS3

Term	*Definition*	*Standard(s)*
deep-level impurity	chemical element that when introduced into a semiconductor has an energy level (or levels) that lies in the mid-range of the forbidden energy gap, between those of the dopant impurity species. Certain crystal defects and complexes may also introduce electrically active deep levels in the semiconductor.	SEMI M59
default object	the object assumed when no object specifier is supplied.	SEMI E53
default substrate ID (default ID)	the substrate ID assigned to the substrate when no substrate ID information is given by the user but the carrier ID for the source carrier is known. The default ID is the combined text of the source carrier ID and the slot number.	SEMI E90
defeat	in the context of safety circuits or safety interlocks, to modify or block a control circuit or actuator so it cannot perform its safety function. Defeating might be authorized or unauthorized.	SEMI S28
defect	a pattern that is not repeated, such as a scratch, dimple, void, pit, crack, etc.	SEMI C78, C87
defect	pinholes, cracks and scratches of the surface of plastic films with high gas barrier.	SEMI D78
defect	(1) a physical, optical, chemical, or structural irregularity that degrades the ideal substrate structure or the thin films built over the substrate. (2) An undesirable classified anomaly.	SEMI E30.1
defect	any surface feature that is either characteristic of the material, or a result of material processing or product fabrication, that is deemed capable of generating and/or trapping and releasing particles, or otherwise be detrimental to the contained fluids.	SEMI F73
defect	unintentional and undesirable irregularity in the part surface that could affect system performance. Examples of such defects include cracks, inclusions, blistering, dents, pits, stringers and scratches.	SEMI F19
defect	the observed unwanted characteristics of photovoltaic module by electroluminescence inspections, such as concentric circles, black edges, dark spots, bright spots, cracks, and finger interruptions.	SEMI PV94
defect classification	the categorization of defects according to some systematic division based on their physical, optical, chemical, or structural properties.	SEMI E30.1
defect cluster, on a Si wafer	an area on a Si wafer with a high density of dislocations and other defects.	SEMI PV51
defect concentrated area	the surface area where the point and planar surface defects are concentrated.	SEMI HB9
defect inspection information	the information gathered with mask defect inspection tools, such as defect position and shape.	SEMI P41
defect limited yield (DLY)	the fraction of units that are not lost from defects added by the equipment. For wafer processing, defect yield is usually derived from a model.	SEMI E35, E140
defect luminescence lines	those features arising from defect structures in the silicon.	SEMI MF1389
defect recognition	to distinguish and mark the characteristics of defects in electroluminescence images.	SEMI PV94
defects	imperfection of c-Si like broken cell, crack or micro-cracks, cell with chips, holes in cells, etc.	SEMI PV38
defects	the damage of package or the imperfection of c-Si like broken cell, crack or micro-cracks, cell with chips, holes in cells, etc.	SEMI PV56
defects, photomask	any flaw or imperfection in the opaque coating or functional pattern of a photomask that will reproduce itself in a photoresist film to such degree that it is pernicious to the proper functioning of the microelectric device being fabricated.	SEMI P2, P3
deflection	a change in shape induced by an outside force, for instance by gravitation.	SEMI 3D12
deflection δ	distance over which the top or bottom surface of the test specimen at midspan deviates from its original position during flexure. It is expressed in millimeters (mm).	SEMI G86
deflection L	distance over which bottom surface of the test specimen at fixed point deviates from its original position during flexture.	SEMI G96

Term	*Definition*	*Standard(s)*
defocus	the distance, perpendicular to the image plane, between the processed image plane and the plane of best focus.	SEMI P25
degasification	the removal of a certain amount of volatile compounds dissolved in water.	SEMI F61
de-gassing	the removal of collected gasses from liquid chemical or DIW streams.	SEMI F31
degradation	a chemical reaction leading to the reduction to a simpler molecular structure. Sometimes also called chemical breakdown.	SEMI F51
degradation (of PPE)	mechanism of deterioration of a material due to chemical reaction with a substance.	SEMI S30
de-installation	the process of disconnecting, disassembling, and moving semiconductor or FPD manufacturing equipment from its point of installation, including movement of assemblies and further preparation (e.g., isolating, decontaminating, component disposal) of chemically contaminated semiconductor or FPD manufacturing equipment for a safe move.	SEMI S24
deionization	the removal of undesirable ions from water.	SEMI F61
deionized water	(specified with specific resistivity ≥18 MΩcm, cations: Na, Fe, Ca ≤ 0.2 µg/l).	SEMI F51
delamination	in a co-fired ceramic package, chip carrier, pin grid array, etc., the separation of the individual layers of the ceramic.	SEMI G22, G61
delivery methods (delivery system)	the way in which the parts of a lesson are transferred and presented to a learner.	SEMI E150
delta beta, Δβ	the projection of $\Delta\beta$ onto the *XB-YB* plane, that is, the delta theta angle measured in direction cosine space.	SEMI ME1392
delta measurement	the ultrapure water (UPW) contaminant concentration difference between the inlet of the resin column and the outlet of the resin column.	SEMI C93
delta theta, Δθ	the angle between the specular direction and the scatter direction.	SEMI ME1392
demonstration	an essential part of every lesson in which the learner observes the task required by the lesson's objective. Also called, modeling.	SEMI E150
denial of service (DOS)	an attack that exhausts resources to prevent or impair the authorized use of networks, systems, or applications.	SEMI E169
dense features	features that influence each other (all that are not isolated). Clarification is required to describe the proximity, either by detailing the feature pitch and number of lines, for regular arrays (pitch = design values of line width and space width added), or by describing the surrounding area. In absence of such clarification dense is regarded by default as equal lines and spaces (or 'half pitch' in general) in a semi-infinite array size, insofar that the feature width does not exceed the proximity range.	SEMI P43
density	weight per unit volume (w/v) is expressed as grams per liter for gases at zero degrees Celsius, one atmosphere.	SEMI C3
density	a measure of the compactness of a substance, expressed as its mass per unit volume.	SEMI C96
density	mass per unit volume. Decided by the mass of the material's atomic composition and the volume (comparative capacity, mol capacity) which it occupies.	SEMI D9
dent	an isolated irregularity on the wetted surface made by an impact.	SEMI F19
denuded zone	a volume in a wafer, usually located just under the front surface, in which the oxygen content has been lowered so that the bulk microdefect (oxide precipitate) density is reduced.	SEMI M59
depletion condition	condition that exists in the semiconductor surface region when the free carrier density is insufficient to neutralize the fixed dopant charge density of donors and acceptors.	SEMI M59
deposition process	the procedure used to place the reference spheres on the reference wafer used to calibrate an SSIS.	SEMI M59
deposition rate	particle flux to a surface (number of particles deposited per unit area per unit time) divided by the particle concentration adjacent to the surface boundary layer. Sometimes called the deposition velocity.	SEMI E78, E129

Term	*Definition*	*Standard(s)*
deposition, for calibrating an SSIS	an approximately known number of reference spheres of known size distribution placed in a known location on the surface of a reference wafer.	SEMI M59
depth	the distance, measured from the wafer top surface vertically toward the wafer bottom surface, between the top surface and the deepest point of the TSV opening.	SEMI 3D1
depth	the distance, measured from the top surface vertically toward the bottom surface, between the top surface and the deepest point of the TGV opening.	SEMI 3D11
depth composition profile	the atomic concentration of the elements present as a function of depth determined by surface analysis in conjunction with the removal of successive atomic layers by ion sputter etching.	SEMI F72
depth of etch	the average depth of the sample surface damage layer.	SEMI PV67
depth profile analysis	the atomic concentration of the elements present as a function of depth determined by surface analysis in conjunction with the removal of successive atomic layers by ion sputtering.	SEMI F60
depth uniformity, %	the percentage variation in the etch depth across the wafer.	SEMI MS13
depth, of focus map	a plot, for each position in the image field, of the greatest defocus in the positive direction and the greatest defocus in the negative direction, where the processed image is sufficiently resolved for practical use.	SEMI P25
de-queue	the act of removing an item from a queue. The de-queue implies nothing about the status of the item after removal.	SEMI E94
derived event	a higher level opinion on the state of the environment based on combining history, facts, models, and analysis.	SEMI E183
descriptive model (DM)	a model describing a possible future condition that may require intervention. The model could also predict the need for actions, such as scheduling preventive actions, to prevent an undesirable future condition.	SEMI E10
Design	the third step in the performance improvement process, as applied to a training solution: This step focuses on creating a lesson design plan for each performance objective established during ‘Analyze’.	SEMI E150
design build	a contract method whereby the contractor assumes responsibility for design generation and construction to accomplish a specified performance criteria.	SEMI E70
design flow	flow normally applied to gas delivery system.	SEMI F70, F70.1
design pattern	pattern of intended design data.	SEMI P23
design pressure	of a system or subsystem, the pressure at the most severe condition of internal and external pressure for which it is appropriate (as defined by the designer) to use the system or subsystem.	SEMI F74
design pressure, of a system or subsystem	the pressure at the most severe condition of coincident internal or external pressure and temperature expected during normal service. The maximum pressure expected in any portion of a system or subsystem is typically determined by the maximum adjustable setting of the last pressure regulator that supplies it, the supply pressure to the regulator, or the actuation pressure of any relief device incorporated.	SEMI F1
design start	a milestone event that designates the initial conversion of equipment specifications and design concepts into engineering plans and specifications.	SEMI E70
design time attribute	a descriptive attribute of an interface data node, which is needed at design time, but not transmitted during run time.	SEMI PV55
designated eye position (DEP)	locations in space, usually not normal to the center of the screen, for which autostereoscopic displays and some stereoscopic displays are usually designed to obtain the best stereo image quality.	SEMI D59
designer	the person or group of people who create the design and have the opportunity to include a readable unique ID.	SEMI T23
desorbability	the relative capability of a fluid to escape from a solid surface and enter the gas or liquid phase.	SEMI MS10

Term	*Definition*	*Standard(s)*
destructive	operations that prevent a wafer from being processed through the subsequent bonding, thinning, edge-bevel trimming, and thermal processes in 3D integration. Some methods and instruments for measuring the geometrical parameters of TSVs require destructive specimen preparation techniques.	SEMI 3D5
detailing	generation of dimensioned shop fabrication plans based on process and instrumentation drawings (P&ID), field surveys, and configuration verifications.	SEMI E70
detection area	the area, defined through the light beam and the detection optics, in which the particles are detected. Often this area is much smaller than the cross-section of the pump line or the process chamber.	SEMI E104
detection limit	the detection limit for all the analytical methods that appear in this section of the BOSS must be established for each impurity defined. The detection limit must be stated as well as the statistical method used to establish that detection limit. The analytical method should be chosen such that the detection limit is at or below the specification.	SEMI C3
deterministic profile	surface profile that is a known function of surface position, with no random dependencies on position.	SEMI MF1811
detrended profile, $Z_d(x)$	the raw or measured profile after removing instrumental and surface trends. The detrended profile is the input for the statistical estimation routines described in § 5 (of SEMI MF1811).	SEMI MF1811
Develop	the fourth step in the performance improvement process, as applied to a training solution: This step focuses on creating all the instructional aids, practice aids, examination materials, and delivery system materials listed and described in 'Design'.	SEMI E150
device	a tangible thing consisting of: (1) at least one sensor and/or actuator and/or controller, (2) a communications controller which supports a single point of access to a network as specified in this document, and (3) interconnection and management hardware and software that provides for the consolidation of (1) and (2) into a system that has the capability to comply with the specification detailed in this document.	SEMI E54, E54.1, E54.10
device	a device (or node) consists of one network transceiver which implements the physical layer of the LonTalk Protocol, one Neuron Chip with associated firmware which implements the other layers of the LonTalk Protocol, and input/output hardware implementing the physical interface of the device to external sensor and/or actuator hardware. A LonWorks device may optionally contain a host processor and associated software or firmware which implements the application layer of the LonTalk Protocol.	SEMI E54.16
device	the unit to which the device status code in the map is assigned including, but not limited to: die, multi-chip modules, and packages.	SEMI E142, G81
device	truncated expression of Semiconductor Device. Minimum devices are fabricated as dice on such substrate as silicon wafer and diced into individual die. It may be mounted on a lead frame and/or packaged. It is still a device. Sometimes a device may consist of more than one die packaged together. Or a device may piggy back one or more devices.	SEMI G81.1
device	a concise representation of a semiconductor device. It must be a semiconductor die regardless whether it is on the way of fabrication or completed, whether it has been diced or not, whether it is installed/mounted on some substrate or not, or whether it is packaged or not. If it is packaged, the whole package is assumed as a device and a device may have more than one dice. In some specific case a device may have some other active or passive elements in the package.	SEMI T13
device asymmetry	the etch features evaluated for asymmetry, where a side of the feature may have a different angle, scalloping, roughness or depth than its opposite side.	SEMI MS13
device consumer	a party that purchases devices from a device manufacturer or supplier.	SEMI T23
device data base	an electronic file that provides a clear and comprehensive description of the characteristics of a device type in a precisely defined format. Also called a GSD File.	SEMI E54.8, E54.14
device description	an electronic file that provides a clear and comprehensive description of the characteristics of a device type in a precisely defined format. Also called an xml File.	SEMI E54.20
device ID	a 15-bit field in the message header used to identify a subentity within the equipment.	SEMI E4, E37.1

Term	*Definition*	*Standard(s)*
device ID	a number between 0 and 32767 used in identifying the particular piece of equipment communicating with a host.	SEMI E5
device insertion errors	error influenced by device-input capacitance and/or terminations.	SEMI G79, G80
device interface	a device interface is a specification of one or more functional blocks, together with semantic definitions relating the behavior of the functional block(s) to the network variable values. The collection of functional blocks in a device corresponds to the SEMI SAN device-specific model for that device. Each type of device interface is identified by a standard program ID (SPID).	SEMI E54.16
device manufacturer or supplier	a party that provides devices to, and directly communicates with, the device consumer.	SEMI T23
device mark	marking placed on the surface of semiconductor device to identify the individual device. This is the general term of such mark as die mark and packaged or sealed device mark.	SEMI T19
device model	an abstraction of a device for the purpose of understanding it before building it or using it.	SEMI E54, E54.1, E54.10
device model	the device model comprises several elements which fully describe the external interface of the device for an interoperable network. The interface is made of the following pieces: a Device Manager (DM) object; a Sensor/Actuator/Controller (SAC) object; functional blocks such as sensors, actuators, and controllers; individual network variables; and configuration properties.	SEMI E54.16
device profile	a DeviceNet specification for a device that contains an object model for the device type, the I/O data format for the device type, and the configuration data and the public interface(s) to that data.	SEMI E54.4
device profile	a Device Data Base Sheet, which specifies the characteristic features of a device, and a GSD File.	SEMI E54.8, E54.14
device profile	an EtherNet/IP specification for a device that contains an object model for the device type, the I/O data format for the device type, and the configuration data and the public interface(s) to that data.	SEMI E54.13
device profile	a kind of electric table to provide the characteristic features of a device including configuration and capabilities.	SEMI E54.17
device tracking	generic term of Die Trace regardless of unit of tracing or category of information. Following narrow sense is also applied in some specific fields. A specific case of tracking especially for geometric coordinates information on holding substrate. Because sometimes this specific type of Device Tracing information is very convenient to such end user industries as the automobile or car parts industries, this is defined separately. This can be realized with limited specification presented in Appendix sections of this specification.	SEMI T13
device under test	mass flow device is being tested by this method.	SEMI E56
device under test	the mass flow controller being tested for warm-up time.	SEMI E68
device under test (DUT)	gas delivery component subjected to test.	SEMI C91, F118
device under test (DUT)	the cable assembly intended to be tested.	SEMI E114
device under test (DUT)	the matching network to be tested.	SEMI E115
device under test (DUT)	the RF generator to be tested.	SEMI E135
device under test (DUT)	the device undergoing evaluation.	SEMI MS3, MS8, MS10
device wafer	a silicon wafer on which devices are formed.	SEMI 3D8, 3D9, 3D10

Term	*Definition*	*Standard(s)*
devitrification	a crystalline area within the glass.	SEMI D9
dew point	the saturation point of water, or the temperature to which a given volume of air must be cooled, at constant barometric pressure, for water vapor to condense into liquid water. When the temperature is equal to the dew point the relative humidity is 100%.	SEMI MS10
dewpoint	the temperature at which liquid first condenses when vapor is cooled.	SEMI C3
DI storage	generally refers to a storage tank that contains DI water, located between the primary and polishing ion exchange subsystems.	SEMI F61
DI water	generally refers to water that has passed through a full-train ion exchange system or RO water that has been polished by ion exchange.	SEMI F61, PV3
DI water	deionized water (specified with specific resistivity ≥18 MΩcm, cations: Na, Cu, Fe, Ca ≤0.2 μg/L).	SEMI E45
DI water	high purity 18 megohm water.	SEMI F46
diagnosis	a process of identifying the root cause of an observed incorrect response.	SEMI G91
diagnosis data object	object(s) which contains diagnosis information referenced by device/slot/subslot/diagnosis identifier.	SEMI E54.14
diagnostic fixture	any electromechanical fixture required to perform system diagnostics. The diagnostic fixture may consist of multiple components with different parts and serial numbers.	SEMI E122
diagonal length, of a nominally square Si wafer	the shortest distance between opposite corners of a wafer.	SEMI PV46
diagonal line, of a nominally square Si wafer	a straight line through opposite wafer corners.	SEMI PV46
dial thickness gauge	an instrument used to measure wall thickness with a dial meter.	SEMI F52
dialog box control button – ‘Apply’	a Dialog Box Control Button which, when selected by the user, indicates acceptance of any choices or user inputs made, if any, but does not dismiss the Dialog Box. This Button shall be disabled until one or more user choices or inputs are made. After user selection of this Button, it shall be disabled until additional choices or user inputs are made, if any.	SEMI E95
dialog box control button – ‘Cancel’	a Dialog Box Control Button which, when selected by the user, indicates no action should be taken, causes the dismissal of the Dialog Box, and returns the user to the state that existed prior to the invocation of the Dialog Box.	SEMI E95
dialog box control button – ‘Close’	a Dialog Box Control Button displayed (often as the only Dialog Box Control Button) when the Dialog Box message contains only information and does not require the user to make or accept choices, and shall be used instead of an ‘OK’ Dialog Box Control Button in this case. The ‘Close’ Dialog Box Control Button shall also be used instead of a ‘Cancel’ Dialog Box Control Button when the user cannot be returned to the state that existed prior to the invocation of the Dialog Box. User selection indicates no action should be taken and causes the dismissal of the Dialog Box.	SEMI E95
dialog box control button – ‘No’	a Dialog Box Control Button displayed when the Dialog Box message is in the form of a question. User selection indicates no action should be taken, causes the dismissal of the Dialog Box, and returns the user to the state that existed prior to the invocation of the Dialog Box.	SEMI E95
dialog box control button – ‘OK’	a Dialog Box Control Button which, when selected by the user, indicates acceptance of any choices or user inputs made, if any, and causes the dismissal of the Dialog Box. If no choices or user inputs were made, selecting this Button indicates acceptance of any default values displayed. If user choices or inputs are required, this Button shall be disabled until the choices or inputs are made.	SEMI E95
dialog box control button – ‘Yes’	a Dialog Box Control Button displayed when the Dialog Box message is in the form of a question. User selection indicates a positive response to the question asked and causes the dismissal of the Dialog Box.	SEMI E95

Term	*Definition*	*Standard(s)*
dialog box control buttons	user selection of a Dialog Box Control Button controls the dismissal of the Dialog Box and, when applicable, controls whether the user accepts or rejects information or choices displayed, or desires no action be performed.	SEMI E95
dialog boxes	dialog boxes are used to provide additional information to the user; to display detailed information not shown on the Information Panel for controlling the system, and to display detailed information for monitoring system operation.	SEMI E95
diameter	the diameter of the minimum circle that encloses the wafer.	SEMI 3D2, 3D16
diameter	the diameter of the fit circle of the TGV opening in any particular horizontal plane.	SEMI 3D22
diameter of a port	value of the width of the opening at the microfluidic interface.	SEMI MS11
diameter, of a 3D wafer stack	the diameter of the minimum circle that encloses all wafers.	SEMI 3D8, 3D9, 3D10
diameter, of a semiconductor wafer	the linear dimension across the surface of a circular silicon or other semiconductor wafer that contains the wafer center and excludes flats or other peripheral fiduciary geometries.	SEMI M59
dicing frame	a frame with sticky plastic film to mount a semiconductor wafer for dicing.	SEMI T13
die	(1) a field subunit. (2) an area of substrate that contains the device being manufactured.	SEMI E30.1, E91, E130
die	a unit equivalent to one die on a wafer. Also known as Chip.	SEMI E107
die	semiconductor device or an imitation.	SEMI G63
die	a semiconductor product which has electric elements and wiring. Many dice are usually fabricated on a semiconductor substrate at a time which is often referred to as wafer and the substrate is diced for dice before packaging or mounting on some other substrate. Some die may be fabricated on such isolator as thin transparent glass plate. Die is intended as it is just one piece of substrate even if it is packaged with the other dice.	SEMI T13
die attach	bond die and substrate such as leadframe/substrate pad.	SEMI G63
die attach area	a dimensional outline designated for die attach.	SEMI G22
die attach surface	a designated dimensional outline area intended for die attach.	SEMI G33, G39, G50
die contact tool	tool for applying load to the die for shearing.	SEMI G63
die mark	marking placed on the surface of semiconductor die to identify the individual die; more formally die device mark.	SEMI T19
die pad dimple	a hollow formed in a die pad using a half-etching technique or stamping to improve the adhesive strength with the die or molding compound and to reduce the stress between the die pad and the die.	SEMI G70
die pad dimple depth	the maximum depth of the dimple.	SEMI G70
die pad flatness	deviation of the center point of the die pad surface from a plane established by the four corner points of die pad.	SEMI G70
die pad location	deviation of the center point of die pad surface from a plane established by the dam bars.	SEMI G70
die pad tilt	deviation of the plane of die pad from a condition parallel to the plane formed by the dam bars.	SEMI G70
die trace	acquiring die information for tracing the die and/or processing the information to investigate what happens on the die during manufacturing or to ensure such properties of the die as producer and facilities. The information for such aggregating entities as wafer and PCB may be included depending on the usefulness of the information for tracing because they are produced with the die on them.	SEM T13
dielectric	a material applied to the surface of a package which provides such functions as electrical insulation, passivation of underlying metallization, and limitation of solder flow.	SEMI G33

Term	*Definition*	*Standard(s)*
dielectric (oxide) electrical thickness, (T_{ox})	silicon dioxide equivalent thickness (when the silicon dioxide dielectric constant is assumed) calculated from electrical measurements.	SEMI M59
dielectric constant	the proportionate dielectric constant which is the ratio between a vacuum dielectric constant and the material dielectric constant.	SEMI D9
dielectric loss	the phenomenon, or volume, of (electricity) loss through heat when a dielectric is introduced to an alternating current.	SEMI D9
differential pressure	the difference in absolute pressure between two points of measurement in a system.	SEMI E28
differential scanning calorimetry (DSC)	analytical technique in which the heat flow in or out of a sample is measured as the temperature is raised at a controlled rate.	SEMI S30
diffused layer	region of opposite conductivity type formed near the surface of a silicon crystal as a result of the introduction of impurities into the silicon crystal by means of solid state diffusion.	SEMI M59
diffusion coefficient, D	the diffusion rate of water into a molding compound.	SEMI G66
diffusion sheet	the sheet which diffuses incident light toward panel.	SEMI D36
diffusivity	the rate at which a dissolved fluid will be transmitted through the specimen material. Strictly defined by Fick's first and second laws. Symbol D is used.	SEMI MS10
digital light processor	an array of movable micro-mirrors that control independently the direction and intensity of individual pixels of light in an image.	SEMI MS3
dilute	to reduce the concentration of a substance by addition of materials that are not substances of concern.	SEMI S6
dilution	combination of a concentrated chemical, DIW or UPW to create a lower concentration of the aqueous chemical.	SEMI F31
dilution	combination of a concentrated chemical and UPW to create a lower concentration of the aqueous chemical.	SEMI F39
dilution factor	numerical number that indicates final amount of solution divided by the initial amount of solution in the preparation of the photoresist process.	SEMI P32
dimming consistency	the luminance characteristics operated according to the signal from various small sizes.	SEMI D81
dimple	deformation appearing in mechanically polished GaAs wafers.	SEMI M10
dimple	a shallow depression with gently sloping sides that exhibits a concave, spherical shape and is visible to the unaided eye under proper lighting conditions.	SEMI M59
dip tube	a piece of tube which penetrates into a vessel as an inlet or outlet of liquid chemical to/from the vessel.	SEMI F66
direct access memory	an embedded memory which can be accessed directly from the interface of the integrated circuit.	SEMI G91
direct material	components and parts that make up a semiconductor package. Examples include lead frames, molding compounds, bonding wires, die bonding materials, etc.	SEMI G83
direct method	a sample preparation method for preparing samples for direct trace metal in photoresist. The materials is diluted with a solvent and then analyzed by the appropriate analytical instrument.	SEMI P32
direct/indirect cost	direct costs are the cost of anything physically associated with the installation, removal, or modification of equipment. Indirect costs cannot be associated with a specific piece of equipment. Profit, overhead, and administrative costs are typically considered indirect.	SEMI E70
direction of substrate viewed from the transfer point	direction of substrate at the transfer point refers to the direction of transfer-in/-out against the transfer point and not left/right of the equipment or upstream/downstream of the processing sequence.	SEMI D54
directive	a capability to instruct such basic functions to a device as reset or abort.	SEMI E54.17

Term	*Definition*	*Standard(s)*
directive	a code to identify type of request or response of application.	SEMI E54.21
dirt	fingerprint; mark left behind after operator handling; stain from liquid.	SEMI P5
disassemble	the step-by-step taking apart or breakdown of a subassembly or assembly.	SEMI E149
discoloration	the change in color of any plated metallization, gold, silver, aluminum, etc., as detected by the unaided eye after the application of heat to the metallization. The metallization may be over base metal, another plated layer, or on refractory metal.	SEMI G2, G3, G8, G22, G33, G53, G62
discoloration	any change in surface color from that of the base metal. Usually associated with *oxidation* occurring on the weld and heat affected zone on the outside and inside diameter of the weld joint as a result of heating the metal during welding. Colors may range from pale bluish-gray to deep blue, and from pale straw color to a black crusty coating.	SEMI F78, F81
disconnect shutoff	a device that will not permit the flow of gas in an open cylinder valve without attachment to an outlet connector.	SEMI F4
disconnecting means	a device, or group of devices, or other means by which the conductors of a circuit are intended to be disconnected from their source of supply.	SEMI S22
dislocation	a line imperfection in a crystal lattice that is characterized by a closure failure of Burgers' circuit that may form the boundary between slipped and non-slipped areas of a crystal or occur at the edge of stacking faults or around precipitates such as oxide precipitates.	SEMI M59
dislocation	a line imperfection in a crystal lattice that is characterized by a closure failure of Burgers' circuit that may form the boundary between slipped and non-slipped areas of a crystal or occur at the edge of stacking faults or around precipitates.	SEMI M92
dislocation etch pit	a pit generated by a preferential etch where a dislocation meets the surface of a wafer.	SEMI M59, M92
dislocation etch pit density	the number of dislocation etch pits per unit area.	SEMI M83
dispatching	generation of a decision or option for the next activity involving a particular factory resource or material. The dispatch result is determined by evaluating the current state of the factory, the priorities and requirements for the activities, and the relationship of the activities to one another. Dispatching returns only the immediately applicable part of a schedule.	SEMI E105
dispense	deal out paste/film.	SEMI G63
dispense rate	a measure of the rate at which a dispense sub-system can distribute product to the customer's downstream processing systems.	SEMI F39
dispersive infrared (DIR) spectrophotometer	a type of infrared spectrometer that uses at least one prism or grating as the dispersing element, in which the data are obtained as an amplitude-wavenumber (or wavelength) spectrum.	SEMI M59
displacement mode terminology	displacement modes are classified into five types caused by supporting conditions, which are number of supporting positions, distance of each supporting position and location of supporting positions.	SEMI D40
displacement sensor	a device that detects physical motion.	SEMI MS3
displacement terminology	the displacement is generated by sag and lift caused by the supporting positions and/or locations of the FPD substrate. The displacement is defined by the values of two-dimensional sag and lift. Two dimensional maximum displacement is also defined by values of two-dimensional maximum sag and lift, and the thickness of the FPD substrate.	SEMI D40
display area	the area which displays images of the test sample.	SEMI D73
display objects	user interface elements displayed on the screen, such as function selection Buttons, keyboard input Buttons, graphics representing the equipment, etc. Some are selectable by the user to initiate or execute an action. Non-selectable graphics and user interface elements (such as pipes and text field labels, respectively) are read only, and no action is initiated or executed.	SEMI E95

Term	*Definition*	*Standard(s)*
disposal party	a party who disposes of equipment or components.	SEMI S16
dispose	the discard an item into a public or private waste management program.	SEMI S16
dissipation factor	the ratio of the real part to the imaginary part of the complex admittance. It is a measure of the non-ideality of the barrier.	SEMI M46
dissolved solids	contaminants in water that are so small that they are uniformly distributed, including ions and the smallest TOC and silica compounds.	SEMI F61
distance learning	the desired outcome of training courses delivered to remote locations via delivery methods such as (a) physically mailing materials like written correspondence, audio, and CD-ROM, or (b) using online learning including the virtual classroom, teleconferencing, videoconferencing, and interactive TV; e-mail; and web-based training. Training from a distance does not preclude the use of the traditional classroom. The definition of distance learning is broader than and entails the definition of e-learning.	SEMI E150
distance-considered SEMI Mura (DSEMU)	measurement index for distance-linked mura.	SEMI D31
distinct regions	visually unique areas of a surface defined by patterns of lay or differences in the appearance of surface roughness. In-line bores of different sizes or orientations and each leg of a shaped component should be considered distinct regions.	SEMI F37
distributed system	an integrated collection of several processing and memory components whose distribution is transparent to the user so that the system appears to be local.	SEMI E81
distribution	a characterization of the probability of realization for a measurable event over the range of values that the measurements may assume.	SEMI E35, M59
distribution system	the collection of subsystems and components used in a semiconductor manufacturing facility to control and deliver process chemicals from source to point of use for wafer manufacturing processes.	SEMI E70
dock date	the date when the fab equipment, including all ancillary components, is on-site at the loading dock.	SEMI E70
docked facial datum plane	a vertical plane that bisects the wafers at the carrier docked position. It is also parallel to the load face plane specified in SEMI E15.	SEMI E92
docked position	the position where the carrier is ready for substrate extraction or insertion.	SEMI E87, E171
docking	the act of locating a floor-based carrier transport vehicle for carrier transfer to/from equipment.	SEMI E64, E83, E101
docking stroke	the travel distance of the carrier center between its load position (facial datum plane) and the position where the door opening/closing is done.	SEMI E92
document	a logical assembly of elements, that, if correctly ordered, is a means of transmitting an internally consistent piece of information. A document is made up of one or more elements which must all be contained in one ‘root’ element.	SEMI E36
document class	consists of all of the documents or information fragments that follow a single set of markup rules, including the same elements and element relationships.	SEMI E36
document interchange	entails passing one or more elements, usually as a document, from one conforming system to one or more other systems (also known as ‘exchange’).	SEMI E36
document model	a term for a set of structural rules that describe the legal markup for a particular class of documents. DTDs and Schema are types of document models.	SEMI E36
document type definition (DTD)	a document model or list of markup rules, which may be used in both SGML and XML.	SEMI E36
documentation collection	a set of documentation content that is logically related, usually by its content, target audience, or origin.	SEMI E149
documentation content	substance of a text document, audio clip, or video clip instead of the form (e.g., text, video, audio) and/or media (e.g., electronic, paper) in which it is stored.	SEMI E149

Term	*Definition*	*Standard(s)*
documents provided to the equipment user	documents provided by the equipment supplier, such as operation manual, maintenance manual, installation manual, safety manual, or OEM manual, not only printed paper, or cleanroom paper but also multimedia information such as CD/DVD or material provided by Internet, which are intended for use with equipment.	SEMI S13, S23
domain	a broker or cluster's identity and coverage scope.	SEMI E183
domain interface	an interface specific to an application subject area.	SEMI E81
domain object	an object implementing a domain interface.	SEMI E81
donor	an impurity or imperfection in a semiconductor that donates electrons to the conduction band, leading to electron conduction.	SEMI M59
door	a hinged enclosure panel.	SEMI S22
door seal zone	a surface on the exterior side of the port door for sealing to the box door.	SEMI E62
dopant	a chemical element which modifies the electrical properties of a semiconductive material.	SEMI F21
dopant	chemical element, usually from the third or fifth columns of the periodic table, incorporated in trace amounts in a semiconductor crystal to establish its conductivity type and resistivity. Common doping elements are boron (acceptor) and phosphorous (donor).	SEMI M59
dopant	a chemical element, usually from the second, fourth, or sixth columns of the periodic table for the case of III-V compounds, incorporated in trace amounts in a semiconductor crystal to establish its conductivity type and resistivity.	SEMI M9, M23, M86
dopant	a chemical element, usually from the third or fifth column of the periodic table for the case of IV-IV compounds, incorporated in trace amounts in a semiconductor crystal to establish its conductivity type and resistivity.	SEMI M55, M79
dopant density	the number of dopant atoms per unit volume. The symbol N_D is used for donor impurity density and the symbol N_A is used for acceptor impurity density. These quantities are usually given in number/cm^3 although the SI unit is number/m^3.	SEMI M59
dopant striation rings	helical features on the surface of a silicon wafer associated with local variations in impurity concentration.	SEMI M59
doping	addition of specific impurities to a semiconductor to control the electrical resistivity.	SEMI M59
dot	a localized region with a reflectance which differs from that of the surrounding surface.	SEMI T7, T8, T9, T24, PV29
dot	in analogy to contact, but clear field, dark feature. A large dot can be called a *pad*.	SEMI P43
dot misalignment, within a cell	the distance between the physical center point of a dot and the cell center point.	SEMI T7, T8, T9, T24, PV29
dot, in a cell of data matix code symbol	a physical difference to evaluate the value of a cell of data matrix code symbol. The physical difference may be protrusion, hollow, material/density/phase difference and so on, depending on technology of marking.	SEMI T19
double insulation	comprised of both supplementary insulation and basic insulation combined.	SEMI S22
double integer (DINT)	an integer, four bytes long, in the range -2^{31} to $2^{31}-1$.	SEMI E54.1, E54.10, E54.22
double-layer phase shift mask	an attenuated phase shift mask including an opaque area inside the exposure area. A phase shifter film is stacked on top or bottom of an opaque film.	SEMI D84
down cycle reading	a reading approached from a set point greater than the current set point and beyond the dead band.	SEMI E69
down cycle value, average	the sum of all down cycle readings, in one cycle, at a single set point, divided by the number of these values.	SEMI E69
downfall	a macroscopic size particle existing within or extending beyond the epitaxial layer. The crystal structure of the particles is usually 3C.	SEMI M92
download	an operation that transfers a recipe (down) to an execution storage area.	SEMI E42
downscale reading	a reading approached from a setpoint greater than the current setpoint and beyond the deadband.	SEMI E69

Term	*Definition*	*Standard(s)*
downscale value, average	the sum of all downscale readings, in one cycle, at a single setpoint, divided by the number of these values.	SEMI E69
downstream equipment	equipment that is in the position to receive Material in an equipment-to-equipment interface in manufacturing line.	SEMI A2
downtime	during an observation period, the accumulated time when the equipment system is not in a condition to perform its intended function. Downtime includes scheduled downtime and unscheduled downtime.	SEMI E10, E79
downtime (DT)	the time when the equipment is not in a condition, or is not available, to perform its intended function. It does not include any portion of non-scheduled time.	SEMI S14
downtime event	an event that starts with an equipment state transition either (1) into a scheduled downtime state (SDT) from an equipment state other than SDT or (2) into an unscheduled downtime state (UDT) from an equipment state other than UDT and ends when an equipment system transitions to any other equipment state. For example, a transition into UDT from SDT, or vice versa, starts a downtime event. A downtime event does not start or end with an equipment substate transition within SDT or within UDT.	SEMI E10
downtime state	the composite state of the scheduled downtime state (SDT) and the unscheduled downtime state (UDT).	SEMI E10
downward compatibility	compatibility between a measurement system and former generation(s) of the same or similar type of system of an equipment supplier.	SEMI M59
DP facility	a capability to manage diagnostic matters of a device.	SEMI E54.17
DP-Master Class 1 (DPM1)	a device that polls its assigned DP-Slave devices and handles user data exchange.	SEMI E54.8
DP-Master Class 2 (DPM2)	a device that interacts as a configuration or diagnostic tool; usually a programming device.	SEMI E54.8
DP-slave	a device that is configured, managed, and polled by Master devices; a DP-Slave initiates no unsolicited communications.	SEMI E54.8
drift	the change in output over a specified time period for a constant input under specified reference operating conditions.	SEMI E56
drift	the change in output over a specified time period for a constant pressure input under specified reference operating conditions.	SEMI F113
drift	a deviation in the output from a set value that is affected by physical or environmental conditions.	SEMI E151
drift, long-term	the drift between a series of tests over a specified time interval. This specified time interval is generally much greater than the time necessary to run an individual test.	SEMI E56
drift, per unit humidity change	the change in output over a specified humidity range for a constant input while other operating conditions are specified and held constant, expressed in ppm/%RH or ppb/%RH.	SEMI MS14
drift, per unit pressure change	the change in output over a specified pressure range for a constant input while other operating conditions are specified and held constant, reported in ppm/hPA or ppb/hPa.	SEMI MS14
drift, per unit temperature change	the change in output over a specified temperature range for a constant input while other operating conditions are specified and held constant, expressed in ppm/°C or ppb/°C.	SEMI MS14
drift, short-term	the drift between sets of measurements over the duration of the test.	SEMI E56
drive through interbay transport (DT)	an interbay transport system where the track runs internal to the stocker boundary for the entire width of the stocker.	SEMI E85
droop	the pressure drop between two flows.	SEMI F101
dross	non-standard term for *slag*.	SEMI F78
drum	a container for storing chemicals, generally with a cylindrical shape and not more than 55 gallons or 200 liters in size.	SEMI F31

Term	*Definition*	*Standard(s)*
dry ashing method	a sample preparation method for preparing samples used in measuring trace metals in the photoresist. The photoresist is evaporated and decomposed to ash by heating. The ash is dissolved in a volumetric flask with acid and aqueous reagent, and the analyzed by the appropriate analytical instrument.	SEMI P32
dry down	removal of residual moisture in a gas delivery or distribution system, often accomplished by flowing a stream of high purity dry inert gas continuously through the system for an extended period of time.	SEMI F29
dry etching patterned sapphire substrate (DPSS)	pattern sapphire substrate processed by dry etching.	SEMI HB13
dry pump (DRP)	dry pumps are a type of mechanical vacuum pump. Dry pumps can work at atmospheric pressure. They are called dry pumps because no liquid sealing materials are used on any surface contacted by gases.	SEMI E73
dry run (mechanical dry run)	a complete equipment cycle that allows the material handling and software capabilities of the equipment to be exercised without requiring full facilities hookups and without changing the physical state of the wafer. Environmental control subsystem (e.g., vacuum, nitrogen purge, particle detection) should not be affected by a dry run, and process consumables are not used.	SEMI E98
dual-beds	an ion exchange scheme where a cation exchange unit is followed by an anion exchange unit.	SEMI F61
dual-cooled process cooling water (PCW-D)	process cooling water from which heat is removed through a heat exchanger to a cooling tower system, a heat exchanger to a chilled water system, or both. The cooling tower system is used when the wet-bulb temperature is low enough to cool the PCW-D to below its return temperature and the chiller system is used (supplementally or exclusively) when the wet-bulb temperature is too high to cool the PCW-D to its supply temperature without mechanical refrigeration.	SEMI S23
duct	an enclosed channel designed expressly for holding and protecting electrical conductors, cables, and bus bars. Conduits, wireways and under-floor channels are types of ducts.	SEMI S22
dummy	a term meant to denote an imitation of a real or original object. In this case, the original object would be a modular surface mount valve.	SEMI F74
dummy module	a device mechanically equivalent (such as in mass, mass distribution, linear dimensions, and rigidity), for the purposes of vibration testing, to a PV module.	SEMI PV23
durable	a type of material used to facilitate manufacturing but not normally consumed in the process that is removable, reusable, and trackable. Examples include containers, reticles, and pellicles.	SEMI E98
durable	items that wear out and require periodic replacement, such as feeders, end effectors, squeegees, grippers, adapters, drill bits, nozzles, needles, heating systems, thermode, laser, ionizer, and other cutting instruments.	SEMI E189
duration	the length of time of a cycle or the entire task, which represents the time of exposure to single or multiple risk factors.	SEMI S8
duration location	location where a durable is mounted and unmounted.	SEMI E189
duty cycle	the normal percentage of time that the chemical blending equipment is operating.	SEMI F39
dwell time	the time for which vacuum or pressure is applied during the evacuation or pressurization steps of a purge operation.	SEMI F29
dye	patterned plastic or gelatin is colored using dye. Also, dyed plastic or gelatin can be patterned using photolithography.	SEMI D13
dyeing	dyeable photoresist materials are patterned by photolithographic image processing. These patterned materials are dyed by a special method. The various colors may be introduced sequentially.	SEMI D13
dynamic (pulse) test	a test performed to determine particle contribution as a result of actuation of valves in the gas delivery line or system.	SEMI F70

Term	*Definition*	*Standard(s)*
dynamic CBU	dynamic CBU occurs in the color transition area of a moving image. When the image (generated by color sequence) is moved by a certain motion vector, eyes are tracking the same motion vector smoothly. During this movement, the colors in sequence are broken on a retina. This phenomenon is called dynamic CBU. Figure 1 is an example of dynamic CBU captured by a pursuit camera system.	SEMI D58
dynamic control mode test	a test performed to determine particle contribution as a result of test flow variation within the normal range of MFC operation.	SEMI E66
dynamic flush	a condition where the moving parts within the component's wetted flow path are intentionally cycled or are known to move due to changing operating conditions.	SEMI F104
dynamic leach test skid	the system providing resin-evaluation test analysis. The test skid includes piping, resin column, flow meters, pressure gauges, valves, regulators, sample ports, etc.	SEMI C93
dynamic port (opposite of static port)	a port with associated mechanisms capable of assisting with the physical movement of a transfer object or of interfering with the transfer of an object during the transfer. Such mechanisms may include doors, elevators, and robot arms. A transfer partner using a dynamic port for the transfer may be active or passive as required.	SEMI E32
dynamic precision	reproductability.	SEMI P35
dynamic repeatability	variations between the nominal and measured dimensions. This is the maximum dispersion of measurements from the best approximate line defined between the nominal and measured dimensions.	SEMI P30
dynamic seals	seals that operate with moving surfaces.	SEMI MS3, MS6
dynamic test	a test performed to determine particle contribution from a minienvironment as a result of a specific minienvironment movement (e.g., acceleration, vibration) to simulate transport, or environmental conditions.	SEMI E146
dynamic test	a test performed to determine particle contribution as a result of valve actuation or regulator adjustment in a process panel during normal operation.	SEMI F28
dynamic test	a test performed to determine particle contribution as a result of pulsing flow through the DUT.	SEMI F43
easement space	the floor space that must remain clear to the rear and sides of the piece of equipment (but not in front of the load face plane). This includes safety aisles, ergonomic maintenance access space, component removal space, and room for doors to swing out.	SEMI E72, F107
E-bit	a bit in the header identifying the last block of a message.	SEMI E4
ECAT datagram	part of an Ethernet frame containing an EtherCAT service.	SEMI E54.20
economy	the degree of cost incurred in the design, manufacture, and use of the equipment.	SEMI PV96
EDA interface	the data communication interface between the data consumer or the EE client and the equipment to provide required capabilities for EDA.	SEMI E147
edge	the rim or edge of via at the top surface.	SEMI 3D11
edge	time delay created by an ATE delay generation resource.	SEMI G79, G80
edge	the location of a significant change in pixel brightness values between regions. It is the point(s) that has the greatest amount of contrast difference (change in intensity values) between pixels.	SEMI T10
edge (or side) type LED backlight unit	a backlight unit with one or more LED light bars coupled with one or more edges of the LGP of backlight unit. Light emits originally from the edge (rather than from bottom to top) of LGP.	SEMI D62
edge bead removal (EBR)	wafer edge photoresist removal process.	SEMI HB14
edge chamfer	the bevel found on all intersections between major and minor sides.	SEMI P34
edge chip	region where material has been unintentionally removed from the edge of the wafer.	SEMI M92
edge clearance	the area that cannot be used for production. It is expressed by the distance from a Wafer edge. The value reduces the effective exposure area of wafer radius (half of diameter).	SEMI P42

Term	*Definition*	*Standard(s)*
edge contact end effector	an end effector designed to contact the wafer on the edge.	SEMI E159
edge contouring	on slices whose edges have been shaped by mechanical and/or chemical means, a description of the profile of the boundary of the slice joining the front and back sides.	SEMI M9
edge contouring	on wafers whose edges have been shaped by mechanical and/or chemical means, a description of the profile of the boundary of the wafer joining the front and back sides.	SEMI M55, M79, M86
edge crown	the difference between the surface elevation at 3.2 mm (1/8 in.) from the edge of the wafer and the elevation at the wafer edge.	SEMI M59
edge detection method	a method whereby the location of an edge in an image is determined.	SEMI T10
edge exclusion	the distance from the fixed quality area boundary to the periphery of a wafer of nominal dimension.	SEMI HB12
edge exclusion	the width X of a narrow band of wafer surface, located just inside the wafer edge, over which the values of the specified parameter do not apply.	SEMI M79, M86
edge exclusion (EE)	the distance from the fixed quality area (FQA) boundary to periphery of a wafer of nominal dimensions.	SEMI M55, M92
edge exclusion (EE), nominal	the distance from the FQA boundary to periphery of a wafer of nominal dimensions.	SEMI HB1, M59
edge exclusion zone, on a LC	a narrow band on the LC surface, located just inside the edge of the rim, over which the values of the specified negative tolerances of the thickness do not apply.	SEMI E177
edge exclusion, Δd	region within a certain distance Δd from the edge of the wafer is excluded from defect counting.	SEMI M91
edge impurity area, of a Si wafer	an area along the edge(s) of a Si wafer with a high concentration of impurities, characterized by a high recombination of excess charge carriers resulting in dark PL images. It occurs most frequently along the edge(s) of wafers or in wafers from the bottom or the top of an ingot.	SEMI PV51
edge isolation etch	achieve insulation of both sides of after the semi-finished solar cell with chemical methods.	SEMI PV67
edge length, of a nominally square or pseudo-square Si wafer	the shortest distance between adjacent corners.	SEMI PV46
edge length, of a substrate	the nominal length of an edge, including that portion at the edge corner(s) from which material may have been removed for finishing purposes. It is "… defined by two dimensions X and Y, with nominal and tolerance values for each."	SEMI D12
edge line, of a nominally square or pseudo-square Si wafer	first or second order polynomial line fit to the wafer edges, excluding chamfers at wafer corners.	SEMI PV46
edge perimeter distance	the distance from the edge of the wafer to the top face of the carrier.	SEMI E1
edge profile	on wafers whose edges have been rounded by mechanical and/or chemical means, a description of the contour of the boundary of the wafer that joins the front and back surfaces.	SEMI M23
edge profile	on edge contoured wafers (whose edges have been shaped chemically or mechanically), a description of the contour of the boundary of the wafer that joins the front and back surfaces.	SEMI M59
edge referenced	property of a measurement or calculation with the radial measurement position established using the physical edge as the origin.	SEMI M77
edge roll off (ERO)	surface deviations of a large-diameter silicon wafer near the edge, but excluding effects due to wafer edge profiling and surface roughness.	SEMI M59

Term	*Definition*	*Standard(s)*
edge roll off (ERO)	surface deviations of a large-diameter silicon wafer near the edge, but excluding effects due to wafer edge profiling, surface roughness, and global bending, such as warp, of the wafer.	SEMI M77
edge roll off amount (ROA)	the displacement from the reference line at the measurement point in the edge vicinity/near-edge region of an un-chucked wafer. ROA is defined as positive in the direction away from the reference line.	SEMI M59
edge roll off amount (ROA)	the displacement from the reference line at the measurement point in the edge vicinity of an un-chucked wafer. ROA is defined as positive in the direction away from the reference line.	SEMI M77
edge roll off measurement point	the radial position where the edge roll off is measured. It is labeled q_0 for an edge-referenced measurement or r_0 for a center-referenced measurement.	SEMI M59
edge roll off measurement point	the radial position where the edge roll off is measured. It is labeled x_0 for an edge-referenced measurement or r_0 for a center-referenced measurement.	SEMI M77
edge roughness	subtle roughness and/or jagged zone on the pattern edge.	SEMI D20
edge roughness	edge roughness refers to edge variations seen in the SEM images, and is defined as the distance, within a field of view, between the peak line and the valley line, where the peak line means the line which runs through the highest peak and is parallel to the pattern-edge mean line, the valley line means the line which runs through the lowest valley and is parallel to the pattern-edge mean line, and the pattern-edge mean line conforms to the expected pattern-edge line. Here, a peak is the tip of a convex section, and a valley is the deepest part of a concave section.	SEMI P36
edge width	the distance inwardly from the periphery of the wafer to the end of the edge profile.	SEMI M59
edge, of a silicon wafer	the annular region of the wafer from the periphery inward that has been intentionally shaped chemically or mechanically to form the edge profile.	SEMI M59
edge-referenced	property of a measurement, calculation, or coordinate system with the position established using the periphery of the wafer as the origin.	SEMI M59
e-diagnostic	electronic access to equipment for the purpose of diagnosing problems from a distance (e.g., via dial-up, network connection, or wireless communication means).	SEMI S21
edit	an operation which creates a new recipe body or changes the body of an existing recipe.	SEMI E42
editor	a service which allows a user to edit a recipe. Editors are not specified in RMS.	SEMI E42
EE application	the means of identifying equipment status to direct the equipment engineering. EE application may represent a computer application program for equipment engineering.	SEMI E147
EE client	a synonym for ‘client’ in this Document.	SEMI E147
E_{etch}	energy of etching.	SEMI F79
effect	change in the expected value of a given response due to the change of a given factor from one level to another. It is a measure of influence that a particular variable level has on the output variable.	SEMI E89
effective charge, (Q_{eff})	the oxide charge/cm^2 in the capacitor that gives the measured flatband voltage.	SEMI M59
effective efficiency (η_e)	in the context of a flow calorimeter, the proportion of the RF energy dissipated in the RF load that is converted to a measurable temperature increase in the coolant.	SEMI E136
effective electrical contact radius, a (cm)	of a spreading resistance probe assembly, an empirical quantity defined by the ratio of ($n\rho$) to ($4R_s$), where ρ is the resistivity of the test specimen (in Ω·cm), R_s is the measured spreading resistance of the test specimen (in Ω), and n = 1 for a three-probe arrangement or n = 2 for a two-probe arrangement.	SEMI M59
effective emission area	an area (length) in which a certain percentage of luminance against the luminance of a central part is maintained with almost even luminance distribution (LE[mm]).	SEMI D35
effective layer thickness, of an epitaxial layer	the depth from the front surface in which the net carrier density is within specified limits.	SEMI M59
effective loading height H*	add the corner edge radius *R* of Tool and Support to *H*.	SEMI G96

Term	*Definition*	*Standard(s)*
effective unit output	the number of units processed by the equipment system during production time that were of acceptable quality. In general, effective unit output is actual unit output less equipment-assignable rework and equipment-assignable scrap.	SEMI E79
effective wafer storage height	concerning height inside the container when the lid is coupled to the main body.	SEMI G94
effective work function	the potential difference between the free space reference and the Fermi energy in the gate electrode of the gate stack of a CMOS device.	SEMI M66
efficiency	a measure of the ability of a purifier to remove active impurities from a matrix gas stream. It is calculated as the ratio of the difference between the inlet concentration and the concentration of impurity leaving the purifier to the concentration of impurity entering the purifier.	SEMI F68
efficiency	the ratio (or fraction or proportion) of removed chemical species to its input amount.	SEMI F5
efficiency	particle removal efficiency of filter measured by this Test Method. It is the effectiveness of the filter in removing the particles, and is measured as (Upstream – Downstream) / Upstream × 100.	SEMI C82, C89, F110
efficiency	the ratio of total light fluxes generated by the lamp and consumed electric power at input part of the lamp. Unit: lm/W (lumen/Watt)	SEMI D36
effluent	the air removed from SME by exhaust ventilation, including any material mixed with or suspended in it.	SEMI S6
effluent treatment system	a device which abates hazardous gas effluent to environmentally safe levels.	SEMI F22
elastic modulus	the ratio of the stress in a material to the corresponding elastic strain.	SEMI MS3
elbow weld fittings	machined fittings shaped like the letter ‘L,’ for welding tubes in a right angle.	SEMI F44
e-learning (electronic learning)	a category of delivery methods that covers a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes delivery via internet, intranet/extranet, CD-ROM, and more. Some would extend the definition to include teleconferencing, videoconferencing, satellite broadcast, interactive TV, and more	SEMI E150
electric deposition	micro cells capsulating pigment particles are dispersed in water solvent and deposited on the selected electrode on glass substrate.	SEMI D13
electric field-induced migration (EFM)	the movement of normally stationary atoms or molecules on a surface as a consequence of the presence of an electric field.	SEMI E163
electric utility	the company identified as the contractual provider of electrical power and energy to the customer point of delivery. Also known as the electric service provider.	SEMI F50
electrical enclosure	a panel, compartment, or other defined area housing electrical components used to enhance the safety of the equipment containing those components.	SEMI S22
electrical failure information	failure information generated by test equipment (e.g., Bit Map Data, Bin Data and Analog Data).	SEMI E107
electrical feed	(referenced from the equipment) a facility supply conductor that provides electrical energy to a piece of equipment.	SEMI S22
electrical length	the length of the cable assembly at the operating frequency expressed in terms of degrees, where one wavelength at the nominal operating frequency is equal to 360°.	SEMI E113, E114, E143
electrical overstress (EOS)	exposure of a device or circuit to damaging electrical signals other than electrostatic discharge.	SEMI E176
electrical PPE	personal protective equipment specially designed to provide protection from electrical arc, shock or other effect that could cause injury to a person touching an electrical circuit or causing an electrical fault.	SEMI S21
electrical test-site	a process-site on the equipment which is coupled with electrical testing equipment for purposes of performing package electrical testing.	SEMI E123

Term	*Definition*	*Standard(s)*
electrically conductive adhesive (ECA)	is used to contact the PV cell to the conductive layer of the back contact sheet.	SEMI PV62
electrochemical	chemical reaction in which charge transfer takes place via an external circuit.	SEMI M46
electrode	the conductor, the part to supply the power into the lamp. It releases the electron by the electric current.	SEMI D36
electrode	non-standard term for *tungsten electrode*.	SEMI F78, F81
electrodeionization (EDI)	a water treatment technology that utilizes mixed-bed ion exchange plus an electrical potential to remove undesirable dissolved solids. Also referred to in the industry as CDI (Continuous Deionization).	SEMI F61
electrofluidic integrated circuit (EFIC)	the integration of semiconductor electronics and microfluidics on a common substrate.	SEMI MS7
electroforming	a process of replicating shapes by electro-deposition of metals using a resin or metal mold.	SEMI MS3
electroluminescence	an optical and electrical phenomenon as a result of radiative combination of holes and electrons in a material where excited electrons release their energy as photons-light.	SEMI PV82
electroluminescence (EL)	radiation emitted by a *p-n* junction under forward or reverse bias.	SEMI PV94
electromagnetic actuator	a device that applies a current flowing through a coil of conducting material to produce a physical movement.	SEMI MS3
electromagnetic actuator	a device that applies a current flowing through a coil of conducting material to produce a physical movement.	SEMI MS3
electromagnetic compatibility (EMC)	the capability of electronic equipment or systems to be operated in the intended operational electromagnetic environment at designed levels of efficiency.	SEMI F53
electromagnetic compatibility (EMC)	the ability of electronic equipment to function properly with respect to environmental electromagnetic interference (EMI).	SEMI E33, E43
electromagnetic compatibility (EMC)	the ability of equipment to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic interference with other equipment in that environment.	SEMI E176
electromagnetic interference (EMI)	impairment of a wanted electromagnetic signal by an electromagnetic disturbance.	SEMI F53
electromagnetic interference (EMI)	the degradation of the performance of an equipment, transmission channel, or system caused by an electromagnetic disturbance.	SEMI E33, E43, E163
electromagnetic interference (EMI)	electromagnetic phenomena that can interrupt, obstruct, or otherwise degrade or limit the effective performance of electrical equipment.	SEMI E78, E129, E176
electron hole droplet (EHD)	the condensed phase (liquid) of the excitonic gas generated by photoexcitation.	SEMI MF1389
electron multiplier	a device that detects and amplifies electro-magnetic phenomena such as positive/negative ions.	SEMI F67, F68
electron, conduction	in semiconductor crystals, a charge carrier in the conduction band that acts like a free electron with negative electronic charge but usually has a somewhat different positive mass; the majority carrier in *n*-type material.	SEMI M59
electropolishing	a method of polishing metals and alloys in which material is removed from the surface by making the metal the anode in an electrolytic bath.	SEMI F19
electrostatic attraction (ESA)	the force between two or more oppositely charged objects.	SEMI E78, E129
electrostatic compatibility	charge control adequate to allow the manufacturing of products and the interequipment transfer of products, reticles, and carriers without electrostatic problems.	SEMI E78, E129, E163

Term	*Definition*	*Standard(s)*
electrostatic discharge (ESD)	the rapid spontaneous transfer of electrostatic charge induced by a high electrostatic field.	SEMI E33, E43, E78, E129, E163, E176
electrostatic force	force proportional to the electric field between electrodes or electric charges.	SEMI MS3
electrostatic properties	for the purposes of this document, electrostatic properties are defined as the ability of a material, when grounded, to dissipate a charge induced onto the surface of that material.	SEMI G60
element	an element is one named, contiguous piece of information in the information stream. Usually the data within an element has a semantic or structural relationship as well, for example a person's surname, an error code, a pointer to external data, a paragraph, or a procedure that contains steps.	SEMI E36
element	part of a semiconductor package feature (e.g., package leads have braze paddle/stand-off and contact elements, pins have the nail head/braze area and contact elements).	SEMI G61
elevated location	a walking or working surface occupancy of which results in the feet being at 500 mm (19.7 in.) or more above an adjacent surface.	SEMI S2
ELF-sensitive equipment	any equipment, such as a scanning electron microscope (SEM), with performance that is adversely affected by extremely low frequency (ELF) electromagnetic fields (EMFs).	SEMI E33, E176
elimination	physical removal of the source of a hazard.	SEMI S10
ellipsometry	a measurement method based on the principle of measuring the change of the polarization state of light after reflection from the sample surface. Ellipsometry is commonly applied for the measurement of layer thickness, refractive index and extinction coefficient, or critical dimensions.	SEMI E141
ellipticity	in optics, of elliptically polarized light, the angle χ given by the inverse tangent of the ratio of the minor to the major axis of the ellipse described by the electric vector of the light.	SEMI MF576
eluent	the solvent used to carry the extracted ions through the ion exchange chromatograph.	SEMI G52, G59
embedded	(abrasive grains): abrasive particles mechanically forced into the surface of the wafer.	SEMI M10
embedded attenuated phase shift mask	an attenuated phase shift mask having an attenuated shifter film, to give a certain phase angle and transmittance. Also referred to as 'EAPSM' for short.	SEMI P29
embedded memory	is a semiconductor memory that is embedded inside an integrated circuit along with other logic blocks.	SEMI G91
embedded object	an embedded object is similar in functionality or purpose to the object in which it is embedded, or supports the functionality of the object in which it is embedded. The embedding construct is utilized solely for purposes of documentation structure and understanding. As such, it does not imply any direct relationship, inheritance, similarity in structure or connectivity in addressing scheme between the embedded object and the object in which it is embedded.	SEMI E54.1
embedded solution	a type of performance solution (intervention); a job aid that is integrated into the equipment (e.g., labels, ergonomic designs, color-coding, mistake-proofing, expert systems, on-line help systems).	SEMI E150
emergency	a sudden, serious event or situation, such as earthquake, explosion, fire, or release of hazardous energy or chemicals.	SEMI S21
emergency off	a safety circuit that, when activated, places the equipment in a safe shutdown condition without generating any increased risk to personnel or the facility.	SEMI S28
emergency off (EMO)	a control circuit which, when activated, places the equipment into a safe shutdown condition.	SEMI S8
emergency off (EMO)	function to place the UTV system into a safe shutdown condition without generating any additional hazard to personnel or the facility when an EMO actuator (e.g., button) is activated.	SEMI S17

Term	*Definition*	*Standard(s)*
emergency power	electrical power supplied by alternate sources or backup systems, like generators that come on line when the main utility power fails.	SEMI E70
emergency response team	a team who is responsible for responding to emergencies.	SEMI S21
emergency stop	a safety circuit that, when activated, provides a Category 0 or Category 1 Stop for hazardous moving parts but does not necessarily isolate or control all energy sources.	SEMI S28
emergency stop (E-stop)	function to place all moving parts of a UTV or the part of the UTV system on which the E-stop actuator located into a safe stop condition without generating any additional hazard to personnel or the facility when an E-stop actuator (e.g., button) is activated.	SEMI S17
EMI Audit	a process of verifying whether actual EMI characteristics are in compliance with desired EMI limits.	SEMI E176
EMI event	an occurrence of electromagnetic interference (EMI) that may also include electromagnetic emission from electrostatic discharge (ESD) events.	SEMI E33, E176
EMI Survey	a process of measuring and reporting characteristics of electromagnetic phenomena relevant to an EMI audit.	SEMI E176
EMI-sensitive equipment	any equipment with performance that is adversely affected by electromagnetic interference (EMI) present in the semiconductor manufacturing environment.	SEMI E33, E176
emitter wrap through (EWT)	where a plethora of vias enlarge the emitter surface of the cell.	SEMI PV62
employer	entity that directly supervises employees.	SEMI S21
empty cell	a cell which has no figure in itself or in any cells under the cell.	SEMI P44
emulator	hardware and/or software that duplicates (or emulates) the functions of the equipment computer system in a different second computer system, so that the behavior of the second system closely resembles the behavior of the equipment system.	SEMI E165
encapsulation	the technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the data link layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data.	SEMI E54.13
enclosed load port	a load port with overhead clearance obstructed by the tool.	SEMI E15
enclosed weld head	weld head in which the weld joint is held and welded within a closed chamber containing a shielding purge gas.	SEMI F78
enclosure	a physical structure that separates a space in which exhaust ventilation is provided from another such space or from a space in which ventilation is not provided.	SEMI S6
enclosure	the physical boundary of the equipment through which electromagnetic fields (EMFs) may radiate or impinge.	SEMI E33
enclosure	the physical boundary of the equipment through which electromagnetic fields (EMFs) may radiate or upon which they may impinge.	SEMI E176
encroachment	nonstandard term for ID *convexity.*	SEMI F78
encrypted data	data entered by the vendor, usually to facilitate traceability, that may or may not be shared with the customer.	SEMI T3
end effector (EE)	wafer transfer device for transferring wafers to or from the carrier.	SEMI M80
end face	a planar face at the end of sapphire ingot perpendicular to the axis.	SEMI HB11
end of life	a product at the end of the product lifecycle, indicating that the product is at the end of its useful life (from the vendor's point of view). At this stage, a vendor stops the marketing, selling, or provision of parts, services or software updates for the product.	SEMI E187
end of life	the item has reached the end of its useful lifespan and should be replaced, renewed, or replenished.	SEMI E189
End of Load Request (EoLR)	a timing when Load Request state ends.	SEMI E171

Term	*Definition*	*Standard(s)*
End of Unload Request (EoUR)	a timing when Unload Request state ends.	SEMI E171
end point detection (EPD)	a change in the signal strength of a specific measurement that occurs during the transition from one material layer to the next.	SEMI C104
end user	party that uses the production equipment for the purposes of manufacturing semiconductors.	SEMI E187
end user	buyer of a product for its intended purpose, for example, a maker of cell phones or laptops.	SEMI T20
end user customer	as related to UTVs, the company operating the factory in which the UTVs are installed.	SEMI S17
end wall	the wall of the carrier opposite the bar end of the carrier.	SEMI E1
end wall	the wall of the cassette opposite the bar end of the cassette.	SEMI HB2
ended	the end of a state that may be when it is normally completed, or its early end due to an allowed or atypical condition (e.g., a STOP command, or an error or alarm condition).	SEMI E30.1
end-of-pipe abatement	abatement technologies that can be fitted at the discharge point of the exhaust system.	SEMI F5
endpoint	a computing device implemented on fab equipment that interacts with external entities via the fab network.	SEMI E187
endpoint detection event	consists of the device operation of monitoring, measuring, analyzing, waiting, and reporting endpoint.	SEMI E54.11
endpoint device (EPD)	a self-contained device, consisting of device specific signal-processing electronics, which is capable of monitoring and measuring the occurrence of a process endpoint.	SEMI E54.11
end-to-end latency	with respect to the reporting of data from equipment to a requesting application, the total sum of tool data latency, network data latency, and the time it takes the signal at a receiving node to reach the application from which the latency is being measured.	SEMI E151
energetic material	a material that is either an energetic process chemical or an energetic byproduct.	SEMI S30
energetic materials container	an assembly consisting of at least: (1) a vessel in which a material is stored and may be transported and from which it may be transferred to another container or to equipment, (2) fittings for fluid connections, and (3) one or more valves permitting isolation of each of its connections. An energetic materials container may include additional valves, means of purging, or sensors.	SEMI S30
energetic materials path	the places through which energetic materials pass or in which they are stored, accumulated or used. This includes energetic process chemical containers, piping, process chambers, exhaust lines, vacuum pumps, and abatement equipment.	SEMI S30
energetic process chemical supplier	party that provides one or more energetic process chemicals directly to another party. An energetic process chemical supplier may be a manufacturer, a distributor, or a representative.	SEMI S30
energized	electrically connected to a source of voltage.	SEMI S22
energized electrical work	work performed on energized equipment or systems containing hazardous voltages.	SEMI S21
energy conversion factor	the equivalent electrical energy per unit of a utility or a material.	SEMI S23
energy efficiency	the quantity of goods or services produced per unit of energy consumed.	SEMI S23
energy impact	positive or negative effects on the amount of energy required to produce or provide an item or material, or to execute a process or step.	SEMI S23
energy resolution	width of peak in γ-spectrum at $1/e$ of its maximum.	SEMI PV10
engineering control	a method to eliminate or mitigate a hazard through equipment design.	SEMI S8, S30
engineering control	a physical feature that isolates personnel from a hazard.	SEMI S10

Term	*Definition*	*Standard(s)*
engineering state (ENG)	the equipment state when the equipment system is in a condition to perform its intended function, but is operated to conduct engineering experiments, especially where the usage of the equipment system during ENG is not indicative of normal production. ENG includes any activities required to restore the equipment system to a condition where it may perform its intended function.	SEMI E10, E79
engineering time	during an observation period, the accumulated time when the equipment system is in the engineering state (ENG).	SEMI E10, E79
enhanced Euclidean	Euclidean geometry formula that have been altered to encompass irregularities seen in nature.	SEMI C69
ENQ	'request to Send' handshake code.	SEMI E4
ensemble	infinitely large collection (infinite ensemble) of quantities, the properties of which are governed by some statistical distribution law.	SEMI MF1811
ensemble average value	value of a particular surface parameter or function averaged over the appropriate distribution functions.	SEMI MF1811
entity	an application program associated with an endpoint of a TCP/IP connection.	SEMI E37
entity	in software engineering, it is something that is recognizable as distinct and particular from the other things that make up a software system or program.	SEMI E54
entity	an active element (person or computer process) that operates on information or the system state.	SEMI E169
entry lesson	the first lesson in a course; the entry lesson is typically shown at the bottom of a learning hierarchy and stated as a task.	SEMI E150
enumerated	may take on one of a limited set of possible values. These values may be given logical names, but they may be represented by any single-item data type.	SEMI E39, E40, E41, E53, E58, E99, E118
enumerated	may take on one of a limited set of possible values. These values may be given logical names, but they may be represented by any single-item data type except floating point.	SEMI E90
enumerated byte	a byte with assigned meaning to the values 0 through 255. May take on one of a limited set of possible values.	SEMI E54.1, E54.10, E54.22
environmental aspect	element of an organization's activities, products or services that can interact with the environment. [ISO 14001]	SEMI S16
environmental impact	an change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services. [ISO 14001]	SEMI S16
environmental impact	positive and negative effects to the Earth's environment from a variety of sources, including people and their activities, and from the operation of SME and facilities.	SEMI S23
environmental impact	positive and negative effects to the earth environment from a variety of sources including people and their activities, and the operation of semiconductor manufacturing equipment and facilities.	SEMI S29
environmental isolation	separated from the ambient atmospheric environment.	SEMI E21, E166
environmental subsystem	a subsystem of equipment with the purpose of monitoring or maintaining one or more specific environmental conditions or used to handle product or durables. Environmental subsystems include vacuum systems, particle detection systems, and nitrogen purge systems.	SEMI E98
EOT	'Ready to Receive' handshake code.	SEMI E4
epi-objective	in microscopy , an objective with an annular mirror that acts as a lens to illuminate the specimen.	SEMI MF728
epitaxial layer	a layer of single crystal semiconductor material grown on a host substrate that determines its orientation.	SEMI M46, M59
epitaxial stacking faul	a stacking fault that arises during growth of an epitaxial layer, usually nucleated at the boundary between the epitaxial layer and the substrate, but sometimes nucleated further into the growth process.	SEMI M59

Term	*Definition*	*Standard(s)*
epitaxial wafer	polished, monocrystalline silicon wafer covered on its front surface, edge, and near edge region of the back surface with a layer of monocrystalline silicon deposited from a heterogeneous phase.	SEMI M59
epitaxy	the growth of a single crystal layer on a substrate of the same material, homoepitaxy; or on a substrate of different material with a compatible crystal structure, heterohepitaxy.	SEMI M59
EPT module	a major component of the equipment that affects processing or throughput.	SEMI E116
EPT state	the state of IDLE, BUSY, or BLOCKED within EPT state model.	SEMI E116
equilibrium capacitance	that capacitance reached after an MOS specimen at a fixed bias is illuminated and then allowed to stabilize in darkness.	SEMI M59
equilibrium vapor concentration (EVC)	the state of a material at which vapor pressure has stabilized and is no longer rising or falling. The EVC value (in parts per million) of a material is determined by multiplying the vapor pressure by 10^6 and dividing by atmospheric pressure (760 mmHg at sea level).	SEMI F6
equipment	mechanical entity in the factory which plays a role in the manufacturing process.	SEMI E32
equipment	the intelligent system which communicates with a host.	SEMI E4, E5, E94
equipment	the combination of hardware and software required to perform an operation or activity (e.g., processing, transporting, storing), including all direct auxiliary support or peripheral equipment (e.g., vacuum pumps, heat exchangers, effluent/exhaust treatment equipment).	SEMI E10, E35, E79, E140, E149, E150, E157, E161, E165
equipment	an agent with associated hardware that provides, at a minimum, recipe execution services.	SEMI E42
equipment	equipment (manufacturing equipment) performs one or more of the following manufacturing functions in the factory: material process, material transport, or material storage. Equipment is made up of various parts: modules, subsystems and sensors/actuators. Equipment has at least one carrier port. Equipment communicates with the factory.	SEMI E98
equipment	equipment (manufacturing equipment) performs one or more manufacturing functions in the factory (e.g., material process, material analysis, material transport, or material storage). Equipment is made up of various parts: subsystems, subassemblies, and sensors/actuators. Equipment communicates directly with the factory.	SEMI E148
equipment	the combination of hardware and software required to perform an operation or activity (e.g., processing, transporting, storing), including all direct auxiliary support or peripheral equipment.	SEMI PV55
equipment	a specific piece of machinery, apparatus, process module, or device used to execute an operation. The term ‘equipment’ does not apply to any product (e.g., substrates, conductors) that may be damaged as a result of equipment failure.	SEMI S2, S30
equipment	a specific piece of machinery, apparatus, process module, or device used to execute an operation. The term ‘equipment’ does not apply to any product (e.g., substrates, semiconductors).	SEMI S22
equipment assignable rework units	any units being reworked due to a fault or defect assignable to the subject equipment. The units may be reworked at the equipment where the fault or defect occurred, or at other equipment.	SEMI E79
equipment assignable scrap units	any units that are permanently removed from production due to a fault or defect assignable to the subject equipment. The units may be removed from production at the operation where the fault or defect occurred, or at a subsequent operation.	SEMI E79
equipment blank	equipment (analyzer) background level.	SEMI MF1982
equipment boundary	plane parallel to the facial plane establishing the boundary between the LEDME and the load port.	SEMI HB3
equipment boundary (EB)	consisting of two planes, one plane parallel to the facial plane establishing the boundary between the semiconductor manufacturing equipment and the load port.	SEMI E182

Term	*Definition*	*Standard(s)*
equipment boundary (EB)	a plane parallel to the facial plane establishing the boundary between the semiconductor manufacturing equipment and the load port. And the second plane parallel to the facial plane and above *z100* establishing the boundary between the semiconductor manufacturing equipment and the overhead transport vehicle.	SEMI E184
equipment center line	it shall be the center of the width of an equipment opening plane (center line of the equipment opening plane). In other words, it shall be a center line of two extention lines X1 and X2 orthogonal to *Y*-axis which is the datum line of the equipment opening plane.	SEMI D44, D48
equipment components	a collection of subassemblies or subsystems owned by the equipment that may provide a clock or timestamp information.	SEMI E148
equipment configuration	specifically, the arrangement, location, type and quantity of EPOC's needed for installation. Also know as tool configuration.	SEMI E76
equipment configuration	the arrangement, location, type and quantity of facility connections needed for installation.	SEMI F107
equipment connector	the part of the equipment to which a facility connector is connected to allow transfer of a facility service to or from the equipment. A connector may be device (e.g., a face-seal fitting or electrical plug) or the unterminated end of what carries the utility (e.g., a tube stub or a wire pigtail). An equipment connector may be part of an adapter plate or of some other part of the equipment.	SEMI F107
equipment data acquisition (EDA)	activity of acquiring data from the equipment by the data consumer.	SEMI E147
equipment data acquisition (EDA)	data collection interface based on SEMI E125 and SEMI E134, along with referenced standards including SEMI E120, SEMI E128, SEMI E132, SEMI E134 and SEMI E138.	SEMI E157
equipment data acquisition (EDA)	refers to the collection of SEMI Standards that define the XML/SOAP-based data collection interface and consists of SEMI E125, SEMI E132, SEMI E134, SEMI E120, and those Specifications that these Standards reference.	SEMI E164
equipment documentation	recorded documentation content intended to communicate equipment information (e.g., installation, operation, maintenance, illustrated field-replaceable units [FRUs] lists) to the user and released in any form (e.g., text, video, audio) or media (e.g., electronic, paper).	SEMI E149, E150
equipment electrostatic levels	acceptable static charge levels related to the major technology nodes of product and reticle feature sizes.	SEMI E78
equipment element	a component of the equipment that behaves as a unit, performs work, and may or may not contain lower-level components.	SEMI E98
Equipment Energy Saving Mode Communications	a capability that allows the host to manage a production equipment's entry and exit of sleep mode for the purpose of reduction of the rate of energy consumption.	SEMI E167
equipment engineering	a group that focuses primarily upon the electrical, electronic, and mechanical characteristics of production equipment. Depending upon the site and the fab area, Equipment Engineering may be a distinct organization or the equipment engineering responsibilities may be handled by other groups such as Process Engineering or Manufacturing Engineering. Equipment Engineering is typically responsible for selection and physical configuration of production equipment.	SEMI E70
equipment engineering (EE)	all activities for equipment availability improvement and performance maintenance inside and outside of the factory.	SEMI E147
equipment engineering capability (EEC)	an application that addresses a specific area of equipment engineering, such as fault detection, predictive maintenance, spare parts management, etc.	SEMI E147
equipment engineering data (EE data)	the data required to support equipment engineering capabilities. This includes data from the equipment and data from the factory.	SEMI E147

Term	*Definition*	*Standard(s)*
equipment engineering system (EES)	the physical implementation of equipment engineering capabilities.	SEMI E147
equipment fan filter unit	an active particle removal device with an assembly of filter, fan, motor and exterior case that is installed inside an equipment.	SEMI F111
equipment front end module (EFEM)	consists of the carrier handler that receives carriers from the factory material handling system on one or more load ports (as specified in SEMI E15.1), opens the carriers (if needed), and may include a substrate handler for unloading and loading wafers from the carrier to the process part of the equipment.	SEMI E63, E101, S28
equipment front end module (EFEM)	a hardware component that provides access for carriers to the equipment. An EFEM encapsulates load ports, carrier locations, carrier handlers, and other associated mechanisms. In many cases, the EFEM also includes a substrate handler.	SEMI E164
equipment internal network	a network that is only used internally by the manufacturing equipment. This network and computing devices on it are not directly accessible by the factory network.	SEMI E188
equipment metadata	the data that describes the equipment physical structure and available data/information from the equipment.	SEMI E147
equipment model	a definition based on capabilities, scenarios, and SECS-II messages that manufacturing equipment should perform to support an automated manufacturing environment.	SEMI E30
equipment module	an indivisible entity within an equipment system that if separated into individual parts is not capable of performing its portion of the intended function of the equipment system. An equipment module may be either a nonprocessing equipment module or a processing equipment module.	SEMI E10, E79
equipment module	a major component of equipment that contains at least one material location and performs some task on material. Equipment modules may be aggregates of equipment subsystems, i/o devices, and other modules.	SEMI E98
equipment module	an indivisible entity within an equipment system. An equipment module may be either a nonprocessing equipment module or a processing equipment module.	SEMI E165
equipment node	an equipment component that is used to describe the equipment physical structure.	SEMI E147
equipment opening plane	an opening through which AMHS loads/unloads substrates.	SEMI D44, D48, D49
equipment opening width	length of an equipment opening plane through which AMHS loads or unloads substrates.	SEMI D44, D48
equipment point of connection (EPOC)	a fitting or other terminal provided with the processing equipment (either external or internal) for utility connection, the equipment end/termination of the hookup. Also know as tool point of connection.	SEMI E76
equipment quality information parameter	a parameter that relates an aspect or quality of a wafer process or product. Specifically, an EQIP is a parameter of measure on a wafer that relates to the quality of the wafer, i.e., the closeness of the wafer to a design specification or the performance of the device being produced. EQIPs may be measurable directly or indirectly. EQIPs do not have to be measured at the process tool. EQIPs may also be referred to as ‘process quality parameters.’	SEMI E126
equipment recipe	an executable specification of an activity or process on an equipment. The recipe is the user-managed, reusable portion of the set of instructions and settings that determine the processing environment seen by the material. Recipes may be subject to change between runs or processing cycles. An equipment recipe consists of one or more recipe components.	SEMI E157, E168.1, E172
Equipment Recipe	a recipe the base part of RecipeXID was assigned by equipment.	SEMI E170
equipment required (ER)	the integer number of equipment required to obtain the throughput required for the step.	SEMI E35, E140
equipment substrate location	a substrate location on an equipment resource.	SEMI E90
equipment supplier	the provider of manufacturing equipment to the equipment user.	SEMI E188

Term	*Definition*	*Standard(s)*
equipment supplier	party who provides equipment to and communicates directly with the user. A supplier may be a manufacturer, an equipment distributor, or an equipment representative.	SEMI S24, S30
equipment system	a system of equipment generally capable of independently accommodating units for processing, inspection, metrology, or support operations (e.g., transportation, storage, pump down) or subsystem for which the independent tracking of performance (i.e., reliability, availability, and maintainability [RAM], utilization, productivity) is desired. Equipment systems include subsystems, noncluster tools, equipment modules, single-path cluster tools (SPCTs), intended process sets (IPSs) in multipath cluster tools (MPCTs), and MPCTs.	SEMI E10, E79
equipment type	a categorization or grouping of equipment based on capability, method of operation, effect on wafer, etc. The boundary of the type should be aligned with a generally perceived categorization of equipment in the industry.	SEMI E126
equipment user	party that uses the manufacturing equipment for the purposes of manufacturing semiconductors.	SEMI E188
equipment yield (EY)	the fraction of units received by the equipment that can be passed to the next step based on any criteria such as damaged units, or units determined to be defective by inspection, test, or measurement. Inclusion of EY results in a decreasing population of units flowing through the factory. At later steps, equipment process fewer units than the full factory unit starts. For inspection, test, and measurement equipment process steps, validly rejected units are scrap associated with the process step that caused it, but are not a component of EY for the inspection, test, and measurement equipment process steps themselves unless the inspection, test, or measurement equipment is integrated with the equipment for the process step that caused the scrap.	SEMI E35, E140
equipment-related failure	any failure caused solely by the equipment (e.g., not an out-of-specification input).	SEMI E10
equivalent corner rounding radius (ECRR)	an equivalent effective corner rounding radius calculated from the area difference. It assumes that the corner is a circular arc.	SEMI P43
equivalent line-end pull-back (ELEPB)	defined as the negative line-end area difference divided by the nominal line width, assuming accurate 1D control.	SEMI P43
equivalent orifice	a passage that will allow fluid flow equivalent to the fluid flow allowed by a round hole with an orifice coefficient of 80%.	SEMI S5
equivalent release concentration (ERC)	the theoretical concentration of a substance of concern that would be measured in air inside or outside an enclosure in the event of a primary containment failure. The ERC is calculated from the measured concentration of the gas that is released to perform the test. The ERC can be expressed as a percentage of the OEL or LFL of the substance of concern.	SEMI S6
equivalent source match	a vector quantity expressing the equivalent output reflection factor that will result in a correct power calculation when making a ratiometric comparison between a coupler-based power meter as the source and a terminating (RF load) power meter.	SEMI E136
equivalent standard leak rate	the leak rate when the pressure one side of the package is at standard temperature and pressure (approximately 760 mm Hg absolute) while the other side of the package is at vacuum (less than 1 mm Hg absolute), often referred to as the true leak rate, or the leak rate normalized for a unit pressure differential.	SEMI MS3, MS8, MS10
ergonomic issues	those issues dealing with the user's physical and cognitive needs, capabilities, and human performance limitations in relation to the design of machines, tasks, and other features of the human's working environment.	SEMI S8
ergonomic-related hazard	an equipment or workplace condition that creates stress to the user that contributes to the risk of developing either an acute injury or a cumulative trauma disorder.	SEMI S8
ergonomics	the study of human mental and physical capability in relation to the working environment and the equipment operated by the worker.	SEMI S8
error	the difference between the quality level committed to a user and the level that could be received.	SEMI M59
error	the difference between the theoretical quality level and the level that could be received.	SEMI HB8

Term	*Definition*	*Standard(s)*
error band	a range of deviation or percentage from an ideal, targeted, or otherwise specified value or set of values.	SEMI E151
error class	specifies the type of electrical failure configuration in a memory cell group. Bit-fail, line-fail and block-fail are examples.	SEMI E107
error condition	an exception condition which is not an alarm and which may support recovery actions requested by a decision authority.	SEMI E41
error correction	mathematical techniques, which reconstruct the original information, based upon the remaining data in a damaged or poorly marked code. Reed Solomon and convolution are two such techniques.	SEMI T10
error counter	containing information about invalid received Ethernet frames.	SEMI E54.20
error message	a notification to the user/client that an error has occurred. It may or may not be associated with an alarm.	SEMI E127
ESD Audit	an internal or external verification of some or all provisions in electrostatic discharge (ESD) control programs and related standards.	SEMI E33
ESD event	an occurrence of electrostatic discharge (ESD) that can cause an electromagnetic emission.	SEMI E33
ESD event	an occurrence of electrostatic discharge (ESD).	SEMI E176
ESD simulator	an instrument providing a specified electrostatic discharge current waveform when discharged directly to a product or equipment part.	SEMI E78, E129
estimate	ensemble-average value of a roughness statistic from a finite set of measured profile data.	SEMI MF1811
estimator	algorithm or mathematical procedure for calculating an ‘estimate.’	SEMI MF1811
etch	any process used to remove silicon in a controlled fashion to create the TSV opening.	SEMI 3D5
etch	a solution, a mixture of solutions, or a mixture of gases that attacks the surfaces of a film or substrate, removing material either selectively or nonselectively.	SEMI M59
etch factor	the ratio of etched depth to the lateral etch or undercut.	SEMI G19
etch pit	a pit, resulting from preferential etching, localized on the surface of a wafer at a crystal defect or stressed region.	SEMI M59
etch rate	the total etch depth divided by the total plasma process time, typically given in µm/min.	SEMI MS13
etch rate	what loss of weight per unit area of materials in unit time.	SEMI PV67
etch stop	in a multilayer object, a layer resistant to chemicals that can dissolve the adjacent material.	SEMI MS3
etch test structure	structures that are designed to aid in the characterization of microelectronic and micromachining etch processes. Electrical, optical, or physical measurements can be made on these test structures for the purpose of device evaluation and process optimization.	SEMI MS13
etched	a surface that has alloy structural features revealed by preferential chemical or electrochemical attack.	SEMI F19
etched polysilicon	polysilicon that has been etched with acid to remove surface contamination.	SEMI M16
etching	dye or pigment-dispersed color material is coated on substrate, and it is patterned by photolithographic etching method.	SEMI D13
Ethernet	a 10/100-Mb/s standard for LANs, initially developed by Xerox, and later refined by Digital, Intel and Xerox (DIX). All hosts are connected to the network media where they contend for network access using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD).	SEMI E54.13
EtherNet/IP	etherNet/IP (Ethernet/Industrial Protocol) is a networked communications protocol that specifies the encapsulation of CIP over TCP/IP.	SEMI E54.13
ethylene/vinyl acetate (EVA)	a kind of hot melt adhesive film, each layer tightly stick together, realizes the cell and the role of the air separation.	SEMI PV62

Term	*Definition*	*Standard(s)*
EUV (mask) blank	an EUV substrate which has had deposited upon it a backside conductive layer (for electrostatic chucking), a multilayer film stack (to provide high reflection of EUV light), and an absorber film stack (to block reflection of light in desired areas). A resist for writing of the pattern must be the top most layer, but this step can be done by the blank supplier or by the mask shop.	SEMI P37
EUV (mask) substrate	the base glass or ceramic material upon which films are deposited to make EUV blanks and EUV masks.	SEMI P37
EUV mask	the final result of patterning the EUV Blank. The EUV Mask is shipped from the Mask Shop to the customer for EUV exposures.	SEMI P37
EUV mask blank (or EUV blank)	an EUV substrate upon which a conductive layer is deposited on the backside, and a multilayer film and an absorber film stack on the other side.	SEMI P48
EUV mask substrate (or EUV substrate)	the base glass or ceramic material upon which films are deposited to make EUV blanks and EUV masks. It is identified with notches or bevels of the required dimensions at three corners on its backside	SEMI P48
EUV multilayer film stack	stack of film layers deposited on the EUV substrate to provide high EUV reflectivity, and any capping layers for environmental protection or etch stops.	SEMI P48
EUV pod	a dual pod minienvironment. It consists of an inner pod and an outer pod.	SEMI E152
Evaluate	the seventh step in the performance improvement process, as applied to a training solution: This step determines whether the training works, by looking at two or more of these examples of evaluation criteria: (1) the reaction/opinion of the students, (2) the degree to which members of the target group are able to be 'signed off' as competent, (3) the reaction of students and their supervisors to the training several months after training, (4) the degree to which members of the target group perform as expected on the job several months after training, and (5) any measurable benefits that accrue to the business as a result of the training.	SEMI E150
evaluating company	the party examining ME and making a finding as to whether the ME conforms to the criteria of a SEMI 'S' Document.	SEMI S7
evaluation length	the actual length over which surface roughness is assessed.	SEMI F37
evaluation length, Le	the length of the profile used for assessing the waviness profile under evaluation. A traced length after deduction of both pre-travel and post-travel.	SEMI D15
evaluation personnel	personnel (e.g., employees or subcontractors) who, as agents of the evaluator, participate in the evaluation.	SEMI S7, S27
evaluation purchaser	the party that pays the evaluator to perform the evaluation.	SEMI S7, S27
evaluative line pattern	a pattern in the image constructed of 3 to 5 straight parallel lines where the lines are oriented at some specified angle with respect to the standard coordinates and where the width of the lines is equal to the practical resolution and the pitch of the lines is twice the practical resolution.	SEMI P25
evaluator	the party examining ME and making a finding as to whether the ME conforms to a SEMI Safety Guideline.	SEMI S27
event	a detectable occurrence significant to the equipment.	SEMI E30, E42, E58
event	represents the occurrence of a change in the condition of a system (e.g., lot complete, temperature over range).	SEMI E53
event	an asynchronous message denoting the occurrence of some incident of importance. For example, state change or new object created.	SEMI E96
event channel	the intermediate object that forwards published events to interested subscribers.	SEMI E81, E96
event report	a class of objects that has information related to an event and can be linked to user defined data reports and can send messages containing this information to a service user.	SEMI E53
event report	a message the equipment sends to the host on the occurrence of a collection event.	SEMI E58, E116

Term	*Definition*	*Standard(s)*
event source	a physical or logical entity associated with the equipment that is capable of generating events independently of other equipment entities	SEMI F96
events	an asynchronous message denoting the occurrence of some incident of importance. For example, state change or new object created.	SEMI E81
examination	a written method for evaluating what a trainee has learned. Also sometimes called, exam or quiz.	SEMI E150
examiner	a person who performs examination of a particular object, or evaluates an operation, for compliance to a given standard. The examiner performs quality control for the manufacturer, fabricator, or erector.	SEMI F78, F81
example value	a value to be used if actual data are not available. Also sometimes called default or default value.	SEMI E35, E140
exception	an alarm or error that is reported to the user and that may or may not be recoverable.	SEMI E58
exception	an infrastructure mechanism used to notify a calling client of an operation that an unusual condition occurred in carrying out the operation.	SEMI E81, E96
exception agent	the entity which manages access to and reporting of information on abnormal situations in equipment. It achieves this by defining exception conditions, each related to a significant abnormal situation. It may provide services for a decision authority to direct the recovery from certain situations.	SEMI E41
exception condition	a managed condition for reporting on and providing recovery from an abnormal situation in the equipment.	SEMI E41
exception source	a physical or logical entity associated with the equipment that is capable of generating exceptions independently of other equipment entities.	SEMI F96
excess area	the difference between the wetted and illuminated areas.	SEMI M46
excess flow device	a mechanical or electrical component which terminates flow in the event predetermined flow is exceeded.	SEMI F22
excessive leakage	gas leakage (measured in bubbles) from a fitting connection greater than can be humanly counted.	SEMI F12
excessive plating	plating exists outside the specified area.	SEMI G62
excessive reach	a reach which may result in biomechanical or other stress to the user.	SEMI S8
eXchange Port	a Port that works as one or both of Send Port and Receive Port in one transfer cycle.	SEMI A1
excitons	the electron-hole pairs that give rise to the luminescence of interest upon recombination at either a free lattice site (free exciton) or an impurity atom site (bound exciton).	SEMI MF1389
exclusion area	a specified area on a physical surface reserved for one or more specific uses.	SEMI E152
exclusion volume	a specified volume reserved for one or more specific uses.	SEMI E152
exclusion window	an area on the wafer front or back surface that intersects the fixed quality area (FQA) from which acquired data, if any, are not used to calculate metrics	SEMI M67, M68
exclusion zone	a restricted area within a process or cassette module reserved for access by the transport module end effector during wafer handling.	SEMI E22
executing agent	an agent that provides recipe execution capabilities.	SEMI E42
execution (recipe execution)	the process of reading the recipe contents and implementing its instructions, process parameters, or other information required for its own processing.	SEMI E42
execution area	the storage location of the recipe(s) currently selected (ready) for execution.	SEMI E42
execution area	the area from which a current copy of the process program instructions are executed.	SEMI E91, E122, E123
execution group (EXG)	a group of wafer which is dealt at a time in the same environment by using the same control condition.	SEMI E174
exhaust	airflow by means of facility fans moving air from SME to a location outside of a fab or laboratory area.	SEMI S23
exhaust ventilation	any of primary, secondary, or additional exhaust ventilation (i.e., PEV, SEV, or AEV), as defined herein.	SEMI S6, S18

Term	*Definition*	*Standard(s)*
exothermic reaction	a chemical process in which heat is released.	SEMI S25
expected block	the block of a message which is expected by the message protocol.	SEMI E4
explanation of wafer metrology terms	the parameters primarily measured, wafer bow, warp, and sori need some explanation. Figure 3 shows schematic diagrams representing these terms.	SEMI 3D4
explicit message connections	connections over a DeviceNet network that provide generic, multi-purpose communication paths between two devices. These connections often are referred to as just messaging connections. Explicit messages provide the typical request/response—oriented network communications.	SEMI E54.4
explicit message connections	connections over a EtherNet/IP network that provide generic, multipurpose communication paths between two devices. These connections often are referred to as just messaging connections. Explicit messages provide the typical request/response-oriented network communications.	SEMI E54.13
exposed (as applied to energized parts)	capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.	SEMI S22
exposure field	the area of a wafer covered by a single exposure.	SEMI P18
exposure time	the time for which the image sensor is exposed to the electroluminescent light from the photovoltaic module.	SEMI PV94
exposure to a hazard	situation in which a hazard is present which can, but does not necessarily, result in harm.	SEMI S10
expression of content and concentration	unless otherwise stated, a specification limit and the analytical result related to it shall be expressed in units of mole per mole (mole/mole).	SEMI C3
extended light scatterer (XLS)	a feature larger than the spatial resolution of the inspection equipment, on or in a wafer surface, resulting in increased light scattering intensity relative to that of the surrounding wafer surface originating from such defects as area contamination and unresolved clusters of localized light scatterers, such as particles or COPs. When observed by the unaided eye, an XLS can usually be seen under high intensity illumination.	SEMI M59
extended mode	one of the transmission format to communicate larger amount of data between master and slave.	SEMI E54.19
extended reach	a reach which requires either stretching, stooping, crouching, bending forward at the waist greater than 20°, or shoulder flexion or abduction greater than 45°.	SEMI S8
extended recipe identifier (RecipeXID)	an identifier of a recipe which is extended with Version ID, Security ID, Type ID, and Equipment ID in addition to conventional Recipe ID.	SEMI E170
extensibility	the ability to extend or specialize existing components and add new object classes or components while preserving architectural integrity and component conformance to standards.	SEMI E81, E96
eXtensible markup language (XML)	a W3C Recommendation that describes a subset of SGML syntax and functionality intended for use on the World Wide Web. XML is, by design, simpler, less complex, and easier to implement than SGML. XML is also, by design, far less flexible than SGML because it includes only the most commonly implemented SGML features.	SEMI E36
eXtensible Markup Language (XML)	a markup language used for representing data rich with context and content in documents and in communications. XML is an extension of SGML, a document-oriented markup language. It was created by W3C for use on the Internet. XML can represent object-oriented structures.	SEMI E120.1, E125.1, E132.1, E134.1, E139.1, E142.1, E172, E173, T20.3
eXtensible Markup Language (XML)	a markup language the defines a set of rules for encoding documents in a text format that is both human-readable and machine-readable.	SEMI PV55
external connection	an external connection is located outside the main frame of equipment.	SEMI E76

Term	*Definition*	*Standard(s)*
external heater	a heater applied to the outside of a vessel that heats the contents of the vessel through the vessel wall.	SEMI S3
external network	network not under the control of the equipment user (e.g., Public Internet or equipment supplier network).	SEMI E188
external stocker load port	a load port that is external to the stocker equipment boundary (such as a shelf or ledge on the stocker).	SEMI E156
external stocker loadport	an interbay loadport that is external to the stocker equipment boundary similar to a shelf or ledge on the stocker.	SEMI E85
extinction, X	ratio of maximum to minimum transmission of light through a pair of polarizers that are rotated with respect to each other.	SEMI MF1763
extremely electrostatic sensitive (EES) item	any item that is very highly susceptible to degradation or malfunction caused by electrostatic charge, voltage or field, even when handled under conditions that would normally be classified as 'electrostatic discharge (ESD) controlled'.	SEMI E163
extremely electrostatic sensitive (EES) minienvironment carrier	a transport method for extremely electrostatic sensitive (EES) items that excludes electric fields by surrounding the EES item with a Faraday Cage (i.e., a conductive enclosure).	SEMI E163
extremely low frequency (ELF)	the spectrum range less than 3 kHz.	SEMI E33, E176
extremely low frequency (ELF) electromagnetic field (EMF)	an electromagnetic field (EMF) generated by extremely low frequency (ELF) current flow (most commonly at 60 Hz in the U.S., parts of Japan, and Taiwan and at 50 Hz in most of Asia and in Europe) within equipment and facilities.	SEMI E33
extrinsic	(1) the region in the conductivity-temperature curve where the conduction in a wafer is dominated by holes or electrons from dopant atoms; (2) a process, such as extrinsic gettering, caused by factors outside the crystal of the wafer itself.	SEMI M59
extrinsic line (X_{TO}(BE) or X_{NP}(BE))	the luminescence that arises from an exciton captured by an impurity site in the crystal lattice (a bound exciton).	SEMI MF1389
fab	a fabrication plant for semiconductor devices.	SEMI E187
fab	the main cleanroom facility for processing semiconductor wafers. Abbreviation for fabrication facility.	SEMI F107
fab	a facility in which semiconductor devices or flat panel displays are manufactured.	SEMI S24
fab equipment	a major manufacturing facility located in the semiconductor fab. It means two types of components in this Standard: semiconductor production equipment and automated material handling system.	SEMI E187
fabless	a company that designs, markets, and sells devices, but contracts out their production rather than owning its own factory.	SEMI T23
face seal fitting	a high purity fitting which incorporates two machined faces and a metallic gasket within a male/female nut configuration to attain a high leak integrity seal.	SEMI F22
face velocity	velocity at the cross-sectional entrance to the exhausted hood.	SEMI S2
facet	not preferred, use *edge.*	SEMI M59
facet length	not preferred, use *edge width.*	SEMI M59
facial datum plane	the plane coincident with the front face of the tool and perpendicular to the horizontal and vertical datum planes.	SEMI D16
facial datum plane	a vertical plane that equally bisects the substrates when the centers of the substrates are aligned and that is parallel to the front side of the carrier (where substrates are removed or inserted) and is perpendicular to the bilateral datum plane. On tool load ports, it is also parallel to the load face plane on the side of the tool where the carrier is loaded and unloaded.	SEMI D17, D18

Term	*Definition*	*Standard(s)*
facial datum plane	a vertical plane that bisects the wafers and that is parallel to the front side of the carrier (where wafers are removed or inserted). On tool load ports, it is also parallel to the load face plane specified in SEMI E15 on the side of the tool where the carrier is loaded and unloaded.	SEMI E1.9, E47.1, E57, E62, E63, E83, E110, E119, E131, E185, M31
facial datum plane	a vertical plane, defining *y=0* of a system with three orthogonal planes (HDP, BDP, FDP).	SEMI E184
facial datum plane	a vertical plane that bisects the wafers and that is parallel to the front side of the carrier (where wafers are removed or inserted). On equipment load ports, it is also parallel to the load face plane specified in SEMI E15 on the side of the equipment where the carrier is loaded and unloaded (as defined in SEMI E57).	SEMI E92
facial datum plane	a vertical plane that bisects the tape frames and that is parallel to the front side of the frame cassette (where tape frames are removed or inserted). On tool load ports, it is also parallel to the load face plane specified in SEMI E15 on the side of the tool where the frame cassette is loaded and unloaded (as defined in SEMI E57).	SEMI G77
facial datum plane	a plane that is parallel to the tool face and vertical to both vertical and horizontal datum planes at the cassette loading position.	SEMI D28
facial plane	a vertical plane, defining *y=0* of a system with three orthogonal planes (HP, BP, FP), coincident with the nominal location of the wafer center and parallel to the H-bar of the cassette when positioned in the equipment load position.	SEMI HB3
facial plane (FP)	a vertical plane, defining *y=0* of a system with three orthogonal planes (HP, BP, FP), *y33=194 ± 0* mm in front of the nominal location of the rear primary KCP.	SEMI E83, E154, E156, E158, E159, E181, E181.1, E181.2, E181.3, E181.4, E182, M80
facial plane (FP)	a vertical plane, defining *y=0* of a system with three orthogonal planes (HP, BP, FP).	SEMI G92, G95
facial reference plane	a vertical plane which bisects the reticle and is parallel to the front side of the pod (where reticles are removed or inserted). The facial reference plane passes through the center of the 200 mm SMIF as defined in SEMI E19.4. The facial reference plane is coplanar with the facial datum plane defined in SEMI E57.	SEMI E100
facial reference plane	a vertical plane which bisects the RSP150 and is parallel to the front side of the pod (where reticles are removed or inserted) and passes through the center of the 150 mm SMIF as defined in SEMI E19.3.	SEMI E111
facial reference plane	a vertical plane which bisects the MRSP150 and is parallel to the front side of the pod (where reticles are removed or inserted) and passes through the center of the 150 mm SMIF as defined in SEMI E19.3.	SEMI E112
facial reference plane (FRP)	a vertical plane that bisects the baseplate and is perpendicular to both the horizontal and bilateral reference planes. The facial reference plane is coplanar with the facial datum plane defined in SEMI E57.	SEMI E152
facilities infrastructure equipment	component, modules, and systems used to transport materials like chemicals, power, water, effluent, and exhaust in semiconductor factories.	SEMI F49
facilities interface specification	documentation provided by a tool supplier that contains the tool requirements for utilities and installation as defined in SEMI E6.	SEMI E70
facilities interface specification	documentation provided by an equipment supplier that contains the equipment requirements for utilities and installation.	SEMI E76
facilitization	the provision of facilities or services.	SEMI E6, S2

Term	*Definition*	*Standard(s)*
facility connector	the part of the facility to which an equipment connector is connected to allow transfer of a facility service to or from the equipment. A connector may be device (e.g., a face-seal fitting or electrical plug) or the unterminated end of what carries the facility service (e.g., a tube stub or a wire pigtail).	SEMI F107
facility electrostatic levels	acceptable static charge levels related to the major technology nodes of product and reticle feature sizes.	SEMI E129
facility exhaust ventilation (FEV)	removal of air and the contaminants, if any, contained therein, from SME or its immediate proximity. FEV is a service provided by a facility, usually through a duct.	SEMI S6
facility monitoring and control system (FMCS)	IT System consisting of software and hardware components that are used to monitor and control all FPUs as described in § 2 [of SEMI F97]. Typically a FMCS is implemented using a PC based architecture.	SEMI F97
facility operator	entity that controls activities at the site. The facility operator may be the user itself.	SEMI S21
facility owner	the actual owner of the property that may not be the actual operator of the facility.	SEMI S21
facility services	any gas, exhaust, liquid, power, data communications or other material which are supplied to or carried away from the equipment and used in the process. Also referred to as utilities or facilities.	SEMI E76
facility supplier	party who provides a facility or facility service (e.g., nitrogen) to, and directly communicates with, the user. A facility supplier may be a construction company, a manufacturer or distributor of facility equipment (e.g., deionization systems), or a facility service provider.	SEMI S24
facility system	describes an overall architecture in the context of facility monitoring and control. A facility system typically consists of four layers.	SEMI F97
fact	the immutable representation of some facet of the total environment's state. Facts are determined by a measurement or state transition.	SEMI E183
factor	predictor variable whose level is changed with the intent of assessing its effect on the response variable (in a designed experiment) [adapted from ISO 3534-3].	SEMI 89
factory automation controller	a computer system that provides integration of factory shop control and business systems with semiconductor equipment.	SEMI E30.1, E30.5
factory components	a collection of software applications, software/hardware systems, and equipment used for manufacturing.	SEMI E148
Factory Host	the host that manages multiple assembly lines from the factory management perspective.	SEMI A5
factory information and control system (FICS)	the software system that controls the operation of the factory and its equipment. It may include such components commonly referred to as the MES, station controllers, recipe managers, etc.	SEMI E139, E168
factory network	a network managed by the equipment user for the purposes of manufacturing equipment connectivity.	SEMI E188
factory object	any identifiable object within the factory information and control architecture. Examples include equipment, a cluster process module, a cell controller, a recipe namespace server.	SEMI E53
factory planning	recommendation of lot starts for a particular production facility over an extended period of time. The factory plan is determined by predicting future changes in factory state and available capacity as lots progress through production. This prediction is used to determine the optimum sequence of lot starts to best achieve the production goals of the facility. Factory planning is typically the responsibility of enterprise systems.	SEMI E105
factory system	the control system of factory which includes the host and AMHS.	SEMI E171
fade meter	a device which tests for the existence of external change or characteristics in materials by long term irradiation using fixed brilliance from a prescribed light source.	SEMI D30
fail bit map data	data representing memory cell electrical failure information according to its location information, in units of the die or wafer.	SEMI E107
fail-safe	designed so that a failure does not result in an increased risk.	SEMI S2, S3, S22

Term	*Definition*	*Standard(s)*
fail-to-safe equipment control system (FECS)	a safety-related programmable system of control circuits designed and implemented for safety functions in accordance with recognized standards such as ISO 13849-1 (EN 954-1) or IEC 61508, ANSI/ISA 84.00.01. These systems (e.g., safety programmable logic controller (PLC), safety-related input and output (I/O) modules) diagnose internal and external faults and react upon detected faults in a controlled manner in order to bring the equipment to a safe state	SEMI S2, S17, S22
failure	tube separation form a welded connection or tearing of the tube.	SEMI C83
failure	a continuous instance of downtime starting from a transition to the unscheduled downtime state (UDT). A failure spans from the transition event (i.e., a failure event) to UDT from an equipment state other than UDT to the next transition to an equipment state other than UDT or SDT. One or more component or subsystem failures, software or process recipe problems, facility or utility supply malfunctions, safety errors (e.g., open interlock), or human errors could cause a failure. An equipment system experiences at most one failure at a time; subsequent problems occurring during a failure are not counted as additional failure events.	SEMI E10
failure	any external leakage of fluid through the tube wall or the tube fitting connection, whether it be catastrophic or a slow leak.	SEMI F10
failure	any unplanned interruption or variance from the specifications of equipment operation other than assists.	SEMI F47
failure	tube separation from a tube fitting connection or tearing of the tube.	SEMI F7, F8
failure	the termination of the ability of an item to perform a required function. Failure is an event, as distinguished from ‘fault,’ which is a state.	SEMI S2, S22, S28
failure event	an event that starts with an equipment state transition for an equipment system from an equipment state other than unscheduled downtime (UDT) to UDT and ends when an equipment system transitions to any other equipment state except SDT. Failure events are used for establishing the count of failures in an observation period for applicable SEMI E10 metrics.	SEMI E10
failure modes	the breakdown failure results are summarized in terms of the range of the oxide electric field in which the breakdown occurred.	SEMI M51
fall arrest	stopping a person in free fall.	SEMI S2
fall protection	engineered or administrative controls that reduce the risk of a fall.	SEMI S2
fall restraint	preventing a person’s center of gravity reaching a fall hazard by use of a harness, lanyard, and connectors.	SEMI S2
false count (FC)	laser-light scattering event that arises from instrumental causes rather than from any feature on or near (in) the wafer surface; also called *false positive*; compare *nuisance count.*	SEMI M59
false count rate (FCR)	mean total number of false counts per wafer that an SSIS reports at some specified SSIS operational setting.	SEMI M59
false counts	particle counts contributed by electrical noise or by other events and not particles in the sampled gas.	SEMI F70, F70.1
family type I error rate	for any individual sample, the probability that one or more characteristics will read OOC when a process is actually in statistical control.	SEMI C64
fast axis	in optics, of a doubly refracting crystal, that direction in which the velocity of light is a maximum.	SEMI MF576
fast fourier transform or FFT	algorithm for calculating the Fourier transform (discrete Fourier transform or DFT) of a set of numerical data.	SEMI MF1811
fast scan direction	direction of the scanner motion, which progresses at the speed of the scan rate. The tip is moved by a distance equal or very close to the scan size along the fast scan direction to complete a scan line.	SEMI C78
fast track	a scheduling method that eliminates float and maximizes parallel activities thereby reducing overall project duration. Selective use of overtime is typically used to reduce the duration of critical path activities.	SEMI E70

Term	*Definition*	*Standard(s)*
fault	an exception.	SEMI E58, E116
fault	the state of an item characterized by inability to perform a required function, excluding the inability during preventive maintenance or other planned actions, or due to lack of external resources.	SEMI S2, S28
fault	the state of an item characterized by the inability to perform its intended function; excludes the inability to perform required functions during preventive maintenance or other planned actions, or due to lack of external resources.	SEMI S22
fault classification (FC)	the technique of determining the cause of a fault once it has been detected.	SEMI E133
fault detection	analysis of data for early detection of process faults before yield loss becomes significant.	SEMI E98
fault detection (FD)	the technique of monitoring and analyzing variations in tool and/or process data to detect anomalies. Fault detection includes both univariate and multivariate statistical analysis techniques.	SEMI E133
fault detection and classification (FDC)	combination of FD and FC.	SEMI E133
fault prediction (or prognosis) (FP)	the technique of monitoring and analyzing variations in process data to predict anomalies.	SEMI E133
fault probability (FP)	probability that a defect caused by processing through the equipment is fatal.	SEMI E35
fault-tolerant	designed so that a reasonably foreseeable single point failure does not result in an unsafe condition.	SEMI S2, S17, S22, S28
feature	(1) a line or a point (as a feature within a pattern). (2) A physical characteristic of the substrate (e.g., a substrate flat).	SEMI E30.1
feature	a distinctive item in a pattern, or a physical characteristic of the substrate (e.g., line, point, a wafer flat).	SEMI E30.5
feature	areas within a single, continuous boundary (e.g., an aggregate image) that have an optical-density value (gray-level range), that is distinct from the background area outside the feature.	SEMI P19
feature	areas within a single continuous boundary (e.g., an aggregate image) that have any physical property that is distinct from the background area outside the feature (e.g., the simplest element of a test pattern, such as a single line or bar).	SEMI P28
feature (lithographic)	region within a single continuous boundary, and attached to a reference plane, that has a defining physical property (parameter) that is distinct from the region outside the boundary.	SEMI P35, P43
feature (or pattern) alignment	positioning of nominal and actual feature (or pattern) relative to each-other.	SEMI P43
feature boundary	surface defined by a user-specified property, such as a threshold, maximum gradient, etc., of the parameter distinguishing the feature from its surroundings. Open features, such as vias or spaces between lines, may be bounded in height by an additional plane parallel to the reference plane.	SEMI P35
feature contour	shape formed by all edges of a feature, including external and internal edges. If the feature considered is clipped, then the edge(s) clipped by the region of interest serve as the edge(s) of the clipped feature.	SEMI P43
feature dimension	the dimension of interest, such as the side of a box, bar width and/or length.	SEMI P28
feature edge	position of the material boundary of a mask feature at a certain height of the physical cross section, to be stated as mandatory information. DEFAULT is feature/substrate interface.	SEMI P43
feature edge	that part of the feature boundary used to define the feature size or linewidth. The criteria used must be specified.	SEMI P35

Term	*Definition*	*Standard(s)*
feature group	a small assembly of one or more similar features arranged together, such as three nested L-bars.	SEMI P19
feature height	dimension of the specified bounding box perpendicular to the reference plane. May also refer to feature depth below the substrate, as in contact holes. Although feature height is sometimes referred to as feature thickness, this usage is not recommended because 'thickness' sometimes alludes to 'width.'	SEMI P35
feature inter-proximity error	range of the deviations between the mask feature width of a given size and the respective target width, on a variation of local pattern density and configuration (i.e., of the surround).	SEMI P43
feature linearity error	total range of the deviations between the mask feature width and the respective target width on a range of feature widths.	SEMI P43
feature mean-to-target	the difference between the mean width of features, selected as detailed, and the targeted feature width, stating the same information as for *feature width uniformity*.	SEMI P43
feature model	a solid geometrical shape, with well defined parameters: length, width, height, centroid, etc., meant to approximate the actual shape of a feature boundary.	SEMI P35
feature placement	(a) coordinates describing the position of the centroid of the specified bounding box projected onto the reference plane relative to a coordinate system in that plane. (b) coordinates describing positions of the feature's edges.	SEMI P35
feature proximity error	total range of the deviations between the mask feature width and the respective target width on a range of feature widths and on a variation of local pattern density and configuration (i.e., of the surround).	SEMI P43
feature roughness	the point-to-point deviation of a *feature boundary's* entire surface from the feature model's surface, as measured perpendicularly to the *feature model's* surface.	SEMI P35
feature size	dimensions of the specified feature model or bounding box.	SEMI P35
feature width	width of a cross section of a mask feature at a certain height defined by an appropriate bounding box model as described in SEMI P35. The bounding box model must be stated as mandatory information, as well as the z height of the measurement.	SEMI P43
feature width deviation (from target)	difference between actual and nominal feature width.	SEMI P43
feature width uniformity	the spread of the distribution of the width of all mask features of a given design size, selected as detailed hereafter.	SEMI P43
feedback (during practice)	information provided to learners during and after their practice of a task, providing both supportive (positive) information about what has been done correctly as well as corrective feedback about what needs to be done differently. Feedback is essential in order for learners to develop competence and confidence regarding the task, whether it is provided verbally by an instructor or whether it is provided by alternate means.	SEMI E150
feedback controlled blending	a blending process which extracts output measurements of the process and reactively adjusts the constituent additions to meet the set point composition and flow rate.	SEMI F39
feed-forward controlled blending	an open loop blending process which incorporates a predefined model to proactively predict and control constituent additions to meet a setpoint composition and flow rate. Feed-forward control may incorporate measurements from system inputs into the model.	SEMI F39
fiducial	flat or notch in the physical substrate used to identify the substrate orientation.	SEMI E130
fiducial	a flat or a notch on a wafer intended to provide a location referenced to its crystallographic axes.	SEMI M59
fiducial mark	a set of marks on EUV blanks, such as large and small crosses.	SEMI P48
fiducial mark location	center of the large cross of fiducial mark on EUV blanks.	SEMI P48
fiducial mark placement square (FMPS)	a square formed by virtual lines connecting the locations of four (4) fiducial marks on EUV blanks.	SEMI P48

Term	*Definition*	*Standard(s)*
field	the printer pattern from a reticle.	SEMI E30.1
field	an exposure repeated in a regular manner on a substrate.	SEMI E30.5
field change order	a document defining a formal change in drawings, specifications, and/or scope of work generated after contract award by on-site personnel to incorporate conditions identified during construction.	SEMI E70
field diaphragm	*in optics*, a usually variable opening that controls the field of view.	SEMI MF728
field fabrication	assembly and/or modification of components on the job site to accommodate site-specific conditions.	SEMI E70
field flatness	the difference between the maximum and the minimum z axis positions over the focal surface.	SEMI P25
field of view	the area that is observable through the eyepiece of an LMD equipped with an eyepiece.	SEMI D81
field of view	the imaging area as seen at magnification of the inspection or review equipment.	SEMI E30.1
field of view	*in microscopy*, the area or solid angle viewed through the microscope.	SEMI MF728
field support	activities performed on the manufacturing equipment after acceptance by the equipment user and includes maintenance related (intended to keep the equipment in good working order), service related (intended to return components that have failed to good working order) and modifications to the manufacturing equipment (e.g., upgrades, configuration changes, etc.).	SEMI E188
fieldbus data link	the PROFIBUS model for the OSI Layer 2 definition.	SEMI E54.8
field-replaceable unit (FRU)	a component part, subassembly, assembly, or subsystem of the equipment that can be removed and replaced on-site (i.e., in the field).	SEMI E149
figure operation	operations of modifying a figure, required when converting a layout data to a mask data.	SEMI P44
filament lifetime	the time constant, τ_F, (in µs) of an exponential portion of the decay of the photoconductivity voltage.	SEMI M59
filar micrometer, optical	a micrometer equipped with a movable fiducial line imaged in the eyepiece.	SEMI MF728
filar micrometer, video	a micrometer equipped with movable, electronically generated fiducial lines that appear, along with an image of the specimen, on a television monitor.	SEMI MF728
fillet	height and shape of die attach paste in contact with or surrounding the die kerf.	SEMI G63
film adhesive	adhesive between frame and film.	SEMI P5
film defects	inconsistencies in the integrity and planarity of the film, including particles, pinholes, scratches, dirt, and a minute quantity of solid.	SEMI P5
filter	a porous device, generally constructed of polymer, metal, or ceramics and housed in a metal chamber, which traps particles, preventing them from being transported downstream.	SEMI F22, F36
filter cartridge	the filtration element that removes particles from incoming gas stream.	SEMI F38
filter cartridge	the filtration element.	SEMI F59
filter housing	the shell that contains the filter cartridge.	SEMI F38, F59
filter shock	release of filtrate from filter media due to mechanical, pressure, or chemical influence.	SEMI F31
filtration	the removal of suspended solids by passing water through some form of solid or semi-solid medium.	SEMI F61
filtration unit	the assembly consisting of a filter cartridge and housing.	SEMI F38, F59
FIMS load port	a load port capable of opening and closing a SEMI E47.1 compliant FOUP using a mechanism that complies with SEMI E62.	SEMI S28
FIMS location	the ‘docked’ position of a FOUP at a load port where the FOUP may be opened and wafers inserted or removed.	SEMI E164
fin, on a ceramic package or cap	a fine, feathery-edged projection of parent ceramic material on the edge or corner of the ceramic body.	SEMI G1, G26, G34, G58, G61

Term	*Definition*	*Standard(s)*
final filter	generally the final treatment step in a UPW system; used to remove suspended solids.	SEMI F61
final report	the complete evaluation report, provided to the evaluation purchaser, that includes the findings as to whether or not the ME or sub-system that was evaluated conforms to the Safety Guideline. A final report is not an interim, cumulative, or supplementary report.	SEMI S27
final steady state value	the average value of the actual flow, after the effects of the initial flow transients have expired to a value equal to or below the intrinsic drift and noise	SEMI E17
finder pattern, of a data matrix code symbol	a perimeter to the data region. Two adjacent sides contain dots in every cell; these are used primarily to define physical size, orientation, and symbol distortion. The two opposite sides are made up of cells containing dots in alternate cells. [ISO/IEC 16022]	SEMI T7, T8, T9, T14, T14.1, T19, T24, PV29
finder pattern, of a data matrix symbol	a perimeter to the data region. Two adjacent sides contain marks in every cell: these are used primarily to define physical size, orientation and symbol distortion. This is often referred to as the L finder pattern. The two opposite sides are made up of cells containing marks in alternate cells.	SEMI T10
fingerprint	residual surface contamination deposited on a photomask or photoplate during handling.	SEMI P2, P3
finger-tight	where a particular joining apparatus (seal-system) is compressed/torqued to the point where one would need a tool of some sort to apply further force.	SEMI F74
finish (plating)	the final plating layer.	SEMI G21
finish parameters and functions	numbers or functions that characterize surface height fluctuations.	SEMI MF1811
finish plating	final plating layer whose electrodeposits fulfill the main purpose of the required characteristic.	SEMI G64
finished units out	the number of units of production that finish processing and testing during the period being measured.	SEMI E124
fired	a process or technology to manufacture products in which the ceramic and refractory metallization are fired simultaneously.	SEMI G5
firewall	a hardware/software capability that limits access between networks and/or systems in accordance with a specific security policy.	SEMI E169
first mizo clearance	the distance between the inside surface of the bottom plate and the centerline of the nearest mizo.	SEMI D11
first mizo dimension	the distance between the outside surface of the bottom plate and the centerline of the nearest mizo.	SEMI D11
first nominal substrate height	the distance (dimension z5) from the horizontal datum plane to the first nominal substrate seating plane.	SEMI D17, D18
first ordering flattening	a technique to eliminate the effect of sample tilt on surface roughness calculations. The technique consists of fitting the data using a first order polynomial and subtracting the best fit line from the data. A first order polynomial is an equation of the type $A + B \times x$ in which A and B are constants and x is the position on the line along which data are collected during a measurement. The best fit line is established through least square fitting.	SEMI C87
first substrate end-effector clearance	the distance (dimension z9) between the top of the cassette bottom domain and the first nominal substrate seating plane.	SEMI D17, D18
fit line	a line fit to a set of *x*-*y*-coordinates.	SEMI PV46
fixed buffer	EFEM configuration with carrier places only on load port units arranged in a load port group.	SEMI E101
fixed buffer equipment	production equipment that has only fixed load ports and no internal buffer for carrier storage. Substrates are loaded and unloaded directly from the carrier at the load port for processing.	SEMI E87, E110, E164, E171
fixed costs	costs incurred once and usually associated with the acquisition and incorporation of equipment into the factory.	SEMI E35, E140
fixed effect	variable for which estimates of the mean are obtained for each level.	SEMI E89

Term	*Definition*	*Standard(s)*
fixed factor	factor that has either all of its levels represented in an experiment or levels selected by a nonrandom process.	SEMI E89
fixed quality area	the central area of a substrate surface, defined by a nominal edge exclusion over which the specified values of a parameter apply.	SEMI 3D23
fixed quality area (FQA)	the central area of a wafer surface, defined by a nominal edge exclusion, *X*, over which the specified values of a parameter apply.	SEMI M79, M86
fixed quality area (FQA)	the central area of a wafer surface, defined by a nominal edge exclusion (*EE*), over which the specified values of a parameter apply. Because the nominal edge exclusion relates to the nominal diameter of a wafer, the size of the FQA is independent of wafer diameter and flat length tolerances.	SEMI HB1, M55, M59, M92
fixed-fixed beam	a MEMS test structure that consists of a freestanding beam that is fixed at both ends.	SEMI MS3, MS4
fixture	a device specially designed and manufactured for a particular seal-system and performance test.	SEMI F74
flake	material missing from one, but not the other, side of a wafer, whose sole interior boundary is one distinct line or arc not exceeding 2 mm in length, nor projecting into the wafer beyond the specified edge exclusion.	SEMI M10
flammable degradation temperature (FDT)	the temperature at which a liquid degrades producing a flammable byproduct.	SEMI S3
flammable gas	any gas that forms an ignitable mixture in air at 20°C (68°F) and 101.3 kPa (14.7 psia).	SEMI S2, S4, S30
flammable gas	any gas that forms an ignitable mixture in air at 20°C (68°F) and 101.3 kPa (14.7 psia). This includes, by definition, any pyrophoric gas. (As used in this definition, ‘an ignitable mixture with air’ is a mixture that can be ignited.)	SEMI S6
flammable liquid	a liquid having a flash point below 37.8°C (100°F).	SEMI S2, S3, S6, S14, S30
flammable mixture	any mixture that forms an ignitable mixture in air at 20°C (68°F) and 101.3 kPa (14.7 psia). This includes, by definition, any pyrophoric mixture. (As used in this definition, ‘an ignitable mixture in air’ is a mixture that can be ignited.)	SEMI S18
flammable range (FR)	the range of concentrations of the dispersed chemical species in air through which a flame will propagate if a source of ignition is supplied. This range is bounded by the lower flammable limit (LFL) and the upper flammable limit (UFL).	SEMI S3, S6
flammable silicon compound effluent	flammable silicon compounds or mixtures of flammable silicon compounds with process gases, purge gases, or process byproducts, but not with air, for which there is no intended use in the manufacturing processes.	SEMI S18
flammable silicon compounds	within this Document (SEMI S18), the chemicals listed in Table 1.	SEMI S18
flange	mass of material on the exterior and perpendicular to the side walls.	SEMI E1
flash point	the minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture with air near the surface of the liquid, or within the test vessel used.	SEMI S2, S3, S6, S30
flat	a portion of the periphery of a circular wafer that has been removed to a chord.	SEMI M59
flat diameter	the linear dimension across the surface of a semiconductor wafer from the center of the flat through the wafer center to the circumference of the wafer on the opposite edge along the diameter perpendicular to the flat.	SEMI M9
flat diameter	the linear dimension across the surface of a semiconductor wafer from the center of the primary flat through the wafer center to the circumference of the wafer on the opposite edge along the diameter perpendicular to the flat.	SEMI M59
flat type U-shaped lamp	a CCFL which has three sides bent at two points to an angle of 90°, of which two sides face each other.	SEMI D47

Term	*Definition*	*Standard(s)*
flat zone, of an epitaxial layer	the depth from the front surface to the point where the net carrier density is 20% greater than or less than the average net carrier density in the region between 0.25 and 0.75 of the layer thickness. Note that there are combinations of layer carrier density and layer thickness that make it impossible to evaluate this quantity.	SEMI M59
flatband capacitance, C_{fb}	the capacitance of an MOS structure at the flatband voltage.	SEMI M59
flatband condition	*in microelectronics,* the point at which an external applied voltage causes there to be no internal potential difference across an MOS structure. Under practical conditions, metal-semiconductor work-function differences and charges in the oxide require the application of an external voltage to produce the flatband condition. In the flatband condition, the surface photovoltage is zero.	SEMI M59
flatband potential	the intercept on the voltage axis of the $1/C^2$ vs V plot. A measure of the built in field or barrier height.	SEMI M46
flatband voltage, (V_{fb})	applied voltage necessary to produce the flatband condition.	SEMI M59
flatness	the deviation of the front surface, expressed in TIR or maximum FPD relative to a specified reference plane when the back surface of the wafer is ideally flat, as when pulled down by a vacuum onto an ideally flat chuck.	SEMI 3D4
flatness	the allowable deviation of a surface from a reference plane. The tolerance zone is defined by two parallel planes within which the surface must lie.	SEMI G22, G33
flatness	for wafer surfaces, the deviation of the front surface, expressed in TIR or maximum FPD relative to a specified reference plane when the back surface of the wafer is ideally flat, as when pulled down by a vacuum onto an ideally clean flat chuck.	SEMI M59
flatness, in a ceramic package or leadframe	the allowable deviation of a surface from a defined reference plane. The tolerance zone is defined by two parallel planes within which the surface must lie.	SEMI G61
flaw	synonymous with defect.	SEMI F19
flexible back contact circuit	multilayer composite materials with circuit construction, which has important function of electric conduction, insulation, support, encapsulation and weather-proof in MWT PV module. Furthermore, in order to package and protect the module, it will only be used in concert with general PV backsheet (such as TPT, TPE, KPE) or glass.	SEMI PV85
flexible circuit backsheet	photovoltaic module backside encapsulated materials combining the layer materials with circuit construction and general PV backsheet (such as TPT, TPE, KPE), which make it not only have a function with electric conduction and insulation, but also can protect the backsheet	SEMI PV85
flexible scheduling	arranging the daily schedule for instructor-led training so as to minimize the number of people around the equipment during practice activities (e.g., half the class begins the day at 8 am while the remaining students begin at 12 noon, half the class takes lunch from 11 am to 12 noon while the remaining students take lunch from 12 noon to 1 pm).	SEMI E150
flexible thin-film photovoltaic module	thin-film photovoltaic module that is designed to be intentionally and repetitively twisted, curved or otherwise bent without physical, electrical or visual damage.	SEMI PV78, PV92
flexural stress σ_f	nominal stress of the outer surface of the test specimen at midspan.	SEMI G86
flexural stress σ_f	nominal stress of the outer surface of the test specimen at test point.	SEMI G96
flexural stress at break σ_{fB}	flexural stress at break of the test specimen. It is expressed in megapascals (Mpa).	SEMI G86
flexural stress at break σfB	flexural stress at break of the test specimen.	SEMI G96
flicker	temporal changes in light output of display, and that is a widely known temporal artefact. Flicker can be direct or indirect perception with different frequency.	SEMI D79
float	a number represented by a mantissa and an exponent. It is used to represent numeric data which is continuous in value.	SEMI E53

Term	*Definition*	*Standard(s)*
float	unallocated time created when tasks are completed ahead of schedule or a task's duration is less than the allotted amount.	SEMI E70
floating point	may take on any single (real) numeric value, positive or negative. Messaging protocol may impose a limit on the range of possible values.	SEMI E39, E58
floating point	may take on any single numeric value, positive or negative. Messaging protocol may impose a limit on the range of possible values.	SEMI E90
floor traveling vehicle (FTV)	AGV or RGV.	SEMI S17
floor-traveling vehicle	a vehicle that automatically travels on the factory floor to a specified station where a load/unload operation is performed automatically or manually. Floor-traveling vehicles include automatic guided vehicles (AGV) and rail guided vehicles (RGV).	SEMI S28
flow calorimeter	a measurement system in which RF power to be measured is applied to a liquid-cooled RF load and in which the output is primarily a function of the temperature increase of the coolant.	SEMI E136
flow capacity	the maximum flow any specific equipment can handle.	SEMI F5
flow coefficient (Cv)	a numeric constant used to characterize the flow capacity of a valve.	SEMI F4, F32
flow coefficient, Cv	defines the flow capacity of an orifice or a valve or other component in a fluid handling system, as determined by SEMI F32.	SEMI F101
flow components	components (such as valves regulators, pressure gauges, elbows, and tees) used in a piping system that normally come in contact with the chemical flowing in the piping system.	SEMI S18
flow limiting device	a device that will reduce maximum flow rate under full flow conditions.	SEMI S5, S18, S30
flow rate	the quantity of fluid passing a specified point per unit time. Flow rates in this Safety Guideline are given in standard liters per minute (slm) at the standard conditions of 0°C (32°F) and 101 kPa absolute (14.7 psia). This corresponds to the standard conditions used for calibration of mass flow controllers used in semiconductor processing systems.	SEMI S5
flow restrictor	a component, generally an orifice, which prohibits gas flow beyond a predetermined flow.	SEMI F22
flow sensor	a device that detects the motions of fluids.	SEMI MS3
flow sensor	a device which measures the movement of a fluid. Flow sensors may measure by comparison of pressures or by other means.	SEMI S6
flow standard	a device used to measure the actual mass flow through the DUT.	SEMI E69
flow velocity (V)	the average speed at which an effluent stream travels through an exhaust ventilation duct. It is commonly expressed in meters per second (m/s). The US Customary unit is feet per minute (fpm).	SEMI S6, PV81
flow volume (Q)	the volumetric flow rate of an effluent stream passing a given location in the ventilation system per unit of time. It is commonly expressed in cubic meters per hour (m^3/hr). The US Customary unit is cubic feet per minute (cfm).	SEMI S6
flow-through	a term used to signify that the configuration of a given fixture or substrate must allow for gas to pass through from an inlet interface point to an outlet interface point. A flow-through device allows one to make flow calculations and obtain particle counts.	SEMI F74
fluctuation error	general term denoting the deviation of a quantity from its mean, average or detrended value.	SEMI MF1811
fluency	a level of performance determined by a performer's ability to meet the standards of a performance objective quickly and instinctively. Also called, automaticity.	SEMI E150
fluid	liquid or gas.	SEMI F78, F81, S3

Term	*Definition*	*Standard(s)*
fluid transmission rate	the quantity of fluid passing through a unit area of the specimen per unit time under the test conditions. The fluid transmission rate depends on the barrier properties of the material and the partial pressure difference between the two sides of the specimen. Expressed in units of cm^3 (at STP)/ cm^2-sec., or moles/cm^2-sec. Acronym FTR may be used.	SEMI MS10
fluidic adapter	a physical connector that links a microfluidic component to another micro or macroscale fluidic device.	SEMI MS3, MS6
fluidic routing card	a fluidic manifold used to interconnect the fluid flow between any multiple of EFIC's.	SEMI MS3, MS7
fluidized bed process	decomposing distilled silane or a halosilane compound in a fluidized-bed reactor by thermolysis to create polycrystalline granules.	SEMI PV17
flush	the use of DIW/UPW or some other liquid chemical to evacuate the line or vessel containing another chemical, waste or process media.	SEMI F31
focal plane	the plane perpendicular to the optical axis of an imaging system that contains the focal point of the imaging system.	SEMI M59
focal plane deviation (FPD)	the distance parallel to the optical axis from a point on the wafer surface to the focal plane.	SEMI M59
focal range (depth of focus)	the total distance of defocus where over the whole of the processed image field, the processed image is sufficiently resolved for practical use.	SEMI P25
focal surface	the surface determined by finding the focus for each point-like object in the optical image field, with the object fixed with respect to the lens. The focal surface is then the map of z axis displacements for the highest contrast at each point in the optical image field as a function of the (x,y) or (r,ø) coordinates.	SEMI P25
focus	a condition of geometric adjustment of the lens's object, the optical system and the image plane such that the optical image rays originating from a given point in the object converge to the smallest possible area at the corresponding point in the optical image.	SEMI P25
footprint	the total area or floor space consumed by a piece of equipment when viewed perpendicular to the area of reference (e.g., normally, when viewed from directly overhead and considering the floor).	SEMI E76, F107
footprint	pin pattern.	SEMI G22, G33
footprint	contact pad pattern.	SEMI G5
force	the mechanical effort to accomplish a specific movement or exertion. These include: static exertions, which produce no motion but have significant duration; dynamic exertions, which are motions including lifting, pushing, pulling; and contact stress, which is localized pressure exerted against the skin by an external force.	SEMI S8
foreign material	an adherent particle that is not parent material of the component. Adherence means that the particle cannot be removed by an air or nitrogen blast at 20 psi.	SEMI G1, G3, G22, G33, G39, G50, G58, G61, G62
foreign material	any adhering residue which is not part of the leadframe composition.	SEMI G2
foreline	vacuum line leading from process chamber to vacuum pump inlet.	SEMI S30
fork	a two-prong transport module end effector designed to hold the wafer around its periphery.	SEMI E22
fork-lift slots	rectangular holes (open to the front and rear) in the bottom of the cassette for picking up the cassette with a fork.	SEMI E1.9
form	a type of data: positive integer, unsigned integer, integer, enumerated, Boolean, text, formatted text, structure, list, ordered list.	SEMI E39, E53
form	type of data representing information contained in an object attribute or service message parameter.	SEMI E40, E41
form	type of data: positive integer, unsigned integer, integer, floating point (float) enumerated, Boolean, text, formatted text, structure, list, ordered list.	SEMI E58, E99, E118

Term	*Definition*	*Standard(s)*
form	type of data: positive integer, unsigned integer, integer, floating point, enumerative, Boolean, text, formatted text, structure, list, and ordered list.	SEMI E90
formatted text	a text string with an imposed format. This could be by position, by use of special characters, or both.	SEMI E39, E40, E41, E53
formatted text	a character string with an imposed format. This could be by position, by use of special characters, or both.	SEMI E58
formatted text	text with an imposed format. This could be by position, by use of special characters, or both.	SEMI E90
formulation information	information related to the reticle frame design data.	SEMI P42
forward current	current flow from positive electrode of a photovoltaic module to the negative.	SEMI PV94
foundry	independent subcontract wafer manufacturer.	SEMI T23
FOUP	a closed carrier for holding wafers.	SEMI E82, E88, E153
four fastener configuration	the component has four fasteners located on an interface, independent of number of sealing point.	SEMI C88, F85, F86, F87, F93, F94, F95, F116
fourier transform infrared (FT-IR) spectrometer	a type of infrared spectrometer in which the data are obtained as an interferogram, which is a record of the modulated component of the interference signal measured by the detector as a function of retardation in the interferometer. This interferogram is then subjected to a Fourier transformation to obtain an amplitude-wave number (or wavelength) spectrum. Due to the complexity of the Fourier transformation, FT-IR instruments are always used in conjunction with a computer.	SEMI M59
four-point probe	the probe consists of four coaxial measuring terminals, H_c (current high), H_p (potential high), L_c (current low) and L_p (potential low), to measure impedance. Independent coaxial cables are used between the package being measured and the measurement instrument to minimize the effect caused by mutual inductance (between terminals) and/or interferences from the measured signals.	SEMI G23
four-point probe	an electrical probe arrangement for determining the resistivity of a material in which separate pairs of contacts are used (1) for passing current through the specimen and (2) measuring the potential drop caused by the current.	SEMI M59
FPD manufacturing system	system used to manufacture, assemble, or test FPD products. The FPDMS is constructed by integration of equipment that processes substrates (e.g., glass substrates, reticules), its component parts and its auxiliary, support, or peripheral equipment (e.g., chemical controllers, chemical distribution systems, vacuum pumps) and AMHS. Each piece of equipment or AMHS is the subsystem of the FPDMS. FPDMS also includes other items (e.g., structures, piping, ductwork, effluent/exhaust treatment systems, valve manifold boxes, filtration, and heaters) specific to the aforementioned system, but may not include such an item if the item is part of a facility and can support more than one piece of FPD manufacturing system.	SEMI S17
FPD waviness, W_{fpd}	moving minimum zone method straightness of waviness. The maximum value of a minimum zone method straightness of a certain sampling length within an evaluation length.	SEMI D15
FPD Waviness, Wfpd	surface profile calculated by a moving minimum zone method. It is expressed as the maximum value of a minimum zone method straightness of a certain sampling within an evaluation length.	SEMI D24
FPU control level	describes a unit to monitor and/or control a certain piece of facility infrastructure. A FPU owns a well defined interface that enables external IT systems to monitor (and control) activities running on the specific FPU.	SEMI F97
FPU field level	describes a unit of a FPU, such as sensors, actuators, aggregates or even an own subcontrol level to control a certain piece of facility infrastructure in order to support all the necessary functions of the FPU at the control level.	SEMI F97

Term	*Definition*	*Standard(s)*
fraction of good field	the overlay capabilities of wafer steppers shall be quantified in terms of the fraction of good fields, F, out of the total number of fields on the wafer: F = Number of good fields/Number of total fields. Good Fields may also be quantified as a percentage (100 * F%). Any specification of overlay must define the applicable exposure field size and the stepping patterns on the wafers over which the specification applies. The specification of the overlay capability of wafer steppers consists of at least two additional numbers, the overlay value, V, and the fraction of good fields, F. It is consistent to characterize stepper overlay capability for multiple overlay values, V_1, V_2, … with corresponding multiple fractions of good fields, F_1, F_2…	SEMI P18
fragmentation rate	the proportion of damaged cells in the total number of cells after tested and sorted by equipment.	SEMI PV96
frame	the frame to make the components of the BLU stably combined.	SEMI D36
frame	a wafer mounted on a film frame so that it may be diced and the die picked and placed in a package.	SEMI E142
frame adhesive	adhesive between frame and photomask.	SEMI P5
frame cassette	an open structure that holds one or more tape frames.	SEMI G77
frame cassette centroid	a datum representing the theoretical location of the center of a stack of tape frames in the frame cassette.	SEMI G82
frame information	the CAD design information of a reticle. It includes information about the part that does not depend on circuit figures of a chip, the frame of a rectangular area, and alignment marks and barcode, and the information of the marks of all layers.	SEMI P42
frame rate	the number of frames per second is shown on a display.	SEMI D65
frame seal zone	a surface on the exterior side of the frame of the port door for sealing to the frame of the box door.	SEMI E62
framework	a collection of classes or components that provide a set of services and functionality for a particular domain.	SEMI E81
framework	a collection of classes or components that provide a set of interoperable services and functionality for a particular domain.	SEMI E96
free end closure	a metal tube fitting connection which is securely fastened to the tube and does not contribute to the restraint of the test specimen.	SEMI F10, F11
free on board (FOB)	goods placed on a truck or other means of transportation at a point specified by the seller without charge to the buyer, but with all further transportation at the buyer's expense.	SEMI E70
frequency	how often a task is performed over time.	SEMI S8
frequency of harm	how often harm is caused by a hazard.	SEMI S10
frequently used	used in processing or job cycle at least once every hour. Multiple tool operation by a single operator should be considered.	SEMI S8
front (of carrier)	the part of the carrier closest to the door.	SEMI E158, E159, E185
front (of carrier)	the side that is facing to the equipment and allows the tape frame input and extraction.	SEMI G92, G95
front (of Panel FOUP)	the part of the Panel FOUP closest to the door.	SEMI E181, E181.2, E181.3, E181.4
front edge grip	handling of a reticle by contact with its sides and front edge.	SEMI E152
front face, of a CSW	that face of a CSW that is intended for manufacturing a semiconductor device.	SEMI HB5, HB6, HB7
front opening unified pod (FOUP)	a box (that complies with SEMI E47.1) with a non-removable cassette (so that its interior complies with SEMI E1.9) and with a front-opening interface (FIMS).	SEMI E84
front opening unified pod (FOUP)	front opening type box/pod with non-removable cassettes.	SEMI E101, E185

Term	*Definition*	*Standard(s)*
front retainer	a retainer which is attached in a front side of a cassette.	SEMI M29
front surface	the surface of a wafer opposite to that with the SEMI T7 marking.	SEMI 3D2, 3D8, 3D9, 3D10, 3D16
front surface	the surface of a substrate upon which integrated circuits, dies and passive components will be placed, and/or interconnects will be formed.	SEMI 3D23
front surface	the exposed surface upon which devices have been or will be fabricated.	SEMI HB1
front surface of the wafer	the surface upon which active semiconductor devices have been, or will be, fabricated.	SEMI M12, M13, M59, T5
front-opening box for interfactory transport (FOBIT)	a transportation box with a front-opening interface (that mates with a FIMS port that complies with SEMI E62).	SEMI E119
front-opening box for interfactory transport (FOBIT)	box for interfactory transport between IC manufacturing sites.	SEMI M31
front-opening interface mechanical standard (FIMS) port	the substrate access port where the FOUP is opened and closed.	SEMI E87, E171
front-opening shipping box (FOSB)	a shipping box (that complies with SEMI M31) with a front-opening interface.	SEMI E119, M31
front-opening unified pod (FOUP)	a box (that complies with SEMI E47.1) with a non-removable cassette (so that its interior complies with SEMI E1.9) and with a front-opening interface (that mates with a FIMS port that complies with SEMI E62).	SEMI E1.9, E47.1, E92, E99, E118, E119, M31, S28
front-opening unified pod (FOUP)	a front-opening pod with an integrated (non-removable) cassette.	SEMI E98
front-opening unified pod (FOUP)	the part of the shipping box closest to the door.	SEMI M80
frontside of EUV blank	the side of the EUV blank with the multilayer and absorber film stack.	SEMI P48
frost point	the temperature to which a given volume of air must be cooled, at constant barometric pressure, for water vapor to condense into ice. Since ice has a stronger bonding between neighboring molecules, it is more difficult for water molecules to escape a frozen surface.	SEMI MS10
frostiness	a continuous surface discontinuity whose appearance pattern is like that of a sparkly, very fine, sandy-textured surface.	SEMI F19
fugitive	escaping, from the ventilated enclosure that was intended for its control, into the work area.	SEMI S6
fulcrum	supports both ends of the test piece during the 3-point bending test.	SEMI G101
full depth TGV	a TGV opening that extends from the top surface to the bottom surface of the substrate.	SEMI 3D11
full depth TSV	a TSV opening that extends from the top surface to the bottom surface of the wafer.	SEMI 3D1
full duplex	a communication scheme that has two independent transfer channels and has a capability to perform asynchronously simultaneous bidirectional communication.	SEMI A1
full scale	the maximum (max) value.	SEMI E151
full scale range	the defined 100% value of an attribute in its assigned units. This value is not necessarily the maximum value for the attribute. As an example, the indicated flow attribute value may attain 120% of the full scale range.	SEMI E54.1, E54.10, E54.22
full site	a site lying wholly within the FQA.	SEMI M59

Term	*Definition*	*Standard(s)*
full site, on CSW	a site the area of which is completely within the FQA.	SEMI HB6
full surface bow	a bow that occurs over the full surface of the substrate.	SEMI 3D12
full tri-tone phase shift mask	a tri-tone phase shift mask employing opaque patterns to improve lithographic performance of the primary features. Also referred to as 'ternary type phase shift mask.'	SEMI P29
full width half maximum (FWHM)	the width of an EDS peak measured at half of its maximum height.	SEMI F73
full-energy peak detection efficiency ε_p	probability of detecting a γ-photon emitted by the γ-source, dependent on energy of γ-photon, distance between source and detector, and the shape of the source.	SEMI PV10
full-train DI	an ion exchange scheme where a cation exchange unit is followed by an anion exchange unit and a mixed-bed ion exchange unit.	SEMI F61
function	a specific message for a specific activity within a stream.	SEMI E5
functional area	a grouping of one or more views presenting information and control capabilities to the user. The grouping reflects the natural flow of information, events, and tasks in a way that is familiar to the user and that directly supports the attainment of successful process and equipment performance goals. The group is user task oriented, collecting together logically related monitoring and control functions, reducing the need to navigate between views.	SEMI E95
functional area	the die attach pad and wire bond (lead tip) area.	SEMI G9, G19, G27, G28, G41
functional block	a device's external interface documentation specifies the type identifiers of the functional blocks contained within the device. This documentation may be uploaded from the device, and completely specifies the functional profiles implemented by the device, as well as the network variables and configuration properties contained within each of the functional blocks.	SEMI E54.16
functional diagram	a type of illustration in which symbols are connected by lines to show relationships among the symbols. The symbols may be rectangles or other shapes; standard electronic symbols representing component parts or functions; or pictorials representing equipment, assemblies, or component parts. Where appropriate, voltage readings may be shown. The lines may represent procedures or processes, such as signal or logic flow, and physical items, such as wires. Functional diagrams may include schematic diagrams, wiring diagrams, piping diagrams, logic diagrams, flow charts, and block diagrams.	SEMI E149
functional group (FG)	a collection of closely related software capabilities that one would expect to be provided as an integrated product.	SEMI E133
functional profile	a functional profile is a set of one or more LonMark objects, together with semantic definitions relating the behavior of the object(s) to the network variable values. The collection of functional profiles and LonMark objects in a device corresponds to the device-specific model for that device. Each type of functional profile is identified by a type number which is allocated when the profile is standardized.	SEMI E54.16
functional test matrix	a checklist of system functions and operations to be verified during system acceptance testing.	SEMI F39
fundamental attribute	an attribute that is required for fundamental compliance with a standard service.	SEMI E39
fundamental compliance	conformance to all fundamental requirements for an object or service resource.	SEMI E39
fundamental requirements	the requirement for information and behavior that must be satisfied for compliance to a standard. Fundamental requirements apply to specific areas of application, objects, or services.	SEMI E39, E40, E41, E99, E118
furnace and thermal processes wafer	wafers intended for use in evaluating metal contamination in thermal process.	SEMI M59
furnace wafer	a silicon wafer which can be used for monitoring thermal processes or as an implant monitor, usually used only in a cleanroom environment.	SEMI M59

Term	*Definition*	*Standard(s)*
gage	alternate spelling of gauge.	SEMI E89
gain-nonlinearity function (GNF)	the relationship between the actual SSIS response and the model-predicted SSIS response, given as a function with two or more independent and adjustable parameters. The GNF should be independent of the reference sphere material, because it is a relationship between the SSIS detector response and the amount of light predicted to be incident upon the detector.	SEMI M53
gallium inclusion	a segregated Ga-rich droplet incorporated into the surface structure.	SEMI M10
gamma	power relationship between R, G, or B input signals and their output luminance. It is applied to subdivide low level's tone resolution with limited number of bits, and expressed by form(V')γ of power function and it is specially called decoding gamma (γ_D). Conversely, its reciprocal is called encoding gamma (γ_E) which is processed on video camera side. Normally, decoding gamma(γ_D) = 2.2.	SEMI D71
gamut area	area enclosed by the chromaticity coordinates of the display primary colors.	SEMI D72
gamut area ratio	ratio of the gamut area to the area defined by a particular specification in a color space coordinate.	SEMI D72
gas	the fluid form of a substance in which it can expand indefinitely and completely fill its container; form that is neither liquid or solid.	SEMI F78, F81, S3, S4, S6
Gas A	a gas supplied into the process line in this test method.	SEMI F80
Gas B	a gas supplied into the purge line in this test method.	SEMI F80
gas box	a gas distribution subsystem which contains gas delivery and control components prior to the POC.	SEMI F22, F59
gas cabinet	a metal enclosure which is intended to provide local exhaust ventilation, protection for the gas cylinder from fire from without the cabinet, and protection for the surroundings from fire from within.	SEMI E70
gas cabinet	a metal enclosure which is intended to provide local exhaust ventilation, protection for the gas cylinder from fire from outside the cabinet, and protection for the surroundings from fire from inside the cabinet.	SEMI S4
gas calibration	a reference to a set of parameters or methods which are used to calibrate or correct the device for a particular gas type, range, and units.	SEMI E54.22
gas cylinder	usually means a high pressure compressed gas cylinder governed by Department of Transportation (DOT) regulations. It also refers to non-DOT low pressure containers used for liquid product having low vapor pressure.	SEMI F14
gas cylinder	a cylindrical container of less than 454 L volume used to store, transport, or dispense compressed gases and liquefied compressed gases.	SEMI S18
gas cylinder cabinet	cabinet used for housing gas cylinders, and connected to gas distribution piping or to equipment using the gas. Synonym: gas cabinet.	SEMI S2
gas delivery system	a system installed in semiconductor manufacturing equipment comprised of one or more lines to supply process and carrier gases to reactors. The system typically includes tubing, fittings, valves, filters, mass flow controllers and regulators. These components can be surface mount or conventional type.	SEMI F70, F70.1
gas delivery system	a system installed in semiconductor manufacturing equipment to deliver process and carrier gases to reactors, which typically consists of tubing, fittings, valves, filters, mass flow controllers and regulators; can be surface mount or conventional system.	SEMI E140, F71
gas interface box (GIB)	an enclosure located between the tool mainframe and facility services containing components for pressure regulation and filtration. Functions to consolidate all gas requirements to single points of connection. Provides location and ability to pre-facilitate tool hookups in advance of tool delivery.	SEMI E70
gas pallet	individual gas distribution subsystems within a gas box that control flow of gas to individual process chambers.	SEMI F59
gas panel	an arrangement of fluid handling components (e.g., valves, filters, mass flow controllers) that regulates the flow of fluids into the process. Synonyms: gas jungle, jungle, gas control valves, valve manifold.	SEMI S2

Term	*Definition*	*Standard(s)*
gas purity guideline	a gas purity guideline is a proposed specification recommended by one or more users as needed in the future for the production of semiconductor devices. They reflect future needs in which test methods are not generally available at the time of proposal. These guidelines are approved by the Gases Committee for publication in the Standards Book. Products meeting these guidelines are not necessarily commercially available.	SEMI C3
gas sample volume	the volume of the sample interval, expressed in standard liters at standard conditions, 0°C and 1×10^5 Pa (1 atmosphere) pressure.	SEMI C97
gas sample volume (Vmi, Vbi)	the volume of the sample interval, expressed in standard liters at standard conditions, 0°C and 1×10^5 Pa (1 atmosphere) pressure.	SEMI F23
gas sample volume (Vmi, Vbi)	the volume of the sample interval, expressed in standard liters at standard conditions, 0°C (32°F) and 1×10^5 Pa (1 atmosphere) pressure. Standard cubic feet (SCF) is defined at 21.1°C (70°F) and 1×10^5 Pa (1 atmosphere) pressure.	SEMI F24, F25, F26
gas source equipment enclosure (enclosure)	an enclosure for the storage of gas containers and associated equipment.	SEMI F14
gas standard number	a number that references a gas type. The number and its referenced gas type are defined in SEMI AUX030.	SEMI E54.22
gas standard symbol	a text symbol that references a gas type. The symbol and its referenced gas type are defined in SEMI AUX030.	SEMI E54.22
gas stick	A series of components for an individual gas within a gas box. It may contain valves, a regulator, a pressure transducer, a purge line, an MFC, and a filter.	SEMI F59
gas temperature	the actual temperature of the flowing gas.	SEMI E18
gas tungsten arc welding (GTAW)	an arc welding process that uses an arc between a tungsten electrode (nonconsumable) and the weld pool. The process is used with a shielding gas.	SEMI F78, F81
gaseous impurities	gas phase elements and compounds in the gas stream other than the process or base gas.	SEMI F67, F68
gasket area	an area where gaskets are attached so as to reduce air flow in a shipping box which is generated by the difference between internal pressure and external pressure.	SEMI M29
gate feature	plastic protrusions or intrusions which result from normal molding and degating operations.	SEMI G54
gauge	instrument used to assign a value to a quantitative or qualitative characteristic of a physical entity or phenomenon.	SEMI E89
gauge pressure	the differential pressure measured relative to ambient pressure. For example, when the pressure within a system equals the prevailing ambient pressure, the gauge pressure equals zero.	SEMI E28
gauge pressure	the pressure measured relative to ambient pressure. For example, when the pressure within a system equals the prevailing ambient pressure, the gauge pressure equals zero.	SEMI F113
GEM compliance	defined with respect to individual GEM capabilities to indicate adherence to the GEM Standard for a specific capability.	SEMI E30
General Data (GD)	general-purpose data that is used for the communication between equipment or between the host and equipment.	SEMI A1, A2, A5
general purpose (GP) grade	for components intended for use in chemical distribution systems of semiconductor manufacturing facilities that do not have stringent cleanliness requirements. Examples are clean dry air and vacuum lines.	SEMI F20
generation lifetime	average time to create an electron-hole pair in the space charge region of a reverse-biased MOS capacitor.	SEMI M59
generation velocity	component of the electron-hole pair carrier creation that is independent of the width of the depletion region. This component is a lumped term composed of electron-hole pair creation from the surface and the quasi-neutral bulk.	SEMI M59
Generic Equipment Model	a reference model for any type of equipment. It contains functionality that can apply to most equipment, but does not address unique requirements of specific equipment.	SEMI E30

Term	*Definition*	*Standard(s)*
generic equipment networked sensor device	measurement device which is connected to manufacturing equipment and communicates via a sensor/actuator network. It may be connected optionally in order to measure values which represent properties of the equipment or the process running.	SEMI E54.24
geometry	a two-dimensional geometric figure such as a polygon, rectangle, trapezoid, path, circle, etc. with inherent attributes of *layer* and *datatype*.	SEMI P39
gettering	the process that immobilizes impurities at locations away from the region of the specimen to be investigated.	SEMI M59
glass	an amorphous solid, which means it has no crystalline structure, and that exhibits a glass transition from a brittle and solid state to a viscous liquid.	SEMI 3D21
glass base material	glass in form of a wafer or panel, prepared for openings in glass and intended to be used permanently bonded in an application.	SEMI 3D16, 3D21
glass carrier	a device made of glass for holding substrates, dies and packaged integrated circuits for various processing steps in semiconductor manufacturing.	SEMI 3D23
glass carrier wafer	a glass wafer used for bonding to a device wafer temporarily during one or more process steps. A carrier wafer has netiher active nor passive electrical parts.	SEMI 3D2
glass carrier wafer	a wafer used for temporarily bonding to a device wafer during one or more process steps. A carrier wafer has neither active nor passive electrical parts.	SEMI 3D16, 3D21
glass flow	on a semiconductor package or cap, the heating process which just removes all the screen printing mesh marks in the sealing glass when viewed at 10× magnification.	SEMI G1, G58
glass flow	heated sufficiently to remove all screen marks visible at 10× magnification.	SEMI G26, G34
glass for interposers	glass substrate with openings intended for further processing into an interposer.	SEMI PV74
glass for interposers	glass base material with openings intended for further processing into an interposer.	SEMI 3D16, 3D21
glass interposer	interposer with glass as substrate.	SEMI 3D16, 3D21
glass plate	a rectangular thin insulator plate to fabricate one or more electric elements on it. Often the material of this plate is transparent glass for flat panel display, sometimes it may be ceramic for passive electric elements. The purpose of definition of this item is just to introduce one of possible examples to trace and this document doesn't specify details.	SEMI T13
glass shift	the maximum distance of the difference between glass edges after lamination	SEMI PV82
glass side reflectivity	a ratio of the intensity of reflected light to the intensity of incident light into the glass side, which is the side of the mask or blank without the shifter films.	SEMI D84, P29
glass substrate	any flat surface for glass, for instance wafers or sheets.	SEMI 3D11
glass substrate cassette	a container for holding glass substrates for processing, storage, and transportation during the fabrication of FPD.	SEMI D11
glass transition temperature, Tg	a temperature, at which certain structural changes in a polymer occur, such as transition from glassy state to viscoelastic state.	SEMI C100
glass void	the absence of a sealing glass layer from a designated area.	SEMI G1, G58
glass with openings	glass substrate with unfilled blind or through openings (etched, laser-drilled, etc.).	SEMI 3D16, 3D21
global alignment	procedure which establishes a coordinate system for the entire substrate.	SEMI E30.1, E30.5
global back face warp SWGB, of CSW	sum of the unconstrained maximum positive and maximum absolute negative height deviations of the CSW back face from a reference plane. The reference plane is determined by a least-square fit to all measurement points of the point pattern on the back face for TAGU.	SEMI HB6
global bow SBGE, of CSW	distance between the CSW unconstrained median wafer surface center and a reference plane. The reference plane is determined by a least-square fit to the median of the measurement points around the periphery of the point pattern used for TAGU.	SEMI HB6
global flatness	the TIR or the maximum FPD relative to a specified reference plane within the FQA.	SEMI M59

Term	*Definition*	*Standard(s)*
global frame	Data for MECHATROLINK firmware to make synchronize between Master firmware descried below.	SEMI E54.19
global front face warp (Sori) SWGF, of CSW	sum of the unconstrained maximum positive and maximum absolute negative height deviations of the CSW front face from a reference plane. The reference plane is determined by least-square fit to all measurement points of the point pattern on the front face for *TAGU*.	SEMI HB6
global orientation	the general orientation of a wafer or wafers in a tool; may be vertical or horizontal.	SEMI E15
global pattern alignment	a procedure which establishes a coordinate reference system relative to repeating features on an entire substrate. For silicon wafers, this coordinate system is defined in MSEM as the M20P coordinate system.	SEMI E30.5
global warp SWGE, of CSW	sum of the unconstrained maximum positive and maximum absolute negative height deviations of the CSW median surface from a reference plane. The reference plane is determined by a least-square fit to the median of the measurement points around the periphery of the point pattern used for *TAGU*.	SEMI HB6
global warp SWGM, of CSW	sum of the unconstrained maximum positive and maximum absolute negative height deviations of the CSW median surface from a reference plane. The reference plane is determined by a least-square fit to all measurement points of the point pattern on the median surface for *TAGU*.	SEMI HB6
glove box	an enclosure that contains a controlled atmosphere, usually inert.	SEMI C91, F58, F118
goal	an intended outcome not stated in measurable terms.	SEMI E150
good fields	exposure fields in which the magnitude of the overlay at every point within the field is less than a specified value, V, in both the X and Y directions, exclusive of contributions to overlay from the reticles and non-linear deformations of the wafers during non-stepper processing.	SEMI P18
good unit equivalents (GUE)	the calculated number of equivalent units required to produce the same number of units output if product yield was 100%.	SEMI E35
good unit equivalents (GUE) out	the (possibly non-integer) number of units of production required to contain all of the good product that exits the factory during the period being measured.	SEMI E124
gouges	mechanically formed depressions in the lid surface.	SEMI G53
grade	the term typically used to describe the level of allowed particle concentration in a gas while determining a) particle concentration and b) the smallest particle size specified to be observed. The specified particle size indicates all particles equal to or larger. The grade specifies the maximal permissible concentration (X_P) of all particles equal to or larger of the size given in µm. (e.g., a grade 20/0.2 refers to a maximum concentration of 20 particles of a size equal to or larger 0.2 µm size per 25 standard liters gas volume).	SEMI C97
grade	a quality description agreed on between supplier and customer, related to the intended use of the wafer in device processing.	SEMI M75
grain	a single-crystalline volume in the bulk of a material. Also used for denoting a cross section of the grain seen on the surface of a slice through the bulk material.	SEMI PV52
grain boundary	an interface separating two grains, where the orientation of the lattice changes from that of one grain to that of the other.	SEMI F19, F73
grain boundary	the interface between two grains, or crystallites, in a polycrystalline material.	SEMI HB10
grain boundry	the perimeter of a two-dimensional cross-section of a grain.	SEMI PV52
granular silicon	nearly spherical granules (200 to 3000 µm) of silicon as produced in a fluidized bed reactor.	SEMI PV74
granules, polysilicon, also called beads or pellets	approximately spherical particulate polysilicon produced in a fluidized bed reactor with a size of typically 0.1 to 10 mm.	SEMI PV17

Term	*Definition*	*Standard(s)*
graphite crucible	crucibles made of high purity graphite grades in order to ensure good heating characteristics with minimal dusting.	SEMI PV43, PV88
grating light valve	an imaging element using silicon ribbons bent by electrostatic means.	SEMI MS3
gravity compensation for horizontally-supported wafers	unlike thickness and TTV measurements which are independent of how the wafer is held, bow and warp measurements are complicated not only by wafer stress but by how the wafer is supported and by gravity. Gravity causes substantial deformation of large diameter or thin wafers, whether they are supported at the edge or in the middle.	SEMI 3D4
gravity compensation for vertically supported-wafers	on tools that support the wafer vertically, effects due to gravity are negligible and therefore do not require compensation. Bow is only measured on one side so there is no need to invert the wafer. The manufacturing tolerance for sori is very low, such that a 300 mm diameter silicon wafer must achieve sori in the nanometer range in order to achieve the maximum yields in semiconductor device processing.	SEMI 3D4
gray balance	adjustment or accuracy of color coordinates at all input ranges, usually from 5 to 100 IRE inputs. It is explained by all range white balance meaning.	SEMI D71
gray scale	gray scale on image display. In this standard, indicates level 32 out of 64 level gray scale.	SEMI D31, D41
grayscale value	the assignment of a digital value to a degree of light intensity. The shades of gray are used by a computer to reconstruct an image. A common scale is 256 shades of gray, with 0 being black and 255 being white.	SEMI T10
grid LC	an LC consisting of a circle segment and a mesh/grid surrounded by a circular rim and covered by a very thin film typically consisting of carbon.	SEMI E177
groove	a shallow scratch with rounded edges that is usually the remnant of a scratch not completely removed by polishing.	SEMI M59
ground	a conducting connection between an object, electrical equipment, and earth, such as the portin of an electrical circuit of the same electrical potential as earth.	SEMI E43
ground	a conducting connection, whether intentional or accidental, by which an electric circuit or piece of equipment is connected to the earth, or to some conducting body of relatively large extent.	SEMI F53
ground (electrode)	the opposite electrode of the hot electrode in the lamp, which is connected with the low-voltage side (ground side) of the inverter.	SEMI D36
ground fault	an unintentional, electrically conducting connection between an ungrounded or grounded conductor of an electrical circuit and the normally non-current-carrying conductors, metallic enclosures, metallic raceways, or metallic equipment.	SEMI S22
ground fault circuit interrupter (GFCI)	a device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds a value in the range of 4 mA to 6 mA.	SEMI S3, S22
ground water	water located below the surface of the earth, also called well water.	SEMI F61
grounded	connected to earth or some other conducting body that serves in the place of earth.	SEMI E43
grounding	electrical wiring system to provide earth ground.	SEMI E70
group	a logical collection of regions.	SEMI E30.1
group	character string used for grouping alignment marks if required.	SEMI P42
group alignment	a procedure which establishes a coordinate system for an area, which is a contiguous group.	SEMI E30.1
group index of refraction	index of refraction of the beginning and the end of the interferometry scan.	SEMI 3D12
group lockout	lockout performed by a group (e.g., crew or department).	SEMI S19
growth method	the technique used to create the single crystal.	SEMI M75
guard	physical barrier designed to provide protection.	SEMI S17
guard ring	component of the electron-hole pair carrier creation that is independent of the width of the depletion region. This component is a lumped term composed of electron-hole pair creation from the surface and the quasi-neutral bulk.	SEMI M59

Term	*Definition*	*Standard(s)*
guard ring, of capacitive probe	a metal ring around the active area of a capacitive probe and electrically separated from it, screening the active area from stray fields.	SEMI PV41
guardrail system	a physical barrier positioned at a prescribed height to prevent a fall from an elevated location. It consists of posts (vertical supports), a toprail, a midrail, and, in some cases, a toeboard.	SEMI S2
guide rail	a component of a port plate that provides coarse location for placing the box on the port assembly.	SEMI E19, E19.4
half wave resonant frequency	the frequency of the cable assembly where the electrical length of the assembly is equal to one half (0.5) of a wavelength.	SEMI E114
half-etch	some designed part or area of leadframe where the thickness is reduced by one side etching.	SEMI G70
half-etch depth	the maximum depth of the half-etch.	SEMI G70
half-moon LC	an LC consisting of a circle segment from which pins protrude to which the lamellas can be fixed and surrounded by a rim that is about ⅔–½ of a circular annulus.	SEMI E177
halides	binary compounds, one part of which is a halogen atom and the other part is an element or a radical that is less electronegative than the halogen.	SEMI F105
halk tone mask	a type of multi tone mask. A half tone film with no phase shift function is placed in the gray area. To distinguish it from the half tone phase shift mask, it is also referred to as stacked layer mask (SLM).	SEMI D84
hall mobility	the ratio of the magnitude of the Hall coefficient to the resistivity; it is readily interpreted only in a system with carriers of one charge type.	SEMI M39
halo	nonstandard term for discoloration resulting from welding procedure.	SEMI F78
halogenated hydrocarbons	hydrocarbons with one or more hydrogen atoms substituted by halogen atoms.	SEMI F105
halogens	elements in Group 17 (Old style VIIA) of the periodic table, namely, Fluorine, Chlorine, Bromine and Iodine.	SEMI F105
halosilanes	silanes, in which one or more hydrogen atoms are replaced by halogen atoms, such as $SiHCl_3$ or $SiHBr_3$.	SEMI PV17
hand scribe mark	any marking, usually on the back surface of a wafer, scratched manually into the silicon surface, as with a diamond tipped scribe, for purposes of wafer identification.	SEMI M59
handle of a pod	a mechanical aid designed for automatic handling of a pod, which may also be used for manual handling.	SEMI E47
handler	an equipment that is used to move the packaged part to and from the test bed during the test.	SEMI G91
handling area	minimum free space around the pod for automatic handling.	SEMI E47
handling equipment	an equipment class generally consisting of integrated mechanisms and controls for the purpose of manipulating packaged devices, trays, and tubes during the manufacturing process.	SEMI E123
handling of a pod	automatic and manual movement and/or placement of a pod.	SEMI E47
handoff	a physical action that transfers a Material between a pair of Ports.	SEMI A1
handoff	is the operation in which a carrier is transferred (loaded or unloaded) from one piece of equipment to another.	SEMI E84
handoff conflict area	an area where the active equipment resource could interfere with the passive equipment resource during the handoff operation.	SEMI E84
handoff interlock abnormal	the state, which indicates the passive equipment, has detected abnormal condition in the handoff operation. It may indicate the possibility that the interference of the active equipment resource with the passive equipment resource has occurred in the handoff conflict area.	SEMI E84
Handoff Step	a unit operation that constitutes Material Handoff Handshake. The operation here does not necessarily involve physical motion, but also includes mechanical clearance sensing/confirmation etc.	SEMI A1

Term	*Definition*	*Standard(s)*
handoff unavailable	the state, which indicates the passive equipment, is not available for material handoff operation.	SEMI E84
handrail	a horizontal or inclined member designed to be grasped by the hand for support.	SEMI S2
handshake	a communication between communication entities associated with Line or Track that performs data transfer and/or Material Handoff.	SEMI A1
handshake data	data that is needed to synchronize the interaction between two tools.	SEMI PV55
hard failure	a failure that renders a MFC permanently incapable of performing in accordance with the manufacturers specifications.	SEMI E67
hard failure	destructive failure of an MOS capacitor associated with rupture of the oxide film.	SEMI M59
hard-bin	hard-bins represent the typical view of the test results. Within a process program, each hard-bin is associated with a single class. Generally, multiple hard-bins are associated with a particular class.	SEMI E122
hardening	configuring a system to reduce the system's security weakness.	SEMI E169
harm	physical injury or damage to health of people, or damage to equipment, buildings, or the environment.	SEMI S1, S2, S10, S30
harmonic frequency	the harmonic frequencies are defined as integer multiples of the fundamental frequency. For example, the second harmonic of 13.56 MHz is 27.12 MHz.	SEMI E113, E114, E115, E143
harmonic frequency	the harmonic frequencies are defined as integer multiples of the fundamental RF frequency. For example, the second harmonic frequency of 13.56 MHz is 27.12 MHz.	SEMI E136
hazard	a condition that is a prerequisite to a mishap.	SEMI S14, S22
hazard	a condition that has the potential to cause harm.	SEMI S1, S2, S10, S30
hazard analysis	the process of determining the scenario(s) involving the identified hazards.	SEMI S10
Hazard Communication (HAZCOM)	communication of environmental and safety hazards for the chemicals present or potentially present on or adjacent to the ME and parts to all potentially affected employees, decontamination personnel, and ME owners before decontamination procedures are executed.	SEMI S12
hazard identification	the process of determining which, if any, characteristics of an object are hazards.	SEMI S10
hazard zone	the space inside the UTV operating space where there is a risk of injury to personnel.	SEMI S17
hazardous degradation temperature (HDT)	the temperature at which a liquid degrades producing a hazardous (e.g., flammable, toxic, corrosive, or oxidizing) byproduct. For liquids that have flammable degradation byproducts, the HDT is no greater than the FDT. The HDT, however, is less than the FDT, if the liquid degrades to produce a byproduct with a hazardous characteristic other than flammability at a temperature below the FDT.	SEMI S3
hazardous electrical power	power levels equal to or greater than 240 VA.	SEMI S2, S22, S28
hazardous energy	any energy that can potentially result in serious injury, illness, or death.	SEMI S21
hazardous gas detectors	analytical instruments which placed in strategic locations in and around gas distribution systems and components are used to detect releases at extremely low levels.	SEMI F22
hazardous gases	gases that have a degree of hazard rating in health, flammability, or reactivity of 3 or 4 in accordance with NFPA 704, or equivalent rating by a regional standard.	SEMI S5
hazardous material	any chemical, substance, or compound which is defined or interpreted to pose risks or hazards to human health or the environment by applicable international, national, regional, or local laws or regulations.	SEMI S12
hazardous material	a solid, liquid, or gas that has a degree-of-hazard rating in health, flammability, or reactivity of class 3 or 4 as ranked by NFPA 704.	SEMI S13
hazardous materials	those chemicals or substances that are physical hazards or health hazards as defined and classified in NFPA 704 whether the materials are in use or in waste conditions.	SEMI E34

Term	*Definition*	*Standard(s)*
hazardous production material (HPM)	a solid, liquid, or gas that has a degree-of-hazard rating in health, flammability, or reactivity of class 3 or 4 as ranked by NFPA 704 and which is used directly in research, laboratory, or production processes that have as their end product materials that are not hazardous.	SEMI E76, F6, S2, S4
hazardous production material (HPM)	a solid, liquid, or gas associated with semiconductor manufacturing that has a degree-of-hazard rating of 3 or 4 in health, flammability, instability, or water reactivity in accordance with NFPA 704 and that is used directly in research, laboratory, or production processes that have as their end product materials that are not hazardous (NFPA 1-2015, Fire Code).	SEMI S30
hazardous voltage	unless otherwise defined by an appropriate international standard applicable to the equipment, voltages greater than 30 volts rms, 42.4 volts peak, 60 volts dc are defined in this Safety Guideline as hazardous voltage.	SEMI S2
hazardous voltage	unless otherwise defined by an appropriate international standard applicable to the equipment, voltages greater than 30 volts rms, 42.4 volts peak, 60 volts DC are defined in this Document as hazardous voltage.	SEMI F107, S14, S21
hazardous voltage	voltages greater than 30 volts RMS, 42.4 volts peak, or 60 volts DC.	SEMI S22, S28
haze	a method to measure the degree of haze created on the FPD glass substrate surface by a chemical etch sequence.	SEMI D10
haze	a diminished surface brightness or specularity attributable to diffuse light scattering by concentrations of microscopic surface irregularities, or to chemical inhomogeneity.	SEMI F19, HB9
haze	nonlocalized light scattering resulting from surface topography (microroughness) or from dense concentrations of surface or near-surface imperfections.	SEMI E146
haze	nonlocalized light-scattering resulting from surface topography (microroughness) or from dense concentrations of surface or near-surface imperfections; compare *laser light-scattering event*. Haze due to the existence of a collection of imperfections is a mass effect; individual imperfections of the type that result in haze cannot be readily distinguished by the eye or other optical detection system without magnification. In an SSIS, haze results in a background signal; this signal and laser light-scattering events together comprise the signal due to light-scattering from a wafer surface.	SEMI M59
haze	nonstandard term for discoloration resulting from welding procedure.	SEMI F78
haze	(cloud, nebula): attributable to light scattering by concentrations of microscopic surface irregularities such as pits, oxides, small ridges or scratches, particles, etc. The light reflection from an individual irregularity probably could not be readily detected by the unaided eye, so haze is a mass effect. It is seen as a high density of tiny reflections.	SEMI M10
HB-LED ECI	a SECS-II compliant interface. Messages are transmitted via an Ethernet network using HSMS protocol.	SEMI HB13
HB-LED ECI	the HB-LED equipment communication interface is a SECS-II compliant interface. Messages are transmitted via an Ethernet network using HSMS protocol.	SEMI HB4
HB-LED equipment	a manufacturing equipment that implements the HB-LED ECI Specification.	SEMI HB4, HB13
HB-LED manufacturing equipment	equipment used in the manufacturing process to make HB-LED devices.	SEMI HB3
HC controller	a controller which is a node of Ethernet and performs communication per A1 HC in equipment. In general, PLC or PC is used as HC controller.	SEMI A1.1
header	a 10-byte data element used by the message and transaction protocols.	SEMI E4
header	a 10-byte data element preceding every HSMS message.	SEMI E37
headspace	the volume above the sample containing the gas to be analyzed.	SEMI E46
headspace	the volume above the liquid in a vessel.	SEMI S3
headspace sampling	collecting volatile organic compounds in an enclosed volume by means of a silicon wafer or silicon wafer chips.	SEMI E108
heartbeat	periodic status message sent at a controlled rate.	SEMI A4, A4.1

Term	*Definition*	*Standard(s)*
heat exchange area	a metalized region on one major surface of the package to which heat sinks may be attached by brazing, soldering or adhesive resin.	SEMI G61
heat exchanger	a piece of equipment used to control the temperature of a water stream.	SEMI F61
heat load	the sum of all heat energy transferred by conduction, convection, and radiation outside the envelope of the equipment.	SEMI S23
heat tint/color	non-standard term for *discoloration* resulting from welding procedure.	SEMI F78
heat transfer fluid (HTF)	a liquid used in a heat transfer system to convey heat from a heating source to the process liquid.	SEMI S3
heat-affected zone (HAZ)	the portion of the base metal whose mechanical properties or microstructure have been altered by the heat of welding.	SEMI F78, F81
heated area	the portion of the heater surface intended for heat transfer.	SEMI S3
heater	an electrical device used to transfer heat energy to a liquid chemical. The heater consists of the heating element as well as any permanently attached wiring or other components.	SEMI S3
heating element	the electrically conductive component in a heater where electrical energy is converted into heat energy.	SEMI S3
height map	a representation of surface height as a function of position on a wafer surface ($z[x, y]$).	SEMI M78
helium leak test	testing shall be conducted per procedure outlined of inboard leak test in SEMI F1.	SEMI F71
Helmholz-Kohlraush Effect (H-K effect)	the effect of chromatic contribution to brightness, which makes higher-saturated lights appear brighter than lower-saturated lights, even when they are equal in luminance.	SEMI D61
help documentation	recorded documentation content intended to communicate embedded assistance information to the user, regardless of format, used in conjunction with the equipment documentation.	SEMI E149
hermetic package	completely sealed with minimal communication of either gases or liquids between the interior and the exterior of the package over operating life.	SEMI MS3, MS8, MS10
hermetic vacuum package	hermetic package sealed with vacuum in the interior of the package.	SEMI MS3, MS8, MS10
HF defect	defect in the SOI layer decorated by immersing the wafer in HF for a certain time.	SEMI M59
hieracrchy of controls	the list of, in order of decreasining effectiveness and decreasing preference, risk controls: elimination, substitution, engineering controls, administrative controls, and personal protective equipmentment (PPE).	SEMI S10
high aspect ratio	large diameter and small thickness of the wafer lead to high aspect ratios.	SEMI 3D12
high bandwidth oscilloscope	digital sampling oscilloscope with >10 GHz bandwidth, using probes with >1 GHz bandwidth, 500 ohm input impedance, 2.5pF ± 0.5pF input capacitance and <0.125 in. ground lead.	SEMI G80
high frequency (HF)	applications employing heteroepitaxy on semi-insulating SiC substrates.	SEMI M55
high power	applications employing homoepitaxy on conductive SiC substrates.	SEMI M55
high purity (HP)	for industry standard systems consisting of high grade materials, components, and standard design/configuration, assembly method, and performance capability.	SEMI E49
high purity graphite powder addition	the addition of graphite powder designed to optimize furnace performance and facilitate the release of oxygen from the test sample.	SEMI PV43
high purity quality	quality of HPW required for higher sensitivity PV processes.	SEMI PV3
high purity water system (HPW)	lower grade than UPW, due to lower requirements for dissolved gases, ions, TOC, bacteria and particles.	SEMI PV3
high resolution	the designation of mass resolution above 3500.	SEMI PV1, PV49
high-efficiency particulate air (HEPA) filter	filter with a minimum particle-collection efficiency of 99.97% on all particles larger than 0.3 micrometer.	SEMI E104

Term	*Definition*	*Standard(s)*
high-frequency limit (HFL) [1/µm]	highest spatial frequency contained in a profile data set or specification.	SEMI MF1811
high-impedance load	an impedance with a load-reflection coefficient calculated with respect to the nominal generator load impedance having a magnitude greater than 0.95 and an angle between −10° and 10°.	SEMI E135
highly toxic	having a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.	SEMI S18
highly toxic chemical	a chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.	SEMI S4
highly toxic gas	a chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.	SEMI F6
high-purity	of a system, subsystem, or component used for the control of chemicals (gases or liquids), designed and constructed in such a manner that it does not introduce significant impurities, particulate or molecular, into the flow stream it controls or regulates.	SEMI F1, MS3, MS6
hill	a gently sloping projection smaller than the cell gap width. Will cause cell gap defect.	SEMI D13
hillock	a localized protuberance of material from the wafer surface.	SEMI HB9
hinged load	a load supported by a hinge such that the hinge axis is not vertical.	SEMI S2
histogram	a graphic representation of a frequency distribution of pixel values within an area of interest in a two-dimensional grayscale digital image. The horizontal axis of the graph represents the range of possible grayscale values in the image. The vertical axis of the graph represents the frequency of occurrence of each grayscale value in the area of interest.	SEMI T10
histogram	a representation of a partitioned (binned) data set as a bar graph in which the widths of the bars are proportional to the sizes of the bins of the data set variable, and the height of each bar is proportional to the frequency of occurrence of values of the variable within the bin. In presenting data for the size distribution of LLSs, the data set variable is usually the derived LSE size; in presenting haze data, the data set variable is usually the haze in ppm.	SEMI M59
hoist	the assembly in an OHT that performs loading/unloading operation by transferring a load.	SEMI S17
hold-down latch	a mechanism for locking the box to the port plate.	SEMI E19.4
hold-up volume	the volume of fluid that is required to fill a device before flow is observed at point of interest or at the outlet.	SEMI MS3, MS6
hole	the area for the pin on another carrier to enter for transferring wafers.	SEMI E1
hole	the area for the pin on another cassette to enter for transferring wafers.	SEMI HB2
hole	a mobile vacancy (unoccupied state) in the electronic valence band of a semiconductor that acts like a charge carrier with positive electron charge with positive mass; the majority carrier in *p*-type material.	SEMI M59
homoepitaxial layer	thin monocrystalline film epitaxially-formed on a substrate of the same material and crystallographic orientation, inheriting the atomic order of the substrate.	SEMI M92
homogenization	the process of rendering the bulk material to be of uniform or similar composition throughout.	SEMI C96
homogenization	the process of rendering the bulk material to be of uniform or similar composition throughout the container.	SEMI C99, C101

Term	*Definition*	*Standard(s)*
hood	a shaped inlet designed to capture contaminated air and conduct it into an exhaust duct system.	SEMI S2, S30
hood	a shaped inlet designed to capture air and conduct it into a facility exhaust ventilation duct system.	SEMI S6
hook	l or similar-shaped tool for hooking a wire for pull test.	SEMI G73
hookup	the act of connection of interconnections and of facilities connectors to equipment connectors.	SEMI F107
hookup/hookup, tool	the set of activities and organization required to accept incoming process equipment, move it into place, connect the equipment to all facilities, and test the connections. The connection of all necessary facilities and interconnects required to make the equipment package fully operational.	SEMI E70, E76
horizontal communication	interequipment communication along or against the physical flow of a material in process.	SEMI PV55
Horizontal Communication (HC)	inter-equipment communication along with a physical flow line of work-in-process. Equipment here is equipment that handles work-in-process, such as process equipment, transfer equipment, metrology equipment, storage equipment, etc.	SEMI A1, A2, A5
horizontal datum plane	load height as defined in SEMI E15.	SEMI D17, D18
horizontal datum plane	the plane coincident with the top surface of the floor and perpendicular to the facial datum plane of the tool.	SEMI D16
horizontal datum plane	a horizontal plane from which projects the kinematic-coupling pins on which the carrier sits. On tool load ports, it is at the load height specified in SEMI E15 and might not be physically realized as a surface.	SEMI E1.9, E47.1, E57, E62, E63, G77, E110, E119, E131, E185, M31
horizontal datum plane	a horizontal plane from which projects the kinematic-coupling pins on which the carrier sits. On equipment load ports, it is at the load height specified in SEMI E15 and might not be physically realized as a surface.	SEMI E92
horizontal datum plane	a horizontal plane, defining *z=0* of a system with three orthogonal planes (HDP, BDP, FDP), from which projects the kinematic-coupling pins on which the Tape Frame FOUP sits.	SEMI E184
horizontal datum plane	a plane that is parallel to the floor surface at the cassette loading position.	SEMI D28
horizontal plane	a horizontal plane, defining *z=0* of a system with three orthogonal planes (HP, BP, FP), coincident with the nominal location of the uppermost surface of the load port to which the H-bar end of the cassette mates when positioned in the equipment load position.	SEMI HB3
horizontal plane (HP)	a horizontal plane, defining *z=0* of a system with three orthogonal planes (HP, BP, FP), coincident with the nominal location of the uppermost points (tips) of the three KCPs.	SEMI E154, E156, E158, E159, E181, E181.2, E181.3, E181.4, E182, G92, G95, M80
horizontal reference plane	a horizontal plane coplanar with the top surface of the port door as defined in SEMI E19.4. The horizontal reference plane is coplanar with the horizontal datum plane defined in SEMI E57.	SEMI E100
horizontal reference plane	a horizontal plane coplanar with the top surface of the port door.	SEMI E111, E112
horizontal reference plane (HRP)	a horizontal plane parallel with the top surface of the load port door as defined in SEMI E19.4 and coplanar with the horizontal datum plane defined in SEMI E57.	SEMI E152
horizontal spacing	the distance from the BP of one load port to the BP of an adjacent load port on an LEDME.	SEMI HB3

Term	*Definition*	*Standard(s)*
horizontal transfer interbay transport (HT)	an interbay transport system where a section of the track transfers or slides into an opening in the side of the stocker to present a passive interbay transport system to the stocker robot.	SEMI E85
horizontal wafer shipping box	a wafer shipping box that, when placed upright on its base, holds the wafers such that the front and back surfaces are oriented parallel to the base.	SEMI 3D3
host	factory automation system.	SEMI D54
host	the intelligent system that communicates with the equipment.	SEMI E4, E5, E30, E94, E157
host	the intelligent system that communicates with the equipment, acts as a supervisory agent, and represents the factory and the user to the equipment.	SEMI E58
host	in the context of material movement, the host is an entity, generally separate from either transfer partner, which coordinates and supervises a transfer job.	SEMI E32
host	a supervisory agent that represents the factory to its subordinates.	SEMI E42
host	the factory computer system, or an intermediate system, that represents the factory and the user to the equipment.	SEMI E82, E88, E116, E153
host	the factory computer system or an intermediate system that represents the factory and the user to the equipment.	SEMI A2, A5, E87, E109, E167, E167.1, E171, E172, E174, E188
host	the factory computer system or an intermediate system that represents the factory and the user to the equipment or other lower-level control system.	SEMI E10, E79, E168
host	the factory computer system or an intermediate system that represents the factory and the user to the equipment, the intelligent system which communicates with the equipment.	SEMI E170
hot (electrode)	the electrode connected with the high-voltage side (hot side) of the inverter.	SEMI D36
HSMS compliant	this term is used to describe systems which comply with SEMI E37 (HSMS) and either SEMI E37.1 (HSMS-SS) or SEMI E37.2 (HSMS-GS) or both. However, it is more appropriate to identify the system as either 'HSMS-SS Compliant' or 'HSMS-GS Compliant,' since they both imply compliance with SEMI E37, and the user must know exactly which of the two is supported. The term 'HSMS Compliant' is ambiguous, but commonly used.	SEMI D27
HSMS-GS compliant	this term is used to identify a system that complies completely with SEMI E37 and SEMI E37.2.	SEMI D27
HSMS-SS compliant	this term is used to identify a system that complies completely with SEMI E37 and SEMI E37.1. This protocol has been adopted for use in FPD.	SEMI D27
human error	errors which include: failure to perform a required function; performing a function that has an undesirable consequence; failure to recognize and correct a hazardous condition; or inadequate or incorrect response to a contingency.	SEMI S8
human readable identification (HRI)	characters that can be read by a human.	SEMI G83
human readable interpretation (HRI)	the interpretation of all or a portion of a data matrix presented in a type font which can be read by persons.	SEMI T20.1
human readable label area	an area on the door and another area on the rear surface of the shell, where a label can be placed for human interface.	SEMI E159
human readable label area	an area on the door and another area on the rear surface of the shell, where a label can be placed for human interface.	SEMI M80
human-readable interpretation (HRI)	the interpretation of all or a portion of a bar or matrix code symbols presented in a type font which can be read by persons.	SEMI T3
hybrid IC	a kind of device which has one or more semiconductor dice and other active/passive elements packaged together.	SEMI T13, T19

Term	*Definition*	*Standard(s)*
hybrid system	a combination of pressurization and pumping techniques used to transfer chemical.	SEMI F31
hydrides	compounds of hydrogen with a more electropositive element.	SEMI F105
hydrocarbons	gases with a chemical structure consisting of only carbon and hydrogen elements. These gases have a carbon backbone and have hydrogen atoms attached to this backbone.	SEMI F105
hydrogen annealed wafer	annealed wafer produced under hydrogen atmosphere.	SEMI M57
hydrophilic	having a strong affinity for water; wettable.	SEMI E146
hydrophilic	a property of material or molecule to transiently bond with water through hydrogen bonding. A hydrophilic surface is typically charge-polarized and can attract water to its surface to form a continuous film. Hydrophilic materials can also dissolve more readily in water.	SEMI MS6
hydrophobic	having little affinity for water; wettable.	SEMI E146
hydrophobic	a property of a surface or molecule that is repelled from a mass of water. Water will typically bead or form discrete droplets on a hydrophobic material surface. This is characterized by a high contact angle measurement.	SEMI MS6
hydrostatic leak	a leak or leak test performed by applying isostatic pressure via some sort of liquid phase media (i.e., hydraulic fluid, water).	SEMI F74
hysteresis	that property of an element evidenced by the dependence of the value of the output, for a given excursion of the input, upon the history of the prior excursions and the direction of the current traverse.	SEMI E56
hysteresis	phenomenon seen in the elastic and electromagnetic behavior of materials, in which a lag occurs between the application or removal of a force or field and its effect.	SEMI E151
hysteresis	the pressure difference between readings, taken as flow is increased from a prescribed minimum to a prescribed maximum, and the pressure as the flow is decreased back to the prescribed minimum.	SEMI F101
hysteresis	the difference between the output readings of a pressure transducer when the same pressure is applied consecutively, under the same conditions but coming from opposite (ascending and descending) directions.	SEMI F113
I/O device	a general term for any type of sensor or actuator or aggregation of sensor and/or actuator.	SEMI E98
icon	an icon (diagrammatic image) is a bitmap or other image used in GUI environments such as windowing systems to show different types of objects, improve operability, and help the user better understand the functionality underlying Buttons.	SEMI E95
ID position on a substrate	as specified in SEMI D32. However, a 2D Code is not always parallel with SRE1 or LRE1. Also, an ID denotes a 2D Code.	SEMI D48
ID position on a substrate	reference Size of Substrate and ID as specified in SEMI D32. 2D Code is not always parallel with LRE1/LRE2 or SRE1/SRE2 as specified in SEMI D48. Also, an ID denotes a 2D Code in this standard.	SEMI D52
IDC	center point of 2D code.	SEMI D52
IDCL	a datum line on a substrate which is parallel with LRE and runs through the center point of the ID.	SEMI D52
IDCS	a datum line on a substrate which is parallel with SRE and runs through the center point of the ID.	SEMI D52
identification, contained in data matrix code symbol	a code to identify an individual device uniquely with manufacture’s assigned code in the same model of products or pointer to external data for such specific purpose as verification.	SEMI T19
Identify	the first step in the performance improvement process. During this step, procedures are used to identify four things: (1) the performance requirements, (2) any factors that prevent performers from performing as required, (3) the most cost-effective performance solution (intervention) that will enable performers to perform as expected, and (4) the evaluation criteria that will enable performance improvement stakeholders to determine the effectiveness of the performance solution.	SEMI E150

Term	*Definition*	*Standard(s)*
IDL	an extended line which is parallel with LRE and runs through the center point of the 2D-ID.	SEMI D48
IDL1	an extended datum line which is parallel with LRE1 and runs through the center point of the 2D-ID.	SEMI D48
IDL2	an extended datum line which is parallel with LRE2 and runs through the center point of the 2D-ID.	SEMI D48
idle	the condition where the equipment is energized and readied for processing (all systems ready and temperatures controlled) but is not actually performing any active function such as material movement or processing.	SEMI E6
idle average flow	the average flow rate when the equipment is in idle condition. Idle average flow should be measured at the equipment point of connection.	SEMI E6
idle mode	the condition where the equipment is energized and readied for process mode (all systems ready and temperatures controlled) but is not actually performing any active function such as materials movement or processing.	SEMI E167, E167.1
idle mode	the mode in which the SME is ready for processing within 15 seconds but is not in process mode.	SEMI S23
IDS	an extended datum line which is parallel with SRE and runs through the center point of the 2D-ID.	SEMI D48
IDS1	an extended datum line which is parallel with SRE1 and runs through the center point of the 2D-ID.	SEMI D48
IDS2	an extended datum line which is parallel with SRE2 and runs through the center point of the 2D-ID.	SEMI D48
ignition energy	sufficient energy to ignite a combustible material. The energy required depends on the form of the energy and the composition and form of the combustible material.	SEMI S14
ignore zone (IZ)	the distance from the wafer leading edge and trailing edge where the position data will be discarded for measurement.	SEMI PV70, PV71
illuminated area	the area of the sample which can be illuminated during electrochemical etching.	SEMI M46
illumination, bright-field	*in microscopy*, a method of illumination in which the image appears against a bright background generally produced by uniformly illuminating a circular and unobstructed condenser aperture diaphragm.	SEMI MF728
illumination, dark-field	*in microscopy*, a method of illumination in which the image appears as self-luminous against a dark background generally produced by illuminating the specimen with an annular cone of light so that only scattered light enters the objective.	SEMI MF728
illumination, Kohler	*in microscopy*, a method of illumination in which an image of the light source is focused on the condenser aperture diaphragm located at or near the back focal plane of the condenser lens and an image of the lamp collector is focused on the specimen plane.	SEMI MF728
image (micropatterning)	any single geometric form appearing in a layout: (1) drafting — as a part of a master drawing or layout; (2) optical — as projected on a screen or viewed, usually at some magnification or reduction; (3) oxide — as etched in the silicon dioxide layer on an oxidized silicon wafer; (4) photographic — as in a photomask or in the emulsion of a photographic film or plate; (5) as a photoresist, an exposed and developed coating on a substrate.	SEMI P25
image coordinates	locations in a two-dimensional digital image are referenced by a two-dimensional orthogonal coordinate system. The datum for the coordinate system is in the upper-left corner of the image. The horizontal axis or x-axis is located along the top of the image, with increasing positive values from left to right in the image. The vertical axis or y-axis is located along the left side of the image, with increasing positive values from top to bottom in the image.	SEMI T10
image field	the extent of the image along the x and y axes. It may be defined by the limits of image quality, as a practical matter, for the intended application.	SEMI P25
image resolution	resolution between two points. This is the minimum resolving distance between any two points in an image.	SEMI P30

Term	*Definition*	*Standard(s)*
image-based	as applied to TSVs, a metrology technique in which TSV dimensions are extracted from an image of the TSV. The image is obtained by some type of microscopy or tomography, and the dimensions are then measured from point to point in the image.	SEMI 3D5
image-scanning micrometer, optical	a micrometer that uses a phototube and scanning slit to generate an optical image profile from which the specimen dimension is determined by means of an optical threshold.	SEMI MF728
image-scanning micrometer, video	a micrometer that uses a television camera to generate an electronic image profile from which the specimen dimension is determined by means of an electronic threshold.	SEMI MF728
image-shearing micrometer, optical	a micrometer that optically shears, or splits, the image of the specimen into two identical images whose separation can be continuously adjusted while being viewed in the eyepiece.	SEMI MF728
image-shearing micrometer, video	a micrometer that optically shears, or splits, the image of the specimen into two identical images whose separation can be continuously adjusted while being viewed on a television monitor.	SEMI MF728
imaging equipment	a two dimension projection of a three dimension solder sphere is imaged. The edges of the projected circle are then detected. The distances between the edges are measured and an algorithm programmed into the equipment obtains the sphere diameter by review of the minimum inscribed circle and the maximum circumscribing circle.	SEMI G93
imaging resolution	qualitatively, the smallest distance between two object points that allows them to be distinguished in an image (limited, for example, by λ/NA in an optical microscope, beam shape in a scanning electron microscope, or tip shape in a scanning probe microscope).	SEMI P35
imaging time	the time from beginning of test to the displaying of a photovoltaic module electroluminescence image.	SEMI PV94
imbedded abrasive grains	on a semiconductor wafer, abrasive particles mechanically forced into the surface.	SEMI M59
immediately dangerous to life and health (IDLH)	is a concentration of airborne contaminants, normally expressed in parts per million or milligrams per cubic meter, which represents the maximum level from which one could escape within thirty minutes without any escape-impairing symptoms or irreversible health effects. This level is established by the National Institute of Occupational Safety and Health (NIOSH).	SEMI F6, S18
immediately dangerous to life and health (IDLH)	an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere. [29CFR1910.134b]	SEMI S6
impact or vibration test	a test performed to determine particle contribution as a result of an impact to the DUT or vibration of the DUT within the normal range of MFC operation..	SEMI E66
impact test	a test performed to determine particle contribution as a result of mechanical shock applied to the DUT.	SEMI F43
implement	a kind of Attachment used to assemble/maintain/improve measurement or production equipment.	SEMI T12
Implement	the sixth step in the performance improvement process, as applied to a training solution: This step is about taking whatever action is required to support the personnel that will deploy the training so that the training delivery is (a) effective and (b) standardized. 'Effective' delivery requires that personnel are equipped with the appropriate skills (e.g., presentation skills, facilitation skills, questioning skills, feedback skills, Performance-Based Equipment Training [PBET] class management skills). 'Standardized' delivery requires that personnel be given written guidance for each lesson.	SEIM E150
implementation	the internal view of a class, object or module, including any nonpublic behavior. The specific code and functionality that implements an interface.	SEMI E81, E96
implementation	the internal view of a type, class, or instance, including any nonpublic properties and behavior. The specific code and functionality that implements an interface.	SEMI E98

Term	*Definition*	*Standard(s)*
implementation conformance statement	a statement made by the supplier of an implementation or system claiming to conform to one or more specifications and stating which capabilities have been implemented. It specifically includes the relevant optional capabilities and limits.	SEMI E96
impulse response, of a profile measuring system	measured shape of an impulse or infinitely-sharp ridge lying perpendicularly to the profile direction.	SEMI MF1811
impurity analyzer	an appropriate analyzer to measure the concentration of desired impurities in a gas stream from the ppm to the percent (%) concentration range.	SEMI F67, F68
inaccuracy	the greatest deviation (absolute value) of any measured value from the ideal value for increasing and decreasing inputs for any test cycle separately, and reported in percent of output span or in percent of reading.	SEMI F113
inadvertent actuation	accidental or unintentional activation or deactivation of a control.	SEMI S8
inboard leak rate	leakage rate expressed in $Pa.m^3/s$ (*atm cc/sec*) from outside to inside occurring when an internal pressure is less than the external pressure acting on the component or system. Inboard leakage is typically determined by introducing a tracer gas around the exterior of the piping system or component under test.	SEMI F74
inch of water gauge (“w.g., in. w.g., or i.w.g.)	the pressure that supports a column of water one inch tall. It is a common US, not SI, unit for pressure. (See also the definition for static pressure.)	SEMI S6
incident	the occurrence of a problem that harms an information asset and equipment operations.	SEMI E169
incident azimuth angle, ϕ_i	the fixed 180° angle from the X_B axis to the projection of the incident direction onto the X_B-Y_B plane.	SEMI ME1392, PV15
incident direction	the central ray of the incident flux specified by θ_I and ϕ_I in the beam coordinate system.	SEMI ME1392, PV15
incident power, P_i	the radiant flux incident on the sample.	SEMI ME1392, PV15
inclusion	(indigenous or) foreign material within the metal, usually referring to non-metallic compound particles such as oxides, alumina, sulfides or silicates.	SEMI F19, F20, F73
inclusion	opaque or partially melted particle of refractory or batch material embedded in glass. Its size is usually determined by the size of the distorted area.	SEMI D9
inclusion	entrapped foreign solid material, such as slag, flux, tungsten, or oxide.	SEMI F78, F81
inclusion	any element that is trapped inside the crystal during its formation.	SEMI HB10
incompatible	as applied to chemicals, describes chemicals that, when combined unintentionally, may react violently or in an uncontrolled manner, releasing energy that may create a hazardous condition.	SEMI S2
incompatible	as applied to materials, describes materials that, when combined, may react violently or in an uncontrolled manner, releasing hazardous materials or energy that may create a hazardous condition.	SEMI S30
incomplete plating	plating is missing from any part of the designated area.	SEMI G62
indent	an edge defect that extends from the front surface to the back surface of a silicon or other semiconductor wafer.	SEMI M59
independent port	a load port on the stocker that is dedicated to input or output. It is considered that the carriers can only be transferred in one direction.	SEMI E88
index	address of a record data object.	SEMI E54.14
index of refraction	the ratio of the speed of light in vacuum to the speed of light in the material. *Snell’s law* states that the ratio of the sine of the angle of incidence to the sine of the angle of refraction equals the inverse ratio of the refractive indices of the materials on both sides of the interface at which the refraction occurs, where the angles are measured between the surface normal and the light beam.	SEMI M59

Term	*Definition*	*Standard(s)*
'L' type matching network	this type of network consists of a tuning element that is connected to ground, which is often a variable capacitor, and another tuning element that is in series with the output connection. The series section of the 'L' matching network typically consists of an inductor and a capacitor, one of which is variable.	SEMI E115
in situ	refers to processing steps or tests that are done without moving the wafer. Latin for "in original position."	SEMI E104
in situ measurement	a measurement performed inside the processing chamber of an equipment. If a wafer is used for this measurement, the wafer typically can be fed back into the process flow. The measurement data is typically available within regular wafer-to-wafer processing time frame or within wafer processing time frame (e.g., when performing layer thickness measurements during plasma etching).	SEMI E141
in situ metrology	the science of measurement referring to in situ measurements.	SEMI E141
in situ particle monitor (ISPM)	particle monitor used under atmospheric conditions or in low-pressure, vacuum or liquid applications to detect particles while a process is running.	SEMI E104
in situ particle monitor (ISPM)	a self-contained device, consisting of a laser that generates light, a light detector, counters, diagnostics and control and signal-processing electronics, commonly used in the semiconductor industry to measure and count particles in a specific area.	SEMI E54.10
indexing	the controlled stepped movement of material through the handler.	SEMI E123
indicated flow	flow indicated by MFC under test. Electrical output of the DUT.	SEMI E56, E68
indicated flow	the flow rate as determined by the output of the D.U.T.	SEMI E77, E80
indicated flow	the electrical output of the device under test (DUT).	SEMI F55
indicated flow	flow value derived from the MFC.	SEMI F56
indicated flow	flow as indicated by the device under test (DUT).	SEMI F64
indicator placement area	an area in which load port status indicators may be placed.	SEMI E154, E182, E184
indicator placement zone	a zone in which load port status indicators are placed.	SEMI E110
indirect alignment	the mechanical positioning of a) alignment marks on the FPD substrate to one set of reference points in the stepper, and b) alignment marks on the reticle(s) to a second set of reference points in the stepper (Contrast with direct alignment).	SEMI D8
indirect material	supplementary materials and parts used during processing but that do not make up a semiconductor package. Examples include bonding capillaries, dicing blades, etc.	SEMI G83
induction time	the elapsed time between when humidified gas is input to the device under test and when moisture is detected at the moisture analyzer. For a device under test which is perfectly transparent to moisture, the induction time is equal to the residence time of the gas in the system.	SEMI C91, F118
induction time	the elapsed time between when humidified gas is input to the test component and when moisture is detected at the moisture analyzer. For a component and test system which are perfectly transparent to moisture the induction time is equal to the residence time of the gas in the system.	SEMI F27
induction time	the elapsed time between when humidified gas is introduced to the test system and when moisture is detected at the moisture analyzer. For a test system which is perfectly transparent to moisture, the induction time is equal to the residence time of the gas in the system.	SEMI F58, F112
industrial authentication service body (ASB)	an agency to issue and register the authentication codes for products and license plates and offer the scheme for verification using the authentication codes. ASB is an agency to manage the access logs read in the distribution points. ASB is to be set up for each country and industry. Therefore, ASB in this document indicates the ASB for each industry.	SEMI T22

Term	*Definition*	*Standard(s)*
industrial robot	an automatically controlled, reprogrammable, multipurpose manipulator which is programmable in three or more axes and which may be either fixed in place or mobile for use in industrial automation applications.	SEMI S28
industrial waste drain (IWD)	standard acidic or alkaline waste; unsuitable for water recovery due to presence of contaminants that make recovery economically infeasible.	SEMI F116
inert gas	a gas, which at ambient conditions, does not react chemically with other materials or chemicals.	SEMI F67, F68
inert gas	a gas that normally does not combine chemically with materials. A protective atmosphere.	SEMI F78, F81
inert gas	a gas which at ambient conditions does not react chemically with other chemicals.	SEMI S4
inert gas	a gas that is not generally reactive (e.g., N_2 and Ar).	SEMI S18
inert gas fusion with infrared absportion method	the designation is given to the analytical method in accordance to the definition “inert gas fusion with infrared detection” in SEMI PV43. It is an analytical method in which the analyzed sample is fused in single-use graphite crucible under inert gas flow at a temperature sufficient to release gases, which are then measured using infrared detection.	SEMI PV88
inert gas fusion with infrared detection	an analytical method in which the analyzed sample is fused in single-use graphite crucible under inert gas flow at a temperature sufficient to release gases, which are then measured using infrared detection.	SEMI PV43
inertia base	a structural unit using mass damping to attenuate vibration for production equipment.	SEMI E70
inertial sensors	a motion detector that embodies a sprung mass to sense acceleration.	SEMI MS3
inerting	a technique by which a mixture of a flammable gas or vapor in air within its flammable range is rendered nonignitable by the addition of an inert gas.	SEMI S3
inerts	gases that are not reactive under normal conditions.	SEMI F105
information asset	the property of information on an information system.	SEMI E169
information component	an information component is a uniquely addressable unit of information within the domain, and an indentifier to an addressable unit of information outside the domain.	SEMI E36
information port	the interchange point of information between an equipment information system and a factory system.	SEMI E169
infrastructure	the services, facilities, and communications mechanisms that support the collaboration between and lifecycle of distributed objects.	SEMI E81, E96
infrequently used	used in processing or job cycle less frequently than once every hour. Multiple tool operation by a single operator should be considered.	SEMI S8
ingot	a cylindrical or rectangular solid of silicon resulting from a crystallization process, generally of slightly irregular dimensions.	SEMI PV9, PV22, PV32
ingot	a cylinder or rectangular solid of polycrystalline or single crystal, generally of slightly irregular dimensions.	SEMI HB8
ingot, silicon	a cylinder or rectangular solid of silicon resulting from a crystallization process, generally of slightly irregular dimensions.	SEMI M59
inheritance	a relationship among classes wherein one class (a subclass) shares the structure or behavior defined in one or more other classes (superclass). A subclass typically specializes its superclasses by augmenting or redefining existing structure and behavior.	SEMI E81
inheritance	the ability to derive new classes, types or interfaces from existing classes, types or interfaces. For example, a derived class (‘subclass’) inherits the instance variables and methods of the base class (‘superclass’) and may add new instance variables and methods. In the CIM Framework, inheritance applies to interfaces and their specification of operations rather than implementations of classes.	SEMI E96
initial light-induced degradation of thin-film silicon PV module	the output power of module tends towards stability after significant decline in the early period of use.	SEMI PV74

Term	*Definition*	*Standard(s)*
initiate motion	to use an exhaust stream to start contaminants (or machine parts) moving from a rest position.	SEMI S6
initiator (HSMS)	the entity requesting an HSMS service. The initiator requests the service by sending an appropriate HSMS message.	SEMI E37
injection level	the ratio of the density of excess carriers generated by photons or other means to the equilibrium density of majority carriers in an extrinsic semiconductor crystal or wafer.	SEMI M59
ink jet method	color filter layers are formed by pigment or dye-colored ink blown out from an ink jet head nozzle onto the substrate pixels.	SEMI D13
inker	a resource of the prober. The electromechanical units to put ink mark on die.	SEMI E91, E130
inlet pressure	the pressure at the inlet fitting of the MFC.	SEMI E28
inline complex type	three units of equipment, equipment A, equipment B, and equipment C constitute a process.	SEMI D49
inline controller	controller that controls overall inline equipment, which integrates multiple units.	SEMI D54
inline equipment	equipment that connects multiple equipment units.	SEMI D54
in-line measurement	a measurement performed inside any portion of an equipment or work cell except the processing chamber. If a wafer is used for this measurement, the wafer typically can be fed back into the process flow. The measurement data is typically available within regular wafer-to-wafer processing time frame (e.g., layer thickness measurements performed inside a cooling station of a cluster tool).	SEMI E141
in-line metrology	the science of measurement referring to in-line measurements.	SEMI E141
inline type	as following process of equipment A, equipment B is placed, and equipment A and equipment B are supplied by separate suppliers.	SEMI D49
inner bound linewidth	width of largest linewidth bounding box entirely inside the line segment. Its width is the smallest linewidth that is ordinarily associated with the feature.	SEMI P35
inner height	the shortest distance between the inside surface of the bottom plate and the inside surface of the top plate.	SEMI D11
inner pod	a set of components that creates a secondary isolated environment for protecting the reticle. The inner pod has two major elements, a baseplate and a cover.	SEMI E152
inner pod baseplate (or, baseplate)	a device intended to hold the reticle front side down and position the reticle.	SEMI E152
inner pod cover (or, cover)	a device to enclose the reticle when connected to the inner pod baseplate.	SEMI E152
inner surface alignment	an operation in which the illumination and viewing axes observe alignment marks on the opposite, adjacent (inner) surfaces of the two wafers to be aligned.	SEMI MS1, MS3
inorganic permeable thin film	a clear thin film of inorganic material formed through methods such as vacuum deposition or sputtering.	SEMI D13
input	direction of transfer-in to the transfer point.	SEMI D54
input and exit ports	the locations where product and/or product carriers are placed to allow the equipment to process them, or where they are removed from the equipment after processing.	SEMI E78
input voltage sensitivity	the change in output value across the range of the input voltage.	SEMI F113
input/output connections	connections over a DeviceNet network that provide dedicated, special-purpose communication paths between a producing application and one or more consuming applications. Application-specific I/O data moves through these ports.	SEMI E54.4
input/output connections	connections over an EtherNet/IP network that provide dedicated, special-purpose communication paths between a producing application and one or more consuming applications. Application-specific I/O data moves though these ports.	SEMI E54.13
inspect	to detect anomalies and/or information about anomalies.	SEMI E30.1
inspection	an examination to detect anomalies.	SEMI E30.1

Term	*Definition*	*Standard(s)*
inspection	determination of the serviceability of an item (e.g., component part, assembly) by comparing its physical, mechanical, and/or electrical characteristics with specifications through examination (e.g., by sight, sound, feel, diagnostic result).	SEMI E149
inspection	an examination of an area of material to detect anomalies.	SEMI E127
inspection equipment	equipment that looks for anomalies on a substrate and reports information regarding those anomalies. Inspection equipment may determine the location of anomalies relative to a coordinate system. Inspection equipment may also provide other types of data related to the anomaly.	SEMI E30.1
inspection information	inspection results for a wafer, indicating defect location and defect details obtained as the result of inspection used in wafer fabrication and the inspection process, such as appearance inspection, contaminant inspection, etc.	SEMI E107
inspection module	a measurement module that inspects substrates and reports information regarding anomalies. Inspection modules may determine the location of anomalies relative to a coordinate system and may also provide other types of data related to the anomaly.	SEMI E127
inspection/review equipment	equipment having the characteristics of both inspection and review equipment.	SEMI E30.1
installation	the activities performed after the equipment is received at a user site through preparation for initial service, including transportation, lifting, uncrating, placement, leveling, and facilities fit up.	SEMI F107, S8, S24
instance	a specific and real occurance of an object.	SEMI E54.1, E54.10
instance	real devices may have zero or more instances of each of the defined LonMark objects and functional profiles. Object instances are identified by means of an instance number within the device.	SEMI E54.16
instance	a software entity that has state, behavior and identity. The terms instance and object are interchangeable. An object is an instance of an interface if it provides the operations, signatures, and semantics specified by that interface. An object is an instance of an implementation if its behavior is provided by that implementation.	SEMI E81, E96
instantaneous air sampling	collecting potentially contaminated air for chemical analysis as rapidly as the collection method permits. Typically, the collection time is less than one minute per sample. Instantaneous sampling provides a means of measuring airborne concentrations of the contaminants during a brief period.	SEMI S6
instantaneous power density (IPD)	the rate at which energy is released by the self-reaction of a unit volume of a material. It is the product of the enthalpy of self-reaction and the self-reaction rate.	SEMI S30
instruction	Identifier for the type of request or response.	SEMI E54.19
instructional aid	any object required for delivery of training but not needed by the performer on the job (e.g., whiteboard, sample faults for troubleshooting, demonstration video, slides). Also called a training aid.	SEMI E150
instructor	an individual with appropriate technical expertise and experience, authorized by the employer to deliver, or facilitate the delivery of, a course module or set of modules and capable of addressing student questions in a timely manner.	SEMI E150
Instructor Guide	provides written information to an instructor on how to teach a lesson or series of lessons. A book, in which all of the right-side pages are annotated reproductions of the student manual and the left-side pages are detailed lecture notes, questions to ask the students, and directions for class activities is one example of such a document.	SEMI E150
instructor led training (ILT)	any training delivery method in which a human instructor is present at the same time as the student (even if not the same location) to present information or direct the learning activities (e.g., classroom lectures, discussion groups, instructor demonstrations at the equipment, instructor feedback during practice activity, virtual classroom).	SEMI E150
instructor or facilitator	an individual with appropriate technical expertise and experience, authorized by the employer to deliver, or facilitate the delivery of, a course module or set of modules and capable of addressing student questions in a timely manner.	SEMI S19

Term	*Definition*	*Standard(s)*
instrument signature	the mean scatter level detected when there is no sample scatter present expressed as BRDF.	SEMI ME1392
insulating boundary	a boundary between two specimen layers of opposite conductivity type, taken to be the point at which the local maximum of the spreading resistance occurs.	SEMI MF672
insulation	a layer of nonconductive material used as the outer surface of a conductor for the purpose of protecting against electric shock.	SEMI S22
integer	may take on the value of any negative or unsigned integer. Messaging protocol may impose a limit on the range of possible values.	SEMI E39, E40, E41, E53, E58, E90, E99, E118
integral unit	the filter cartridge and housing are not separable.	SEMI F59
integrated air sampling	moving potentially contaminated air at a known rate for a known sampling period through a medium suitable for collecting and retaining the contaminants of interest for subsequent chemical analysis. Integrated sampling provides a means of measuring the time average airborne concentrations of the contaminants during the sampling period.	SEMI S6
integrated device manufacturer (IDM)	typically, this is the principal end user of slurries and post-CMP chemicals.	SEMI C99, C101
integrated measurement module	a measurement module intended to be integrated into manufacturing equipment, and with the capability of receiving substrates from the equipment, measuring those substrates, and returning the substrates and the measurement results to the equipment and other concerned clients.	SEMI E127, E131
integrated metrology	the science of measurement using metrology equipment that is closely connected to an equipment or work cell, characterized by the capability to perform in-line and in situ measurements.	SEMI E141
integrated SMIF	a unit including a SMIF port and a mechanism for indexing the port door. The entire unit being incorporated within the tool.	SEMI E48
integration	covers the interconnection of FMCS and FPUs by Engineering and Commissioning with respect to communication. It does not cover the Engineering and Commissioning of the FPUs themselves.	SEMI F97
integration	the connections of various components, such as valves, regulators and filters used in liquid chemical distribution or mixing. Since the piping may be complicated in some cases, and require extra space, integration refers to reviewing the conventional connection method which connects these components with other components and/or tubing/piping systems and simply offers suggestions that minimize space, thereby connecting or fitting each component in close proximity.	SEMI F108
integration structure	a structure that fixes multi-functional accessories such as base plate, thermal insulation material, membrane, and outer envelope structure to the roof platform.	SEMI PV100
integrator	a party who integrates components such as load ports, robots, and EFEMs into semiconductor manufacturing equipment.	SEMI S28
intelligent device station	station which can send cyclic transmission and transient transmission to master station.	SEMI E54.12
intelligent device station	a node capable of performing 1:n bit data and word data cyclic transmission and transient transmission with the master station, and transient transmission with slave stations, excluding remote I/O stations. Has client functions or server functions during transient transmission.	SEMI E54.23
intended function	a manufacturing function that the equipment was built to perform within specified operating conditions agreed upon between the user and the supplier. This includes transport functions for transport equipment and measurement functions for metrology equipment, as well as process functions such as physical vapor deposition and wire bonding. The period of time equipment is performing its intended function includes equipment initialization and reaching base operating environmental conditions (e.g., temperature, pressure). Complex equipment may have more than one intended function.	SEMI E10, E79

Term	*Definition*	*Standard(s)*
intended function	a manufacturing function that the equipment was built to perform. This includes transport functions for transport equipment and measurement functions for metrology equipment as well as process functions such as physical vapor deposition and wire bonding.	SEMI E58, E116
intended process set (IPS)	a predetermined set of equipment modules that is used to achieve a process and is specified by the user for equipment operation. A multi-path cluster tool (MPCT) may have one or more such intended process sets (IPSs). An IPS may include alternative equipment modules at one or more steps of the process. An IPS may therefore contain one or many process paths.	SEMI E10, E35, E79, E140
intended reaction product	chemicals that are produced intentionally as a functional part of the semiconductor manufacturing process.	SEMI S2
interaction	effect for which the apparent influence of one factor on the response variable depends upon one or more other factors. [ISO 3534-3]	SEMI E89
interactive gas	a gas that will readily adsorb to the surface of a vessel used to contain or transport it. Examples of interactive gases are hydrogen chloride and moisture.	SEMI F29
interactive transfer	a transfer in which both partners are active and must interact in the performance of the transfer.	SEMI E32
interbay loadport	the interface location on a stocker where the interbay transport places wafer carriers to allow the stocker to store the carriers.	SEMI E85
interbay transport	movement of loads [e.g., carrier(s), cassette(s), reticle(s)] between functional work areas or bays.	SEMI S17
interbay transport system	the track and vehicle (if applicable) that transports the carrier to and from the interbay stockers.	SEMI E85
interbay transport system	a transport system used to move work-in-process between stockers in different parts of the factory.	SEMI E88
interconnect	connection(s) between tool mainframe and peripheral tool sub-system equipment.	SEMI E6, E70
interconnect	connections between equipment mainframe and peripheral equipment subsystem equipment.	SEMI E76
interconnection	connections between the chassis and peripheral subsystems and support equipment.	SEMI F107
interested party	any entity, for example, buyers, law enforcement agencies, customs, counterfeiters, etc., that desires to determine the authenticity of a product.	SEMI T20
interface	in information modeling, it is the boundary between two entities from which information will flow.	SEMI E54
interface	the external view of a class, object, or module that emphasizes its abstraction while hiding its structure and internal behavior. An interface definition ideally includes the semantics.	SEMI E81
interface	the external view of a class, object, or module that emphasizes its abstraction while hiding its structure and internal behavior. An interface definition ideally includes the semantics of attributes and operations.	SEMI E96
interface	the external view of an object type, class, or object that defines its public properties and services without regard to the internal structure and internal behavior.	SEMI E98
interface	the boundary between the substrate and the epitaxial layer.	SEMI M59
interface box	an enclosure located between the equipment mainframe and facility services typically containing components for pressure regulation and filtration. It functions to consolidate facility service requirements to single points of connection. The interface box can provide location and ability to pre-facilitate equipment hookups in advance of equipment delivery.	SEMI E76, F107
interface inheritance	the construction of an interface by incremental modification of other interfaces.	SEMI E81, E98
interface plane	the vertical surface defined by the mating surfaces of two joined modules.	SEMI E21, E166

Term	*Definition*	*Standard(s)*
interface seal zone	an absolute surface or face reserved for establishing an environmental seal between modules.	SEMI E21, E166
interface trap density, D_{it}	charge per unit area at the boundary between the oxide layer and the silicon.	SEMI M59
interfering	a dynamic port is interfering when any of its associated mechanisms are positioned where they are capable of physically obstructing the transfer.	SEMI E32
interferometer	a noncontact optical instrument used to obtain topographical data.	SEMI MS3
interferometer	a noncontact optical instrument used to obtain topographical data (such as 3D data sets and 2D data traces).	SEMI MS4
interferometry	a technique that relies on the principal of superposition of multiple beams of light to determine the effect that a material has on the state (phase and amplitude) of the original light beam.	SEMI 3D4
interferometry	high resolution, noncontact measurement technique that relies on the principle of superposition of multiple beams of electromagnetic waves.	SEMI 3D12
interim report	report created to document the progress of an evaluation.	SEMI S27
interlaced pattern	the pattern rendered by even rows and odd rows of the display panel.	SEMI D70
interleaf (for semiconductor leadframes)	a paper or plastic film which is placed between layers of semiconductor leadframes strips to prevent tangling and transformation.	SEMI G59, G60
interlock	a mechanical, electrical or other type of device or system, the purpose of which is to prevent or interrupt the operation of specified machine elements under specified conditions.	SEMI S2, S3, S28, S30
interlock	a mechanical, electrical or other type of device or system, whose purpose is to prevent or interrupt the operation of equipment subsystems under specified conditions.	SEMI S22
intermediate container	container that holds one or more product packages for product/order separation in a shipping pack.	SEMI T20.1
intermediate container	a container that holds one or more product packages for product/order separation in a shipping container or final container.	SEMI G83
intermediate container	a container housing one or more product packages for the purpose of product/order segregation in a shipping container.	SEMI G71
intermediate depth	the distance measured from the wafer top surface to a selected level less than the full depth of the TSV opening.	SEMI 3D1
intermediate depth	the distance measured from the top surface to a selected level less than the full depth of the TGV opening.	SEMI 3D11
intermediate wafer	a wafer which has undergone processing and is intended for use in, or has been included in, a wafer stack.	SEMI 3D8, 3D9, 3D10
internal buffer	a set of locations within the equipment to store carriers. These locations exclude load ports.	SEMI E164, E171
internal buffer	a set of locations within the equipment to store carriers. These locations exclude load ports.	SEMI E87
internal buffer	EFEM configuration with carrier places different from load port units.	SEMI E101
internal buffer	locations within the equipment to store carriers. These locations exclude load ports.	SEMI E82
internal buffer equipment	equipment that uses an internal buffer.	SEMI E164, E171
internal buffer equipment	equipment that uses an internal buffer.	SEMI E87, E110
internal connection	an internal connection is a utility connection to the equipment which is located internal to the equipment and typically associated with hazardous utilities.	SEMI E76

Term	*Definition*	*Standard(s)*
internal inductance (pf packages)	inductance of the circuit that comprises the signal path starts from the shoulder or in the center of the outside lead and ends at the end of the lead on the cavity side of the lead. The return path is made by tying all other traces (except for the target trace in the same electric potential) together. The target trace is tied to the return path at the bonding finger.	SEMI G23
internal pod buffer	storage area for reticle pod that is internal to the equipment.	SEMI E109
internal reticle library	a set of locations within the equipment to store reticles. These locations exclude load ports.	SEMI E109
internal stocker load port	a load port that is recessed from the stocker equipment boundary (a cavity or cutout in the stocker.	SEMI E156
internal stocker loadport	an interbay loadport that is recessed from the stocker equipment boundary (a cavity or cutout in the stocker).	SEMI E85
internal transfer port	a specific type of *transfer port,* which is internal to a single TSC domain. As an example, this location may be used to transfer carriers among different vehicles in a single TSC domain.	SEMI E82
Internet Protocol address (IP address)	a logical address which uniquely identifies a particular attachment to a TCP/IP network.	SEMI E37
interocular crosstalk	the 3D crosstalk perceived by a viewer. Inter-ocular crosstalk could come from system crosstalk, viewer crosstalk, the inconsistence of 3D cues, etc. Inter-ocular crosstalk can be called ghost image on 3D display as well. Interocular crosstalk can not be measured by an LMD. Its value should be determined by ergonomic test. Interocular crosstalk is unit-less.	SEMI D59
interocular luminance difference	the luminance difference perceived by the viewer's eyes, when the viewer watches a 3D display using its specific viewing method and with the same condition of the left/right images.	SEMI D59
interoperability	the ability for two applications or the parts of an application to cooperate. In the CIM Framework, interoperability requires that application components be able to share data, invoke each others' behavior (services), exchange events, and publish service exceptions.	SEMI E81
interoperability	the ability for two applications or the parts of an application to cooperate. In the CIM Framework, interoperability requires that application components be able to support specified relationships, share data, invoke each others' behavior (operations), return exceptions, and exchange events.	SEMI E96
interposer	a substrate that has been modified in such a way as to allow the routing of electrical signals, power and ground, enabling connections between multiple die and/or passive components, and which may subsequently be enclosed in a package or module.	SEMI 3D16
interpreter	the system that interprets a primary message and generates a reply when requested.	SEMI E5
interpupillary distance (IPD)	the distance between the centers of the two pupils while watching infinity. IPD can range from 55 to 75 millimeters for adults, but the average is usually taken to be 65 mm.	SEMI D59
interrupt	any assist or failure.	SEMI F47
interrupt (interruption)	a failure.	SEMI E58
interrupted electropolishing	a break in the continuity of the electropolished surface appearance due to a change of electropolishing conditions at the interruption boundary; may be visible as a change in reflectivity across the boundary or a step in the surface.	SEMI F19
interrupting capacity	the highest current at rated voltage that a device is intended to interrupt.	SEMI S22
interruptive mode	one of the transmission formats to communicate larger amount of data between master and slave.	SEMI E54.21
intertool transport	wafer or cassette movement between independent tools.	SEMI E21
interval frame	a unit of transaction data between communication frames interruptively in communication protocol format of MOTIONNET.	SEMI E54.21

Term	*Definition*	*Standard(s)*
intrabay transport	movement of loads [e.g., carrier(s), cassette(s), reticle pod(s)] within a functional work area or bay.	SEMI S17
intrabay transport system	a transport system dedicated to one or more bays in the factory and responsible for transferring carriers to and from production equipment. ITS consists of the physical units of the system (e.g., vehicles, nodes, docking stations), the low-level unit controllers, and a system-level controller. ITS excludes factory floor storage systems (stockers), but includes any short-term storage integral to the system, such as storage locations within an overhead track system that are accessible only to units of the particular ITS.	SEMI E88
intrafield overlay	the overlay within an exposure field, relative to the overlay at the center of the lens reference location. Also referred to as within-a-field overlay.	SEMI P18
intratool transport	wafer movement inside a cluster tool.	SEMI E21, E166
intrinsic	(1) the region in the conductivity-temperature curve where the conduction in a wafer is dominated by hole-electron pairs excited across the forbidden energy gap; (2) a process, such as intrinsic gettering, caused by factors within the crystal of the wafer itself.	SEMI M59
intrinsic line (I_{TO}(FE))	the luminescence that arises from the silicon itself, with no impurity species affecting the exciton recombination.	SEMI MF1389
intrinsic surface or finish parameters	characteristics such as the rms roughness or rms slope that contain all surface spatial frequencies from zero to infinity.	SEMI MF1811
inversion condition	for measurements on surfaces that do not exhibit a permanent inversion layer, the region of the capacitance-voltage, (C-V) curve for which a 5 V increment toward a more positive voltage for *p*-type material, or toward a more negative voltage for *n*-type material, results in less than 1% change in the equilibrium minimum capacitance, C_{min}. This is the condition in which a minority carrier layer is formed at the semiconductor surface separated from the bulk by a depletion region.	SEMI M59
inversion domains	isolated three-dimensional regions in the GaN wafer having inverted polarity with respect to the rest of the crystal.	SEMI M86
inverter	the circuit device to convert the low voltage DC into the high voltage RF in order to light on the CCFL.	SEMI D36
IO controller	a device that manages its assigned IO Devices and handles user data exchange; usually a programmable controller.	SEMI E54.14
IO data exchange	cyclic writing of output data and reading of input data.	SEMI E54.20
IO data object	object designated to be transferred cyclically for the purpose of processing and referenced by device/slot/subslot.	SEMI E54.14
IO device	a device that is configured and managed by IO controllers and IO supervisors; an IO device initiates no unsolicited communications.	SEMI E54.14
IO supervisor	a device that interacts as a configuration or diagnostic tool; usually a programming device.	SEMI E54.14
ion	an atom or group of atoms that has lost or gained one or more electrons.	SEMI F51
ion exchange	a water treatment technology used in a high-purity water treatment application to exchange undesirable cations for hydrogen ions and undesirable anions for hydroxide ions.	SEMI F61
ion source	the section of a mass spectrometer used to generate sample ions by electron impact, chemical ionization, or charge exchange.	SEMI F67, F68
ionization degree	the ratio of the concentration of singly positive charged to total EL2 defects.	SEMI M64
ionizing radiation	alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions in human tissue.	SEMI S2
IRE	an arbitrary unit used to describe a video signal.	SEMI D71
iron enriched oxide layer thickness	the depth from the initial surface for which the iron concentration is greater than the chromium concentration in the depth profile analysis of the passive oxide layer. Sometimes also called a *detached iron oxide layer*.	SEMI F60, F72

Term	*Definition*	*Standard(s)*
irradiation capsule	container in which sample is kept during irradiation.	SEMI PV10
irradiation time t_{irr}	duration of irradiation.	SEMI PV10
irritant	a chemical is considered to be an irritant if: (a) It is classified as a 'primary skin irritant' per 16 CFR 1500, or (b) It is designated as an irritant according to European Directive 67/548/EEC, on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances including its amendments and adaptations to technical progress.	SEMI S4
ISEM job	the information required to specify an inspection or review that may include material identification and location and process program identifications as well as any other parameters required to obtain a desired result.	SEMI E30.1
ISO container	a container for storing chemicals, usually large in size, able to be transported directly, and designed in compliance with criteria from the International Standards Organization.	SEMI F31, S25
isokinetic sampling	sampling of particles in a moving aerosol or fluid by matching the sample probe inlet velocity (flow speed and direction) to the velocity of the moving aerosol or fluid.	SEMI E66, E104
isolated contact	a switch or relay contact that is not connected to ground, power or other internal circuits.	SEMI S28
isolated defect, edge defect	shape defects, in which defects are isolated from the pattern, are called isolated defects. For these type of defects, dot or hole is suitable for a definition. Size of isolated defect is expressed as 'width' and 'height.' 'Width' of the isolated defect is expressed with dimension of X direction, and 'height,' dimension of Y direction. Defects adjacent to pattern are called edge defects. However, the edge defect which is positioned at corner section of contact (island) pattern, etc. is called a corner defect. Size of edge defect is expressed as 'width' and 'height.' 'Width' of the isolated defect is expressed with dimension of X direction, and 'height,' dimension of Y direction. 'Width' of the edge defect is expressed with dimension which is parallel to the side of the pattern, 'height,' dimension which is normal to it.	SEMI P22
isolated feature	feature that has no neighbors within a distance smaller than the proximity range to any edge of the feature.	SEMI P43
isolated power system	a power system that has a high impedance between its conductors and the facilities connection of the equipment. High impedance can be characterized by resistances of one meg-ohm or more. Isolated power systems are supplied power by isolation transformers or power supplies that have no direct electrical connection between their primary conductors and their secondary conductors.	SEMI S22
isolated space	a darkfield, clear line as shown in Figure 3 (of SEMI P19).	SEMI P19
isolation gap	metal free space between conductive areas.	SEMI G22, G33
isolation material	a type of isolation film or coating, either on the cell back surface, on the ribbon surface, or exists as a separate layer in the module.	SEMI PV62
isolation valve	a valve used to separate the high temperature fluid from the high pressure fluid or to separate the samples from each other.	SEMI F10
isothermal test plane	the isothermal plane intended to contain DUT at the reference irradiance level.	SEMI PV57, PV69, PV76, PV80, PV89
isotropic surface	surface whose intrinsic finish parameters and functions are independent of the rotational position of the surface about its surface normal. Also known as statistically-isotropic surface.	SEMI MF1811
issue for construction (IFC)	a milestone event that identifies when drawings and specifications are released to subcontractors for construction.	SEMI E70
item	a data element within a message.	SEMI E5
item format	a code used to identify the data type of an item.	SEMI E5
jig	a three dimensional fixture, typically a frame that contains equipment installation aides which serve to indicate location and type of connection needed for equipment hook-up.	SEMI E76, F107

Term	*Definition*	*Standard(s)*
jig	an attachment which is used to support measurement or production of material on one or more equipment as defined in SEMI T12.	SEMI T17, T18
Jig	a kind of attachment used to support measurement or production for material on one or more equipment.	SEMI T12, T15
Jig ID	an identifier installed onto a Jig, which is recognized to identify the individual piece.	SEMI T15
jitter	the unwanted variations of one or more signal characteristics, such as the time interval between successive pulses, the amplitude of successive cycles, or the frequency or phase of successive cycles.	SEMI E151
job	some system level operation whose execution may be requested by an entity whose responsibility it is to manage jobs. The job concept is analogous to operations performed on the 'factory floor' in a physical factory. There, operators are requested to perform operations (jobs) requested by their managing supervisors or some other managing source. A job often spans a significant amount of time and multiple resources within the system. In the CIM Framework, the job construct is intended for specialization to enable specific job supervisors and jobs to provide system solutions.	SEMI E81
job	a lot, processed with a single process program on PSEM equipment.	SEMI E91
job	the collection of tasks to be performed by an individual, in support of a process. The job (or performer of the job) is usually identified with a particular function (e.g., equipment operator, process engineer).	SEMI E150
job aid	a type of performance solution (intervention); any object used by the performer on the job that provides information and makes the performance of the task easier or more accurate. Also called, performance aids or guides.	SEMI E150
job analysis	a procedure used during 'Analyze' of the performance improvement process to identify the tasks performed by a competent job incumbent.	SEMI E150
job deck view	viewing of chip layout on writing data.	SEMI P46
joint probability	a probability density or cumulative distribution function comprised of two or more random variables.	SEMI E35, M59
junction temperature, T_J	in degrees Celsius, is used to denote the temperature of the semiconductor junction in the microcircuit in which the major part of the heat is generated. Usually the measured junction temperature is only indicative of the temperature in the immediate vicinity of the element used to sense the temperature.	SEMI G30, G38, G42, G43
junction temperature, T_J	in °C, is the temperature of the semiconductor junction on the microcircuit in which the major part of the heat is generated.	SEMI G68
junction-to-ambient thermal resistance	$R_{\theta JA}$, in degrees Celsius, watt is the temperature difference between the junction and the ambient, divided by the power dissipation P_H.	SEMI G42
just noticeable difference (JND)	used in the field of Psychophysics; for a certain stimulus, the smallest change in stimulus (luminance, for example) where a difference can be perceived. Specifically, it is often used to indicate a statistical value where the probability of the difference being 'perceptible' is 50% and the probability of the difference 'not being perceptible' is 50%. This is also expressed as j.n.d. using lower case letters.	SEMI D31
Kelvin probe	reference electrode that vibrates perpendicular to the wafer surface and generates an AC signal by varying the electrode-wafer capacitance.	SEMI M59
key group (K)	a subset of equipment modules that are common to all intended process sets (IPSs) in a multipath cluster tool (MPCT) where the failure of K is sufficient to cause a failure of all IPSs and hence the MPCT. K may include a mainframe equipment module.	SEMI E10
kinematic coupling	the physical alignment mechanism on the bottom of the wafer carrier that consists of features that mate with three vertical pins on the load port.	SEMI E101
kinking	a collapse of the tube wall caused by excessive bending.	SEMI F9
kit	specific items of hardware and software as specified by the equipment manufacturer that adapt the equipment for a specific unit or unit package.	SEMI E123

Term	*Definition*	*Standard(s)*
kitting	the act of placing a group of one or more reticles in a reticle pod for removal from a bare reticle stocker. This is accomplished via a ReticleTransferJob that specifies one or more reticles for removal from the stocker, or by one or more MoveReticle services that specify a destination that is a Pod Location.	SEMI E109
KLL Auger peaks	standard terminology for the identification of Auger peaks, derived from the identification of the atomic electron shells participating in the production of the Auger electron.	SEMI F72
knot	an embedded glassy transparent lump having an irregular or tangled appearance. Its size is usually determined by the size of the distorted area.	SEMI D9
L0 display	gradation 0 out of 64. (Pitch Black)	SEMI D31, D41
L63 display	gradation 63 out of 64. (Completely white)	SEMI D31, D41
label	the label on the wafer shipping box or items such as bags identifying the product and its manufacturer.	SEMI M26, M45
label placement area (LPA)	this is the placement area for the label to identify the 450 TFC. Labels intended for use here include RFID, 2D-code, barcode, the label for visual confirmation, etc.	SEMI G92
labor rate	the contractually stipulated cost of labor.	SEMI E70
ladder	a fixed or portable means of access with a pitch more than 75° but not more than 90°, whose horizontal elements are steps or rungs.	SEMI S2
lamella	a piece of material with dimensions in the submillimeter range prepared from bulk material for investigation in a TEM.	SEMI E177
lamella	a special case of the twin. A multiple twin, extremely thin and relatively long, which may intersect more than one plane.	SEMI M10
lamella carrier (LC)	a device for supporting and holding one or multiple lamella(s).	SEMI E177
laminates	same that laminated from multiple layers under high temperature.	SEMI PV83
lamp	the light source of the BLU. A CCFL is mainly used.	SEMI D36
lamp assembly	the lamp and the parts directly mounted on the lamp.	SEMI D36
lamp collector or lamp condenser	*in microscopy*, a lens that collects light from the lamp and usually focuses the light either on the specimen or on the condenser aperture diaphragm.	SEMI MF728
lamp cover	the part protecting lamp. It makes the light emitted from the luminance factor be incident into the light guide plate.	SEMI D36
lamp current	effective current inside the lamp. [mArms]) (The GND side shall be measured.)	SEMI D35
lamp diffuser	*in microscopy*, a ground-glass plate or other light-diffusing material used to improve the uniformity of the illumination.	SEMI MF728
lamp holder	the part which protects the lamp from external impact (collision and contact) and protects it so that no high voltage is directly impressed around the lamp input parts (electrode terminals).	SEMI D36
lamp ring	the part that protects lamp from the fragility.	SEMI D36
lamp voltage	effective voltage across both ends (between two electrodes) of a lamp at rated lamp current (VL[Vrms]).	SEMI D35
lamp wattage	a product of the lamp current, lamp voltage and a power factor. A reference value (W[Wrms]).	SEMI D35
landing	a horizontal elevated location, not intend by the supplier as a location of work, at the end of a series of steps.	SEMI S2
laser	any device that can be made to produce or amplify electromagnetic radiation in the wavelength range from 180 nm to 1 mm primarily by the process of controlled stimulated emission.	SEMI S2
laser bond	debond using a laser process.	SEMI 3D8

Term	*Definition*	*Standard(s)*
laser light-scattering event	a signal pulse that exceeds a preset amplitude threshold, generated by the interaction of a laser beam with a discrete scatterer at a wafer surface as sensed by a detector.	SEMI M59
laser outlining	the use of a laser to determine the outer surface shape and area of an object.	SEMI C69
laser product	any product or assembly of components that constitutes, incorporates, or is intended to incorporate a laser or laser system (including laser diode), and that is not sold to another manufacturer for use as a component (or replacement for such component) of an electronic product.	SEMI S2
laser source	any device intended for use in conjunction with a laser to supply energy for the excitation of electrons, ions, or molecules. General energy sources, such as electrical supply mains, should not be considered to be laser energy sources.	SEMI S2
laser spot, of laser triangulation sensor	a sensor consists of a laser output and a linear array light receiver. The laser and the light receiver are arranged in the manner where laser spot of a surface at different position will be imaged through optical component onto different element of the light receiver. Surface position can be determined by reading the brightness signal from the light receiver.	SEMI PV70, PV71
laser system	a laser in combination with an appropriate laser energy source, with or without additional incorporated components.	SEMI S2
laser triangulation sensor	a sensor consists of a laser output and a linear array light receiver. The laser and the light receiver are arranged in the manner where laser spot of a surface at different position will be imaged through optical components onto different element of the light receiver. Surface position can be determined by reading the brightness signal from the light receiver.	SEMI PV71
last valid value (LVV)	the most recent value successfully assigned to an attribute.	SEMI E54.1, E54.10, E54.22
latch cavities	spaces located in the port assembly guide rails that accommodate the box latches in the open position of the box door.	SEMI E19
latch pins	pins that engage the box door latch and accomplish the box door lock/unlock functions. Latch pins are on the port plate.	SEMI E19, E19.4
latent scratch	a scratch which is usually invisible but when subjected to an etching action by dipping into a detergent or a corrosive solution, such as an acid, the previously invisible scratch becomes visible due to the minor removal of surface glass.	SEMI D9
lateral etch or undercut	the allowable beveled edge caused by the leadframe etchant attacking the metal laterally as well as vertically.	SEMI G19
lateral pinch	grip in which the object is held between the thumb and the side of the index finger (often referred to as key grip).	SEMI S8
laterals/sublaterals	intermediate facility service distribution lines that run between mains and equipment-specific isolation valves.	SEMI E70
latex sphere equivalent	not preferred, use *light scattering equivalent* (adj).	SEMI M59
latex sphere equivalent (LSE)	the diameter of a monodisperse polystyrene latex sphere that, under identical test conditions, produces the same detected scattering intensity as the LLS under investigation.	SEMI E146
lathe welding	automatic or machine welding of tubes or pipes in which the electrode is stationary and the weld joint rotates. Lathe welding as defined here is a fusion process without the addition of filler.	SEMI F78
lay	the direction of the predominant surface pattern, ordinarily determined by the production method used.	SEMI F19
lay	the general direction of orientation of surface features.	SEMI F37
lay	the predominant direction of the surface texture. Although the texture of polished silicon wafers is generally isotropic, some epitaxial wafers exhibit a pattern of steps and ledges when examined by atomic force microscopy at near atomic resolution. Contoured wafer edges may also exhibit lay even after polishing.	SEMI M59

Term	*Definition*	*Standard(s)*
layer	one of a sequential series of overlaying photomasks that make up a device series.	SEMI E30.1
layer	a ceramic or metalized layer that performs a discrete function as a part of the package. Should a layer be comprised of more than one ceramic laminate, all of those laminates shall be considered as comprising one layer if all are common in both plan-form and function. Leadframes shall not be considered as layers.	SEMI G3
layer	a dielectric sheet with or without metallization that performs a discrete function as a part of the package construction.	SEMI G5, G22, G39, G50
layer boundary	interface between the layer and substrate.	SEMI M59
layer, on a cofired ceramic package	the body is made from layers of ceramic or liquefied ceramic. The layers are defined by their functionality, and several ceramic layers may be described as comprising one functional layer if all are common in plan-form and function (e.g., die attach cavity).	SEMI G61
layer particle	a three-dimensional substance adhered to the surface of some color filter layer material.	SEMI D13
layer thickness	the metric distance between two interfaces.	SEMI E141
layout	the logical and physical dimensions of two-dimensional array of devices to which a map may be assigned.	SEMI E142
layout fixed	the milestone date when the physical layout of equipment and components is fixed and all stakeholders complete approval sign-off.	SEMI E70
leachate	the organic solution obtained from the leaching process which includes the test fluid and the compounds extracted from the wetted surfaces of ultra high purity chemical delivery systems and components.	SEMI F114, F115
lead bend angle	the angle to which the leads are bent in reference to a plane normal to the X-Y plane of the package. After a suitable radius has been formed at the shoulder, there must be no compound angle formation to achieve the lead spread requirements. Lead bend angle may just be a reference if lead spread is specified.	SEMI G54
lead coplanarity	is defined as the vertical lead position with respect to a reference plane measured after forming. The reference plane is defined by the three lowest leads from the bottom of the package.	SEMI G16, G36, G37
lead coplanarity	the vertical position of a lead foot with respect to a reference plane created by the three leads with feet most extended from the bottom surface of the package body. The term ‘foot’ applies to both PLCC foot radii and PQFP feet.	SEMI G54
lead coplanarity	total indicator reading difference of the lead tips in the Z direction.	SEMI G70
lead flat surface	area on the lead tips that is suitable and available for wire bonding. This is generally achieved by coining on stamped leadframes and is also known as the coined area on such leadframes.	SEMI G9
lead lock groove	a groove formed in leads using the half-etching technique or stamping to increase the adhesive strength of plastic molding compound to the leads and improve resistance to water intrusion into the package.	SEMI G70
lead lock groove depth	the maximum depth of the groove.	SEMI G70
lead offset	alignment of leads across the package.	SEMI G5, G39
lead offset	lead centerlines must be aligned to within 0.254 mm (0.010 inch) of the centerline of corresponding braze pad metallizations.	SEMI G50
lead offset	in brazed lead ceramic packages, the variation in position of the centerline of the lead with reference to the centerline of the braze pad to which it is mounted.	SEMI G61
lead planarity	total indicator reading of the lead tips in the Z direction relative to the datum formed by the dam bars.	SEMI G70
lead shoulder (dambar area) protrusions or intrusions	a protrusion (tab) on the shoulder or lead, or intrusion cut into the shoulder or lead as a result of dambar trimming.	SEMI G54

Term	*Definition*	*Standard(s)*
lead shoulder protrusions and intrusions	any variations in straightness along the defined shoulder width caused by dambar removal.	SEMI G16, G36, G37
lead sweep	lead movement, measured with respect to a datum, perpendicular to the top or bottom of the package that passes through the designed mid-point of the lead where the lead is attached to the package (e.g., side-brazed laminates), or where the lead exits the package body (e.g., plastic dual-in-line packages). The movement is viewed from the side of the package, not the ends.	SEMI G54, G61
lead tilt	deviation of the plane of coined area from a condition parallel to the plane formed by the dam bars.	SEMI G70
lead tweeze	lead movement, measured with respect to a datum, perpendicular to the top or bottom of the package that passes through the designed mid-point of the lead where the lead is attached to the package (e.g., side-brazed laminates), or where the lead exits the package body (e.g., plastic dual-in-line packages). The movement is viewed from the ends of the package, not the side and the lead movement is from the edges of the package in toward the centerline of the package.	SEMI G61
lead twist	angular rotation of bonding fingers.	SEMI G9, G19, G27, G28, G41, G51
leadconditioning site	a process-site on the handler where some form of conditioning occurs on the package leadfingers (i.e., warming).	SEMI E123
leadfinger (or substrate connector lead)	(1) in ceramic packages, an area of refractory metal that has been plated and is designated for the attachment to a process-site. (2) the area of the unit designated for attachment to a process-site.	SEMI E123
leadframe	a sheet metal framework upon which a chip (sometimes chips) is attached, wire-bonded, and then either molded with plastic epoxy or with ceramic and/or metal.	SEMI E123
leadframe top surface	the active side of the leadframe, the surface used for die attach and wire bonding.	SEMI G62
leadframe twist	angular rotation of one end of the leadframe or strip with reference to the other end.	SEMI G70
leading edge (LE)	the position where first valid position data is found after acquisition is started.	SEMI PV70, PV71
lead-to-lead separation	the distance between adjacent leads when measured from their centerlines at the point of connection to the package.	SEMI G61
leak	a path (or paths) in a sealed system that will pass tracer gas when a pressure differential or diffusion path exists. There are two leak mechanisms: a mechanical passage and a material through which gas can diffuse or permeate. A leak may have both mechanisms operating in parallel.	SEMI F1, F74
leak	a path (or paths) in a sealed system that will pass helium gas when a pressure differential or diffusion path exist. There are two leak mechanisms: a mechanical passage and a material through which gas can diffuse or permeate. A leak may have both mechanisms operating in parallel.	SEMI F106
leak	a path (or paths) in a sealed system that will pass tracer gas when a pressure differential, a concentration differential, or diffusion path exists. There are two leak mechanisms: a mechanical passage and a material through which gas can diffuse or permeate. A leak may have both mechanisms operating in parallel.	SEMI MS3, MS6
leak	a path or paths in a sealed system which will pass helium when a partial pressure differential exists. A partial pressure differential can exist for helium even though a total gas pressure differential may not exist. There are two major leak mechanisms, a mechanical passage or a material through which gas can diffuse or permeate. In a real system, a leak may have both mechanisms operating in parallel. A mechanical leak may be a physical crack, pit, scratch or other imperfection in a sealing surface, or contamination or debris on the seals. A diffusion or permeation leak is caused by the movement of helium through gaskets, O-rings, polymers, or other materials through which helium can diffuse.	SEMI E16

Term	*Definition*	*Standard(s)*
leak integrity	the leak measured between the wetted surface volume and the ambient environment surrounding the device.	SEMI F113
leak tight	having a helium leak rate no greater than that specified by the customer or end-user.	SEMI F69
leakage transmission, t_2	ratio of minimum transmitted light power for a polarizer rotated in a light beam of infinite contrast, to the total light beam power without the polarizer.	SEMI MF1763
leakage, inboard	leakage from outside to inside that occurs when the internal pressure is less than external pressure acting on a component.	SEMI F1
leakage, inboard	leakage from outside to inside occurring when the internal pressure is less than the external pressure acting on a component. Inboard leakage is typically determined by introducing a tracer gas around the exterior of the piping system or component under test.	SEMI F106
leakage, inboard	leakage from outside to inside occurring when the internal pressure is less than the external pressure acting on a component or the concentrations of a given component are different inside and outside generating a non-zero chemical potential. Inboard leakage is typically determined by introducing a tracer gas around the exterior of the piping system or component under test.	SEMI MS3, MS6
leakage, internal	leakage that occurs within a component across a flow barrier, such as leakage across the seat of a closed valve.	SEMI F1
leakage, outboard	leakage from inside to outside that occurs when the internal pressure is greater than the external pressure acting on a component.	SEMI F1
learning hierarchy	a diagram showing enabling relationships between two or more tasks and that communicates the recommended sequence for learning the tasks.	SEMI E150
learning objective	written statement of the desired knowledge, skill, or ability to be demonstrated.	SEMI S19
LED light bar	a strip light source with multiple LEDs (SMD or other package type LED) mounted along on a strip PCB. In general, all the LEDs emit the chief optical radiation in the same direction.	SEMI D62
length (L)	datum line for a long edge of a substrate.	SEMI D44, D48, D49, D52
length byte	the character used to establish the block length during transmission.	SEMI E4
lesson	a planned sequence of activities which, when completed, enables a person to perform one task according to the specifications of the corresponding performance objective. Also called, a module.	SEMI E150
level	value of a factor in a designed experiment.	SEMI E89
level (as in task levels or skill levels)	a designation for grouping a series of tasks into categories (1) that parallel the requirements for jobs like equipment operator, maintenance technician, field service engineer; or (2) that represent increasing levels of entry skill such as operator level, preventive maintenance level, corrective maintenance level, etc.	SEMI E150
level 1 variability (σ_1)	variation (standard deviation) of measurement results obtained by repeated measurements on the same test specimen(s) with the same measurement tool system under nominally identical conditions with a single calibration in the shortest possible time interval and without removal and reloading of the test specimen between subsequent measurement runs and using a single calibration.	SEMI M59
level 2 variability (σ_2)	variation (standard deviation) of measurement results obtained by repeated measurements on the same test specimen(s) with the same measurement tool system with removal and reloading of the test specimen between subsequent measurement runs but otherwise under nominally identical conditions with a single calibration in the shortest possible time interval under nominally identical conditions except for replacing the test specimen between subsequent measurement runs.	SEMI M59

Term	*Definition*	*Standard(s)*
level 3 variability (σ_3)	variation (standard deviation) of measurement results obtained by repeated measurements on the same test specimen(s) with the same measurement tool system with removal and reloading of the test specimen between subsequent measurement runs over a time period greater than that used level 2 variability tests but otherwise under nominally identical conditions without operator induced adjustment and with replacing the test specimen between subsequent measurement runs.	SEMI M59
level of concern (LOC)	is equal to 0.1 of the IDLH value.	SEMI F6
life cycle	the processes and activities of something from its beginning (creation) to its ending.	SEMI E94
life cycle assessment (LCA)	a methodology used to evaluate the environmental impact of SME throughout its life cycle, including raw material procurement, manufacturing, transportation, use, and disposal.	SEMI S23
life time	the shorter of following: (1) a period of the time when the intensity of light falls to the specified regulated value (for example 50%). (2) a period of the time when the lamp starts to get an abnormal discharge.	SEMI D36
lifecycle	the life of an object, including creation, deletion, copy, and equivalence.	SEMI E81, E96
lifecycle	the entire life of an item of equipment, from conceptual design through to disposal.	SEMI S10
lifetime	the time over which the fixed and recurring costs are spread for an annualized basis.	SEMI E35, E140
lifetime $t_{½}$	time after which a nuclide activity has decayed to 50% of its starting value.	SEMI PV10
lift	lift is defined as the displacement to the bottom surface of substrate from the support plain. It is located above position from the support plain.	SEMI D40
lifting accessory	a component (e.g., eyehook, shackle, hoist ring, wire rope, chain, or eyebolt) which is part of a lifting fixture or is attached directly between the lifting device and the load in order to lift it.	SEMI S2
lifting device	a mechanical or electro-mechanical structure that *is* provided for the purpose of raising and lowering a load during maintenance or service tasks, and *may be* capable of moving the load in one or more horizontal directions.	SEMI S2
lifting equipment	lifting devices, lifting fixtures and lifting accessories.	SEMI S2
lifting fixture	a mechanical device or an assembly of lifting accessories (e.g., hoisting yoke, wire rope sling, webbing sling, or chain assembly) placed between the lifting device (but not permanently attached to it) and the load, in order to attach them to each other.	SEMI S2
ligand	ion or molecule (chemicals) that could bind with the surface of gold nanoparticle.	SEMI C82, C89
light and elevated temperature induced degradation (LeTID)	change of physical properties of solar cell or modules under illumination and at elevated temperature with effect on the power output.	SEMI PV93
light guide plate	an optical component used to guide and diffuse light from a light source.	SEMI D36
light induced degradation (LID)	change of physical properties of solar cell or modules under illumination with effect on the power output.	SEMI PV93
light measurement device (LMD)	a device used to measure light, luminance, color, or color temperature. LMDs can include luminance meters, photometers, spectro-radiometers, photodiodes, etc. depending upon the requirements for the measurement.	SEMI D59
light resistance	minimum cumulative exposure energy a pellicle can withstand without (or within specified) change in performance.	SEMI P5
light scattering latex sphere equivalent (LSE) (adj.)	having the linear dimension assigned to a LLS by a calibrated SSIS equal refers to the diameter of a hypothetical deposited polystyrene latex sphere that would produce the same signal amplitude on that SSIS.	SEMI M59

Term	*Definition*	*Standard(s)*
light source	a source of radiant energy to simulate natural sunlight and used for cell performance measurement.	SEMI PV57, PV69, PV76, PV80, PV89
likelihood	the expected frequency with which a mishap will occur. Usually expressed as a rate (e.g., events per year, per product, or per substrate processed).	SEMI S14
likelihood	the expected frequency with which harm will occur. Usually expressed as a rate (e.g., events per year, per product, or per substrate processed).	SEMI S2, S30
likelihood	the expected frequency with which harm will occur, expressed as the percentage of unit-years in which the harm has occurred or is expected to occur.	SEMI S10
limit	the level of susceptibility that a stated standard allows.	SEMI F53
limit of detection (LOD)	lowest concentration that can be detected by an instrument. LOD is typically defined as three times the standard deviation of the mean noise level.	SEMI F67, F68
Line	a connection between two Nodes. One Line may have multiple Tracks.	SEMI A1, A2
Line	a connection between equipment or between the host and equipment. One Line may have multiple Tracks.	SEMI A5
line	a clear field, dark feature of quasi-infinite length (>> *proximity range*) determined by its width. A line is an example of a 1D feature.	SEMI P43
line accuracy	the maximum deviation of the draw line and the reported data. For calculation, line accuracy is the maximum orthogonal distance of reported coordinate to the drawing line.	SEMI D73
Line Acknowledge DB	a data block which contains Line Information signals from Data Receiver to Data Sender.	SEMI A1.1
Line CB	a part of communication block which contains Line Information including GD. Line CB consists of Line SB and Line RB.	SEMI A1.1
line character misalignment	the vertical distance, *R*, between the character baselines of any two characters on the same line.	T5
line character misalignment, R_{line}	the vertical distance between the character baselines of the highest and the lowest characters on the same line.	SEMI M12, M13
line control	a portion of the block transfer protocol.	SEMI E4
Line Data	data that is handled by one Line connection.	SEMI A1
line edge bounding box	The region, for each edge, between specified inner and outer linewidth bounding boxes encompassing the edge of the feature. (b) User-specified bounding box intended to encompass the feature edge.	SEMI P35
line edge position	expectation value of the position of the edge within the line edge bounding box used to define the linewidth. If the probability distribution of the edge within the line edge bounding box is symmetric, this will be at the center of the line edge bounding box.	SEMI P35
line edge roughness (LER)	the perpendicular point-to-point deviation of the *feature*'s edge from the *feature model*'s edge. Usually a line *feature model* describes a smooth line, with the LER contained within the *line edge bounding box*. Then the physical LER can be defined as the deviation of the actual line edge surface (the *feature edge*) from the *feature model*'s edge at each point on the surface of the *feature model*'s edge. This will be some function of *y* and *z*.	SEMI P35
line focus	the z-axis position where for evaluative lines in the image, the optical image has the highest contrast and the evaluative line pattern will consequently appear with the correct width and pitch. Line focus may vary across the image field and is properly given as a z-axis value for a specified image site in the image field. It also varies with the line angle, and the line focus must therefore include a specification of the angle (e.g., saggital or tangential or some other angle).	SEMI P25
Line RB	a part of Line CB which contains Line Information signals including GD for Data Receiver.	SEMI A1.1
Line SB	a part of Line CB which contains Line Information signals including GD for Data Sender.	SEMI A1.1

Term	*Definition*	*Standard(s)*
Line Transfer DB	a data block which contains Line Information signals including GD from Data Sender to Data Receiver.	SEMI A1.1
line yield	the fraction of units leaving the factory that have finished processing (measures relative material losses such as scrapped units).	SEMI E124
lineage	a low-angle grain boundary resulting from an array of dislocations.	SEMI M59
lineage	(dislocation pit) (grain boundary): low-angle grain boundary resulting from an array of dislocations. This angle may vary from a fraction of a second to a minute of arc difference in orientation from one part of the crystal to another. The array of dislocations will appear as rows of pits on a preferentially etched surface.	SEMI M10
linear systems, linear measurement system	a signal-processing concept more precisely described as a linear, shift-invariant system.	SEMI MF1811
linearity	the closeness to which a curve approximates a straight line. It is measured as a nonlinearity and expressed as a linearity.	SEMI E27, E56, E69, F113
linearity	absence of changes in variability or bias as measurements are made at different points within the measurement range.	SEMI E89
linearity	variations in measurement values without changing device and wafer conditions. This is the closeness of agreement between the measured values obtained by measuring a pattern repeatedly without any changes of measurement conditions.	SEMI P30
linearity, terminal-based	the maximum absolute value of the deviation of the accuracy curve (average of up cycle and down cycle values) from a straight line through the upper and lower setpoint limits of the accuracy curve.	SEMI E56
linearity, terminal-based	the maximum absolute value of the deviation of the accuracy curve (average of upscale and downscale values) from a straight line through the upper and lower setpoint limits of the accuracy curve.	SEMI E69
linear-referenced ROA (L-ROA)	the roll off value when a straight line is employed as the reference.	SEMI M59, M77
line-edge roughness (or line edge roughness)	the perpendicular point-to-point deviation of the feature's edge from the feature model's edge.	SEMI P47
line-end area deviation	the sum of line-end area gain and line-end area loss. As such it becomes a special case of clipped feature area deviation, in which the region of interest contains a line-end.	SEMI P43
line-end area difference	line-end area gain minus line-end area loss. As such it becomes a special case of clipped feature area difference, in which the region of interest contains a line-end.	SEMI P43
line-end area gain	special case of clipped feature area gain, in which the region of interest contains a line-end.	SEMI P43
line-end area loss	special case of clipped feature area loss, in which the region of interest contains a line-end.	SEMI P43
line-end pull-back (LEPB)	the distance, parallel to the line center, between the line-ends of the nominal and the actual features. This distance may be determined along the line center (center LEPB), or alternatively it may be determined by the distance between the extreme point of the actual line and the nominal line-end (minimum LEPB), in analogy to corner pull-back.	SEMI P43
line-end shortening	deviation of the actual feature from the nominal feature at the nominal line-end. This is still qualitative, and can be quantified in general cases by overlaying the actual line contour to the nominal line. Alternatively, a test pattern such as Figure 17 may overcome the need to overlay to the nominal case.	SEMI P43
linewidth	in semiconductor technology, at a given cross-section of the line, the distance between the airline material boundaries at some specified height above the interface between the patterned layer in which the line is formed and the underlying layer.	SEMI P19
linewidth	Width of a specified linewidth bounding box. Distance between the two opposing line edge positions of a feature.	SEMI P35

Term	*Definition*	*Standard(s)*
linewidth bounding box	(a) If the feature height is unambiguous, a specified rectangular bounding box constrained to the line height and bounding a specified line length segment; (b) appropriate parameters describing a different bounding box. Additional constraints, such as orientation parallel to a defined length direction, may be placed on the bounding box.	SEMI P35
linewidth measurement uncertainty	parameter that characterizes the dispersion of the values that could reasonably be attributed to the linewidth of an object.	SEMI P35
linewidth roughness	the deviation of the point-to-point linewidth from the average width of the specified linewidth feature model.	SEMI P47
linewidth roughness (LWR)	the deviation of the point-to-point *linewidth* from the width of the specified linewidth feature model.	SEMI P35
link device	a general term for RX, RY, RWr, and RWw.	SEMI E54.23
link scan	the updating of RX, RY, RWr, and RWw and the transmission of transient communication and station diagnostic information that are repeated periodically.	SEMI E54.23
link scan time	the time required for one link scan.	SEMI E54.23
linked equipment	two or more equipment that are physically and logically connected and function as a single installation of equipment. In this case, the individual component equipment are modeled as high-level modules of the linked equipment.	SEMI E98
linked process program parameter	an equipment process program parameter that can be altered to effect change of an EQIP with which it is associated.	SEMI E126
liquefied compressed gas	a gas which under the charged pressure is partially liquid at a temperature of 21.1°C (70°F).	SEMI C3, S18
liquid	having its molecules moving freely with respect to each other so as to flow readily, unlike a solid, but because of cohesive forces not expanding infinitely like a gas.	SEMI F78, F81, S4
liquid	the fluid form of a substance in which its molecules moving freely with respect to each other so as to flow readily, unlike a solid, but, because of cohesive forces, not expanding infinitely like a gas.	SEMI S3
liquid chemical	acid, alkali, organic solvent, and pure water used for wet stations; resists and developers used for track system; and other chemicals used for process or maintenance (such as slurry of chemical-mechanical polishing) of equipment or facilities.	SEMI F52, F65
liquid chemical distribution system	the collection of components and subsystems used to control and deliver liquid process chemicals from a source location to a point of use in a semiconductor manufacturing facility.	SEMI F34
liquid chemical distribution system (LCDS)	the collection of components and subsystems used to control and deliver liquid process chemicals from a source location to a point of use in a semiconductor manufacturing facility.	SEMI F57
liquid chemical/liquid chemicals	organic or inorganic liquid chemical used for semiconductor or flat panel display manufacturing.	SEMI F66, F103
liquid chemicals	acid, alkali, organic solvent, and pure water used for wet stations; resists and developers used for truck system; and other chemicals used for process or maintenance (such as slurry of CMP) of equipment or facilities.	SEMI F99, F100
liquid chemicals	acids, alkali, organic solvents and pure water used in wet stations, resist and developer used in track systems, and chemicals (CMP slurry, etc.) used for other systems and device processes and maintenance.	SEMI F108
liquid container	a container of less than 454 L volume used to store, transport, or dispense liquids.	SEMI S18
liquid precursor	a liquid precursor is a chemical supplied as a liquid and used in chemical vapor deposition (CVD). Many liquid precursors are toxic, reactive and air-sensitive.	SEMI F96
list	a group of items.	SEMI E5

Term	*Definition*	*Standard(s)*
list	a set of one or more items that are all of the same form.	SEMI E39, E40, E41, E53, E58, E90
lithographie, galvanoformung und abformung (LIGA)	a micromachining technology used in the production of high-aspect ratio, precision microstructures.	SEMI MS3
lithography and patterning wafer	wafers intended for use in evaluating pattern resolution.	SEMI M59
lithography wafer	a silicon wafer used specifically for testing lithography equipment wherein surface flatness is the key attribute, usually used only in a cleanroom environment.	SEMI M59
load	the operation of placing a carrier on a load port.	SEMI E87, E171, E174
load	move material to the probing or marking location from the cassette.	SEMI E91
load	the operation of placing a pod on a load port.	SEMI E109
load	load is the object to be transported by UTV. Load includes a carrier (cassette, box, pod, etc.) and its contents.	SEMI S17
load	(1) move a substrate onto a substrate location. (2) move a carrier onto the equipment.	SEMI E130
load and tune position	for some matching networks, the tuning elements are referred to as the *Load Position* and the *Tune Position.* This terminology is common for 'L' type matching networks, which have a tuning element that is connected to ground and another tuning element that is in series with the output connection. The *Load Position* corresponds to the tuning element that is grounded and is associated with matching to the real part of the load impedance. The *Tune Position* corresponds to the tuning element that is in series with the output and is associated with matching to the reactive part of the load impedance.	SEMI E115
load boundary	a plane parallel to the facial plane establishing the boundary between the load port and the fab aisle.	SEMI HB3
load boundary (LB)	a plane parallel to the facial plane establishing the boundary between the load port or SME and the fab aisle	SEMI E182
load depth	the horizontal distance from the load face plane to cassette centroid or carrier centroid.	SEMI E15
load face plane	the furthest physical vertical boundary plane from cassette centroid or container centroid on the side (or sides) where loading of the tool is intended.	SEMI E62
load face plane	the furthest physical vertical boundary plane from the cassette centroid or carrier centroid on the side (or sides) of the tool where loading of the tool is intended.	SEMI E15, E63, E72
load face plane	the furthest physical vertical boundary plane from carrier centroid on the side(s) of the equipment where loading of the tool is intended.	SEMI E64, E83
load face plane	the furthest physical vertical boundary plane from the cassette centroid or carrier centroid on the side (or sides) of the equipment where loading of the equipment is intended.	SEMI E92, E156
load face plane (LFP)	a plane parallel to the facial plane establishing the boundary between the load port and the fab aisle (refer to dimension *y101*).	SEMI E184
load height	the distance from the bottom of the cassette or carrier to the floor at the load face plane.	SEMI E15
load height	the distance from the horizontal datum plane to the fab floor.	SEMI E182, E184
load height	the distance from the HP to the fab floor.	SEMI HB3
load impedance	the load impedance is the impedance to which a matching network is matched.	SEMI E115
load impedance	the load impedance is the impedance to which a generator is attached.	SEMI E135
load impedance	the load impedance is the impedance to Ih an RF generator is driven into.	SEMI E143
load impedance simulator	a device that presents a load impedance to which a matching network can match.	SEMI E115

Term	*Definition*	*Standard(s)*
load port	the interface location on the equipment where pods are loaded and unloaded.	SEMI D54, E109
load port	the interface location on a tool where wafer carriers are delivered. It is possible that wafers are not removed from, or inserted into, the carrier at this location.	SEMI E15, E99, E118
load port	the interface location on a tool where wafer carriers are placed to allow the tool to process wafers.	SEMI E64
load port	the interface location on the equipment where carriers are delivered.	SEMI E82, E153
load port	the interface location on a tool where carriers are placed to allow the tool to process wafers.	SEMI E101
load port	the interface location on a tool where wafer carriers are placed to allow the tool to process wafers.	SEMI E84
load port	the interface location on the equipment where carriers are loaded and unloaded.	SEMI E83, E87, E174
load port	the interface location on the equipment where carriers are transferred.	SEMI E88
load port	the physical interface provided for the exchange of carriers with an agent of the factory (operator or automated material handling system).	SEMI E98
load port	the interface location on a semiconductor manufacturing equipment, where a Panel FOUP can be loaded and unloaded.	SEMI E182
load port	the interface location on a semiconductor manufacturing equipment, where a 300 mm Tape Frame FOUP can be loaded and unloaded.	SEMI E184
load port	the interface location on an LEDME, where a 150 mm HB-LED cassette can be loaded and unloaded.	SEMI HB3
load port	the location on the equipment where carriers are loaded and unloaded.	SEMI S28
load port door	mechanical feature on a load port surrounded by the load port frame. It can be engaged with the carrier door and together they can be moved away to allow access to wafers in a carrier.	SEMI E154
load port door	mechanical feature on a load port surrounded by the load port frame. It can be engaged with the Panel FOUP door and together they can be moved away to allow access to panels in a Panel FOUP.	SEMI E182
load port door	mechanical feature on a load port surrounded by the load port frame. It can be engaged with the Tape Frame FOUP door and together they can be moved away to allow access to wafers in a Tape Frame FOUP.	SEMI E184
load port door	the mechanism of the SME that opens between SME and a carrier to allow access to wafers.	SEMI S28
load port frame	mechanical feature on a load port surrounding the load port door.	SEMI E154, E182, E184
load port operation interface	any indicator (e.g., lamp, LED) to visualize status information of a load port to an operator and/or any switch to be used for manual handoff operation.	SEMI E110
load port operation switch	any switch to be used for manual handoff operation.	SEMI E110
load port status indicator	any indicator (e.g., lamp, LED) to visualize status information of a load port to an operator.	SEMI E110, E182, E184
load port status indicator	any kind of visualization means (e.g., lamp, LED, display) to indicate the status of a load port to an operator.	SEMI E154
load Q	the quality factor, Q, of the load is defined here as the magnitude of the reactive part of the load divided by the real part of the load. For example, a load impedance of 2 to j20 Ω would have a load Q of 10.	SEMI E113
Load Stagnation	a stagnation caused by nonreadiness of a carrier which loads substrates.	SEMI E171
loading edge	edge to apply the force to test specimen.	SEMI G86
loading height H	distance from supports to loading tool.	SEMI G96

Term	*Definition*	*Standard(s)*
loading port	user or vehicle accessible port location on a stocker output shuttle. Contains carrier presence sensors so that the host can be notified when a carrier is situated at this position.	SEMI E88
loading slider area	two flat surfaces on equipment which may be used by a maintenance supporting mechanism to support the box opener/loader during attachment and detachment.	SEMI E92
loading tool	tool to apply the force to test specimen.	SEMI G96
loading/unloading operation	the action necessary to move a load to and from a UTV system. This operation may involve hoisting, manual, or robotic manipulation to transfer loads between a UTV system and SME or between a UTV system and FPD manufacturing equipment (FPDME) (such as process equipment or stockers).	SEMI S17
local abatement	treatment of emissions at the point of generation at the tool.	SEMI E70
local back face warp SWLB, of CSW	maximum of the individual local bottom warp of all sites of a CSW.	SEMI HB6
local bow	an area of a small, localized deviation of the general plane of a substrate	SEMI 3D12
local clearance	the distance between the external surface of a cassette or container to nearby vertical obstructions such as an alignment pocket.	SEMI E15
local entity	relative to a particular end point of a connection, the local entity is that entity associated with that endpoint.	SEMI E37
local entity-specific	general qualifier to any procedure, option, issue, or other implementation matter which is not a subject of this standard and left to the discretion of the individual supplier.	SEMI E37
local exhaust ventilation	local exhaust ventilation systems operate on the principle of capturing a contaminant at or near its source and moving the contaminant to the external environment, usually through an air cleaning or a destructive device. It is not to be confused with laminar flow ventilation. Synonyms: LEV, local exhaust, main exhaust, extraction system, module exhaust, individual exhaust.	SEMI S2, S30
local flicker	flicker which is measured specific field of display.	SEMI D79
local front face warp (Sori) SWLF, of CSW	maximum of the individual local front warp of all sites of a CSW.	SEMI HB6
Local Host	the host that controls one or more assembly lines from production execution control perspective.	SEMI A5
local slope, of film on grid LC	the slope of the film across a site.	SEMI E177
local station	station which can send cyclic transmission and transient transmission to master station and other local stations.	SEMI E54.12
local station	a node capable of performing n:n bit data and word data cyclic transmission and transient transmission with the master station and other local stations, and transient transmission with slave stations, excluding remote I/O stations. Has server functions and client functions during transient transmission.	SEMI E54.23
local thickness TALU, of CSW	mean of the thickness measured at all measurement points of a site.	SEMI HB6
local thickness variation TALV, of CSW	difference between the maximum and minimum thickness measured within a site. The value is assigned to the center of this region.	SEMI HB6
local warp SWLM, of CSW	maximum of the local median warp of all sites of a CSW.	SEMI HB6
localization	grouping cells according to the specified area size for the efficiency improvement of the input process and the parallel processing of OASIS.MASK. The records of each cell group are also localized in the OASIS.MASK file.	SEMI P44
localization area	an area which contains one of the cell groups divided by the localization.	SEMI P44
localized cell	a cell which is placed in single localization area.	SEMI P44

Term	*Definition*	*Standard(s)*
localized light scatterer (LLS)	an isolated feature, such as a particle or a pit, on or in a wafer surface, resulting in increased light scattering intensity relative to that of the surrounding wafer surface; historically called *light point defect* because under high intensity optical illumination features of sufficient size appear as an isolated point of light.	SEMI E146
localized light-scatterer (LLS)	an isolated discrete feature, such as a particle or a pit, on or in a wafer surface, resulting in increased light-scattering intensity relative to that of the surrounding wafer surface; historically called *light point defect* because under high intensity optical illumination features of sufficient size appear as isolated points of light.	SEMI M59
location ID	the name of a material location.	SEMI E90
location plane	the common area on a piece of equipment where EPOC's may be located (e.g., back, side, top, bottom).	SEMI E76
lockout	the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.	SEMI S19
lockup	the outlet pressure increase which occurs above the set pressure after flow shutoff.	SEMI F101
log	a record of equipment operations or activities.	SEMI E169
log reduction value (LRV)	log reduction value of filter measured by test method. This is measured as logarithmic value of ratio of upstream to downstream particle counts.	SEMI C82, C89, F110
log reduction value (LRV)	a way of expressing particle retention of a filter; logarithmic ratio of particle concentration upstream of the filter to the particle concentration downstream of the filter.	SEMI F38
logic entity	logical subcomponents of a device; it could be physical.	SEMI E54.19
logic tree	a diagram comprised of a branching series of questions, resulting in a 'yes' or 'no' answer, used during troubleshooting to determine and resolve a problem.	SEMI E149
logical port	one or more physical input or input/output ports that are controlled by the same execution of a Process Program.	SEMI E30.5
logical recipe	a recipe with a particular set of attributes and a particular body, considered independently from its physical location. A logical recipe may have multiple instances or copies.	SEMI E42
Logical Signal	information that performs the handshake for Line connection.	SEMI A1
long axis of test module	the line across the center and parallel to the long side of PV module.	SEMI PV92
long integer (LINT)	an integer, eight bytes long, in the range -2^{63} to $2^{63}-1$.	SEMI E54.1, E54.10, E54.22
long lead materials	material requiring early ordering due to availability or long manufacturing time.	SEMI E70
long radius elbow	a ventilation duct elbow that has a center line radius 1.5 or more times the duct diameter.	SEMI S6
long real (LREAL)	a double floating point number, eight bytes long, as defined in IEEE 754.	SEMI E54.1, E54.10, E54.22
long reference edge	a long edge of a substrate and their extension on the orientation corner side.	SEMI 3D23
long reference edge (LRE)	two long edges of a substrate and their extension lines. *LRE1* — extension line of LRE on the orientation corner. *LRE2* — extension line of LRE on the opposite side of the orientation corner.	SEMI D44, D48, D49, D52
long time irradiation	irradiation longer than short time irradiation.	SEMI PV10
long wavelength cut-off	wavelength that the attenuation ratio of its amplitude becomes 75% when the traced profile is passed through the high-pass wavelength filter which eliminates waviness element.	SEMI D7
long wavelength cut-off, λL	wavelength that the attenuation ratio of its amplitude becomes a standard value when the traced profile is passed through the high-pass wavelength filter which eliminates form element.	SEMI D15

Term	*Definition*	*Standard(s)*
LONWORKS-specific definitions	in addition to the standard data type definitions for bit, nibble, byte, and character, the ANSI/EIA/CEA-709.1 (LONWORKS) protocol defines a set of standard data representations for use as attribute values.	SEMI E54.16
loop	the distribution system that includes the continuous circulation of UPW from the Final Filter back to the DI storage tank. End users draw off of the loop.	SEMI F61
loop distribution	a distribution circuit design that circulates the process fluid back to the point of origin.	SEMI F31
loss modulus, G”	a parameter that measures pad ability to adsorb mechanical energy in dynamic oscillation mode of applied stress, or applied strain, indicates viscous component of viscoelastic deformation.	SEMI C100
lot	a group of one or more substrates of the same type. A lot must be organized by the user. The group may be referred to for tracking of substrates in the factory.	SEMI E90
lot	a group of one or more substrates of the same type (e.g., wafers, masks, CDs).	SEMI E30.1, E91
lot	(a) all of the wafers of nominally identical size and characteristics contained in a single shipment, or (b) subdivisions of large shipments consisting of wafers as above which have been identified by the supplier as constituting a lot.	SEMI M9, M55, M79, M86
lot	(a) all of the substrates of nominally identical size and characteristics contained in a single shipment, or (b) subdivisions of large shipments consisting of substrates as (a) above which have been identified by the supplier as constituting a lot.	SEMI M23
lot	all of the material of nominally identical purity and characteristics contained in a single shipment, manufactured with similar processing conditions, and traceable to the manufacturing conditions. A lot may be further defined as the polysilicon produced from one reactor run.	SEMI M16
lot	for the purposes of commercial exchange of silicon wafers, (a) all of the wafers of nominally identical size and characteristics contained in a single shipment, or (b) subdivisions of large shipments consisting of wafers as above that have been identified by the supplier as constituting a lot.	SEMI HB1, M59
low stiffness wafer	wafers that show deflections more than 200% of the allowable bow tolerance when tested for bow using the conventional three-point mounting method.	SEMI 3D12
low temperature sensing device	a component which protects the system downstream of the vaporizer from cryogenic temperatures by initiating an alarm or triggering a valve shut-down.	SEMI F22
lower detectable limit (LDL)	in particle measurement: the smallest particle size that a particle detector can measure at a given flow rate with a signal-to-noise ratio of at least 3 dB and with a counting efficiency of 50% ± 10%.	SEMI E104
lower detectable limit of instrument (LDL)	the lowest concentration of a substance that will give an instrument response with a signal-to-noise ratio of at least 3 db.	SEMI F6
lower flammable limit (LFL)	the minimum concentration of a flammable substance in air through which a flame will propagate. (See also the definition for flammable range.)	SEMI S3, S6
lower flammable limit (LFL)	the minimum concentration of a flammable substance in air through which a flame will propagate. Synonyms: lower explosive limit (LEL)	SEMI S2
lower range input value	lowest value of input at which the instrument is specified to operate. In mass flow controllers this is zero or the lowest set point at which the instrument is specified. In mass flow meters this is no flow or the lowest actual flow value at which the instrument is specified.	SEMI E27
lower size sensitivity	the particle size corresponding to 50% counting efficiency for the CNC.	SEMI F54
lower specification limit (LSL)	value of an attribute below which a product is said to be nonconforming.	SEMI E35, E89
low-frequency limit (LFL) [1/μm]	lowest spatial frequency contained in a profile data set or specification.	SEMI MF1811

Term	*Definition*	*Standard(s)*
low-impedance load	an impedance with a load reflection coefficient calculated with respect to the nominal RF generator load impedance having a magnitude greater than 0.95 and an angle between 170° and 190°.	SEMI E135
low-level injection, in a homogeneous semiconductor	a condition in which the density of excess minority charge carriers is very small compared with the density of majority charge carriers.	SEMI M59
low-pressure particle detector (LPPD)	optical particle sensor for use under low-pressure and vacuum conditions to measure particles or particle levels in semiconductor process equipment.	SEMI E104
low-pressure UV units	units that use UV lamps that have a slight vacuum within. Typically, low-pressure lamps are called 254 nm for ozone destruction and bacterial inactivation or 185 nm for TOC reduction.	SEMI F61
LSE sphere sizing uncertainity	an estimate of the relative uncertainty in the diameter reported by an SSIS for a PSL sphere having any diameter in the calibration range, determined by combining contributions from the calibration diameter errors and the certified deposition uncertainty.	SEMI M53
L-shaped lamp	a CCFL which has two sides bent at one point to an angle of 90°.	SEMI D47
luminance	the luminous flux from the surface per unit solid angle per unit area in a given direction. Unit: cd/m^2	SEMI D36
luminance accuracy	the error ratio of the luminance.	SEMI D41
luminance stabilization time	the time to reach a certain percentage of the luminance of a central part (Ts[min.]).	SEMI D35
luminance uniformity	the value that indicates the uniformity of luminance for the measured point.	SEMI D36
M type	the type has an alphabetic ‘M’ shape, which mixes the convex shape and the concave shape. This substrate shape is named ‘M type.’ M type consists of all sag and requires sag to exist at both edge regions of the substrate, even if the substrate has a continuous wave or corrugation in its shape.	SEMI D40
M20P	a designation used for the global coordinate system defined within MSEM, that is established relative to a pattern on a silicon wafer.	SEMI E30.5
machine coordinate system	the coordinate system of the measurement tool.	SEMI 3D22
machine direction (MD)	of plastic films/sheets. Parallel to plastic films/sheets forming direction.	SEMI D74
machine direction (MD) curl	curvature along the length of the tape.	SEMI G76
machine type information	target machines for using the reticle frame design information.	SEMI P42
machining lines	a type of process line that results from machining processes.	SEMI F19
macro level	level of material movement that involves coordination by the host but may not require knowledge of the physical process used to accomplish the material transfer.	SEMI E32
macro to micro sealing	sealing that connects the micro regime with the macro regime.	SEMI MS3, MS6
macroscale	generally, the scale of dimensions of 0.1 millimeters or greater.	SEMI MS3, MS6
macroscratch	a scratch that is visible to the unaided eye under either incandescent (high intensity) or fluorescent (diffuse) illumination.	SEMI M59
macrosealing	sealing on components at the macroscale.	SEMI MS3, MS6
macrosealing dimensions	low channel cross sections having an effective diameter of >100 micrometers.	SEMI MS3, MS6

Term	*Definition*	*Standard(s)*
magazine	a container that is used to carry multiple panels at the same time.	SEMI A2
magnification	the ratio of a deflection width on a display to that on a measurement pattern. Compares the deflection width on the screen and on the pattern.	SEMI P30
main disconnecting means	a disconnecting means that is intended to be used to disconnect facilities electrical power from the system.	SEMI S22
mainframe equipment module	an individual abstract equipment module that may be used in modeling a multipath cluster tool (MPCT) to represent functionality of the equipment system at large rather than for an individual equipment module. Examples include shared computing resources, information services like recipe download, and power and gas distribution.	SEMI E10
mains/submains	central distribution lines from a facility services source to which laterals are connected. Individual equipment is not connected directly to mains.	SEMI E70
maintain	the act of sustaining equipment in a condition to perform its intended function.	SEMI E149
maintainability	the probability that the equipment system will be retained in, or restored to, a condition where it can perform its intended function within a specified period of time.	SEMI E10, E150, PV96
maintenance	the act of sustaining equipment in or restoring it to a condition to perform its intended function. Maintenance refers to function, not an organization; it includes any necessary activities (e.g., adjustments, change of consumable material, software upgrades, repair, preventive maintenance [PM]), no matter who performs the task.	SEMI E10
maintenance	planned or unplanned activities intended to keep equipment in good working order. See also the definition for service.	SEMI S2, S6, S8, S10, S12, S30
maintenance	planned activities intended to keep equipment in proper working order (see also the definition for service).	SEMI S22, S28
maintenance task	a series of related maintenance procedures (e.g., adjust, align, calibrate, check, disassemble, reassemble, inspect, rebuild, remove/reinstall, repair, replace) with a definite beginning and end.	SEMI E149
major diameter	the length of the longest chord of the TSV opening in any particular horizontal plane. There is no requirement that this diameter pass through any geometrical center or centroid of the TSV opening. There is no relationship implied between the length of the major diameter and the area of the TSV opening.	SEMI 3D1
major flat	the flat of longest length that is commonly located with respect to a specific crystal plane.	SEMI E30.1
major flat	straight segment of the wafer edge, abbreviated OF, identifying the direction of the family of {110} planes within the wafer.	SEMI M75
majority carrier	type of charge carrier constituting more than one half the total charge-carrier concentration in extrinsic semiconductor (e.g., holes in *p*-type material). Although to be absolutely correct, the relative mobility of the charge carriers must also be taken into account, this is not essential in practical cases because the charge carrier densities differ by orders of magnitude while the mobilities differ by up to a factor of only two or three at the most. In an ideal intrinsic semiconductor, the concentrations of conduction electrons and holes are identical. In this case, a measurement of the conductivity type (*p*- or *n*-type) would identify the majority charge carrier, as the charge carrier that has the higher mobility.	SEMI M59
make-up rate	a measure of the rate at which a blend system can create a product and make it available for distribution to the customer's downstream processing systems.	SEMI F39
malware	a comprehensive term to represent malicious software, such as viruses or spyware, specifically designed to disrupt or damage a computer system or disclose secret information.	SEMI E169
malware	a comprehensive term to represent malicious software, such as virus or spyware, specifically designed to disrupt or damage a computer system or disclose secret information possibly resulting in tampering of manufacturing equipment.	SEMI E188

Term	*Definition*	*Standard(s)*
malware free	the scanned computing device or storage device does not have any malware detected, based on the malware scanning software and definition/pattern files used at the time of the scan.	SEMI E188
manual access mode	an access mode in which an operator performs a material handoff of a carrier rather than the AMHS equipment.	SEMI E84
manual docking	contact motion controlled by the operator of the cart.	SEMI E64
manual load port	a load port for carriers without an automated mechanism for opening and closing the carriers or a load port for cassettes without a mechanism that opens and closes (such as a cover or door) using drive power.	SEMI S28
manual locking device	a device used to prevent the cylinder valve from opening during transportation or service.	SEMI F4
manual operation	the operation method controlled by an operator without a recipe. Uses an operator.	SEMI P30
manual operation	any control outside of automated operation.	SEMI S17
manual override	a device used for manually opening the cylinder valve.	SEMI F4
manual pattern determination method	operator uses cursors, etc. The pattern selection method is accomplished by the operator placing cursors on the measurement pattern.	SEMI P30
manual pattern edge determination method	the operator measures the distance between cursors per image edge area. This method is used to determine the edge position manually by calculation based on the width between cursors which are set to the measurement pattern edges by operator.	SEMI P30
manufacturer	the manufacturer of the device.	SEMI E54.1, E54.10, E54.22
manufacturer ident number	central administrative number can be assigned by ETG.	SEMI E54.20
manufacturing equipment	the combination of hardware and software required to perform an operation or activity (e.g., processing, transporting, storing), including all direct auxiliary support or peripheral equipment (e.g., vacuum pumps, heat exchangers, effluent/exhaust treatment equipment).	SEMI E188
manufacturing equipment	machinery, associated electrical equipment, apparatus, process modules or devices used to manufacture, measure, assemble and test semiconductor or FPD products but not including any product (e.g., substrates, semiconductors) or UTV system.	SEMI S17
manufacturing equipment	equipment used in electronics industry for device manufacturing such as semiconductor, flat panel display (FPD), or photovoltaic (PV).	SEMI S19
manufacturing equipment (ME)	equipment used to manufacture, measure, assemble, or test products. It includes the equipment that processes substrates (e.g., silicon wafers, reticules), its component parts, and its auxiliary, support or peripheral equipment (e.g., chemical controllers, chemical delivery systems, vacuum pumps). ME also includes other items (e.g., piping, ductwork, effluent treatment systems, valve manifold boxes, filtration, and heaters) specific to and provided with the aforementioned equipment, but does not include such an item if the item is part of a facility and can support more than one piece of ME.	SEMI S7, S12
manufacturing equipment (ME)	equipment used to manufacture, measure, assemble, or test semiconductor, flat panel display, or related products. It includes the equipment that processes substrates (e.g., silicon wafers, reticles), its component parts, and its auxiliary, support or peripheral equipment (e.g., chemical controllers, chemical delivery systems, vacuum pumps). ME also includes other items (e.g., structures, piping, ductwork, effluent treatment systems, valve manifold boxes, filtration, and heaters) specific to and provided with the aforementioned equipment, but does not include such an item if the item is part of a facility and can support more than one piece of ME.	SEMI S27
manufacturing execution system (MES)	the factory system responsible for managing the manufacturing process, including logistics and process flow.	SEMI E98
manufacturing time	the sum of productive time and standby time.	SEMI E10

Term	*Definition*	*Standard(s)*
map	a list of coordinate positions of die on a substrate. MAP is defined in accordance with SEMI M21 in this document.	SEMI E91
map	a two-dimensional array of data for a specific layout on a substrate.	SEMI E142
map	a two-dimensional array of bin codes derived from electrical test data of a two dimensional substrate including, but not limited to; wafer, tray, strip or tape.	SEMI G85, G81
map	one- or two-dimensional array or arrays of characteristic data of devices. In case of vertical disposition of the devices on a substrate plane, they may be projected on a virtual plane to avoid three dimension arrays.	SEMI G81.1
map data	the categorized data of die as a result of measurement associated with coordinates. Map data also have an information that identifies origin die.	SEMI E91
map data	a set of data which contains one or more maps with their associated data such as substrate information and coordinate system.	SEMI G81.1
march element	sequence of read and write into the memory. It is used to excite a potential fault and observe corresponding response.	SEMI G91
mark	a cell or area of a Data Matrix symbol, which has been marked, meaning the substrate has been altered by the marking process so as to significantly alter its contrast when imaged. Also can refer to an entire Data Matrix symbol that has been applied in rows and columns on a substrate by a marking process.	SEMI T10
mark area	a rectangular area containing the mark field(s) and the surrounding quiet zone.	SEMI D32, T11, T16
mark field	an area within which all mark dots occur.	SEMI D32, T11, T16
mark use rule	name of the file containing the wafer alignment mark selection rule to be applied for the subject layer.	SEMI P42
marking	the process of the prober that making an ink mark on a die using the inker.	SEMI E91
marking	the process of the prober that deposits an ink mark on a die using the inker.	SEMI E130
markup	for Semiconductor Equipment Manufacturing Information Tagging, markup is defined as additional data characters that are added to data to provide information about the data and make the data more useable. The markup described by Semiconductor Equipment Manufacturing Information Tagging is internal markup, that is, markup which resides in the same data stream as the data—in specific SGML and XML markup.	SEMI E36
mask	a selective barrier to the passage of radiation. For example, a transparent plate containing an opaque pattern that is used to transfer that pattern to another substrate.	SEMI E30.1
mask	a photomask for one layer.	SEMI P45
mask critical dimension markup language	the name of the XML file defined in this Standard.	SEMI P46
mask defect markup language	the name of the XML file defined in this Standard.	SEMI P41
mask restrictions	restrictions on OASIS format which enables to input the mask data to mask tools.	SEMI P44
mask set	a set of masks necessary to manufacture a semiconductor product.	SEMI P45
mask undercut	the lateral distance measured under the mask edge to the top of the etched feature.	SEMI MS13
masquerading	claiming the authentication of another agent by an unauthorized agent.	SEMI E169
mass analyzer	a device that utilizes electric and/or magnetic fields to separate charged particles or ions according to their mass-to-charge (m/e) ratios. Examples of mass analyzers include quadrupole, magnetic and/or electric sector, time of flight, and ion traps.	SEMI F67, F68
mass balance	a qualitative, and where possible, quantitative, specification of mass flow of input and output streams (including chemicals, gases, water, deionized water, compressed air, nitrogen, and byproducts), in sufficient detail to determine the effluent characteristics and potential treatment options.	SEMI S2, S30

Term	*Definition*	*Standard(s)*
mass flow controller (MFC)	a self-contained device, consisting of a mass flow transducer, control valve, and control and signal-processing electronics, commonly used in the semiconductor industry to measure and regulate the mass flow of gas.	SEMI E29, E34, F36, F67, F68
mass flow controller (MFC)	a self-contained device consisting of one or more pressure transducers/flow sensors, control valve and signal processing electronics commonly used in semiconductor processing equipment to measure and regulate mass flow of a gas.	SEMI E186
mass flow meter (MFM)	a self-contained device, consisting of a mass flow transducer and signal-processing electronics, commonly used in the semiconductor industry to measure the mass flow of gas.	SEMI E29, E34, F36
mass flow meter (MFM)	a self-contained device consisting of one or more pressure transducers/flow sensors and signal processing electronics commonly used in semiconductor processing equipment to measure mass flow of a gas.	SEMI E186
master	the block transfer designation for the equipment.	SEMI E4
master	One of the MECHATROLINK device which generates global frame signal and command for all slave station.	SEMI E54.19
master	a device that manages its assigned Slaves and handles user data exchange; usually a programmable controller.	SEMI E54.20
master	one of nodes on the MOTIONNET, which generates primary frame signal or receives secondary frame for all slave station; Center in another word.	SEMI E54.21
master recipe	the recipe component that represents the set of recipe components that make up an equipment recipe. Through the master recipe, the other recipe components can be identified. It is the identifier of the master recipe that is supplied to the equipment for processing activities. For example, the RecID provided to a SEMI E40 ProcessJob is the master recipe's name or identifier. If the recipe consists of only one component, that component is the master recipe.	SEMI E157
master station	station that controls all stations on CC-Link. One (and only one) master station per system is required.	SEMI E54.12
master station	a node that has control information (parameters) and manages cyclic transmission.	SEMI E54.23
master/slave	communication over a Modbus network, which is referred to as 'client/server,' that provides exclusive control of data by a 'master' or 'host' device acting as a 'client.' All network input data is reported exclusively to the host when requested by the host, and the host has exclusive control over the states of all network output signals of all nodes acting as it's 'slaves' or 'servers.' Master/Slave communication provides the typical request/response oriented network communications.	SEMI E54.9
master/slave	communication over a SafetyBUS p network provides exclusive control of data by a 'master' or 'host' device. All network input data is reported exclusively to the host when requested by the host, and the host has exclusive control over the states of all network output signals of all nodes acting as its 'slaves.' Master/Slave communication provides the typical request/response oriented network communications.	SEMI E54.15
mastery	(1) a level of performance determined by a performer's having met the standards of a performance objective when the performance objective has no speed requirement (i.e., competency); (2) a level of performance determined by a performer's ability to meet the standards of a performance objective quickly and instinctively (i.e., fluency, automaticity).	SEMI E150
matched input impedance	a matched load impedance is defined as typically having a magnitude of 50 ± 3.3 ohms of a phase angle of up to ±3.8 degrees. In other words, the load is considered matched if the reflection coefficient is no greater than 0.032 at any phase angle.	SEMI E115
matched load	a matched load impedance is defined as typically having a magnitude of 50 ± 3.3 Ω at a phase angle of up to ±3.8°. In other words, the load is considered matched if the reflection coefficient is no greater than 0.032 at any phase angle.	SEMI E113, E143
matching network	the device used to transform the impedance of the load (chamber/chuck) to match the impedance of the generator/cable assembly, which is typically 50 Ω.	SEMI E113, E115
matching network load impedance	the impedance of the load to which the matching network is matched.	SEMI E113

Term	*Definition*	*Standard(s)*
matching tolerance (Δ_m)	difference in bias for any two measurement systems (MSs) of the same kind made under the conditions of reproducibility.	SEMI E89
matching tolerance (Δ_m)	difference in bias for any two measurement systems of the same kind made under the conditions of level 3 variability tests reproducibility.	SEMI M59
Material	a work-in-process that is transferred as one unit at a time.	SEMI A1, A5
Material	a container that is used to carry multiple Panels at the same time.	SEMI A2
material	a piece or pieces of substrate, one or more substrates, a lot, a batch, or a run.	SEMI E30.1, E30.5
material	a term used interchangeably with 'transfer object' to refer to discrete objects which may be transferred to and from equipment. This may include product, carriers, reusable fixtures, etc.	SEMI E32
material	(1) the basic unit of process, physically a cassette or some cassettes. (2) a lot.	SEMI E91
material	(1) any material used in, or required by, the manufacturing process. Material is classified as consumable, durable, or product. (2) an abstraction of the various types of things used during manufacturing, such as wafers, carriers, and chemicals, which require some management.	SEMI E98
material	a set of one or more substrates.	SEMI E116
material	used to refer to discrete objects used in or required by the manufacturing process and which may be transferred to and from equipment. This may include carriers, substrates, reticles, nonproduct wafers, etc.	SEMI E168.2, E168.3
material	a single species or a mixture.	SEMI S10
material	a solid, liquid, or gas or a combination of two or more of them. This includes solutions, mixtures, and colloids.	SEMI S30
material control system (MCS)	a supervisory control system that accepts commands from the FICS to transport material between locations within the factory and accomplishes the work by supervisory control and coordination of transport syststems and stockers.	SEMI E168.2, E168.3
Material Data	data that belongs to an individual Material and describes the Material.	SEMI A1, A2, A5
material group	a categorization of the comparative tracking index (CTI) of an insulator as follows: • Material Group I: 600 <= CTI • Material Group II: 400 <= CTI < 600 • Material Group IIIa: 175 <= CTI < 400 •Material Group IIIb: 100 <= CTI < 175	SEMI S22
Material Handoff	a series of actions that transfers a Material between a pair of Port.	SEMI A1
Material Handoff Handshake	a handshake that performs physical handoff of Material.	SEMI A1
Material Handshake	a handshake that transfers Material and its Material Data.	SEMI A1, A2
material hazard index (MHI)	a numeric value used for ranking chemical production materials in order to determine the level of controls necessary for regulation. MHI is determined by dividing the equilibrium vapor concentration (EVC) of a material at 25°C by the level of concern (LOC) value for the material.	SEMI F6
material location	a physical position on a piece of equipment at which a transfer object may reside. Many material locations may be accessed directly through a port, but this is not a requirement. Some material locations internal to the equipment may not be accessible by a transfer agent.	SEMI E32
material location	an identifiable place within the equipment or carrier where material can be held.	SEMI E90
material location	a reference to a place within the equipment or an equipment component that can hold material, such as the top surface of an indexer or substrate chuck or the end effector of a substrate handler.	SEMI E98

Term	*Definition*	*Standard(s)*
material permeability	the tendency of gases to directly migrate through the walls of the package. Bulk permeability depends on both chemical composition and diffusion. For example, diffusion of gases may be accelerated along grain boundaries. Stainless steel in half-hard condition will have small grain sizes relative to package wall thickness, while in fully annealed condition the grain size may be comparable to package wall thickness. In the latter case permeability is increased although the chemical composition is unchanged.	SEMI MS3, MS8, MS10
Material Redirection Mode	term for an equipment mode of operation in which substrates are redirected to a carrier slot other than the source carrier slot.	SEMI E94
material safety data sheet (MSDS)	written or printed material concerning a hazardous material which is prepared in accordance with the provisions of 29 CFR 1910.1200.	SEMI E34
material safety data sheet (MSDS)	written or printed material concerning chemical elements and compounds, including hazardous materials, prepared in accordance with applicable standards.	SEMI S2
max Cr/Fe ratio	determined by inspection and calculation from the depth profile analysis as the maximum of the ratio of the Chromium concentration to the Iron concentration profiles.	SEMI F60
maximal vertical range	AFM supplier specified maximum vertical travel distance of the scanner in nanometers or micrometers.	SEMI C78
maximal vertical range	CP supplier specified maximum vertical travel distance of the stylus in nanometers or micrometers.	SEMI C87
maximum allowable working pressure (MAWP)	the maximum internal pressure permitted in a vessel or a piping system for continued operation at the most severe condition of coincident internal and external pressure and temperature (minimum or maximum) expected. Its value is limited by the pressure-temperature rating of the equipment and the maximum allowable stress used in the design.	SEMI S18
maximum back face saw marks depth/height SMB, of a CSW	the maximum depth/height of all saw marks on the back face of a CSW.	SEMI HB5
maximum baking temperature	the highest temperature to which the Mass Flow Controller or its components in contact with the gas can be heated in accordance with a specified baking procedure. The specified baking process will not impair the performance characteristics per the manufacturers specifications. (‘Baking’ is a process whereby a device is heated to accelerate the removal of adsorbed gases and/or other volatile material).	SEMI E18
maximum Cr/Fe ratio	the maximum of the Cr/Fe ratio, determined by inspection and calculation from the depth composition profile.	SEMI F72
maximum displacement	two-dimensional maximum displacement (Max. Displacement) is defined by maximum lift (Max. Lift) + maximum sag (Max. Sag) + substrate thickness. Maximum displacement can have the same value at several different locations.	SEMI D40
maximum feature width deviation from target	maximum deviation of the width of a feature from its target width in the total population of features considered, stating the same information as in feature width uniformity.	SEMI P43
maximum FPD	the largest of the absolute values of the focal plane deviations.	SEMI M59
maximum front face saw marks depth/height SMB, of a CSW	the maximum depth/height of all saw marks on the front face of a CSW.	SEMI HB5
maximum luminance	maximum value among the measured luminance.	SEMI D36
maximum nominal load	the maximum continuous power a circuit will draw under operating conditions prescribed by the manufacturer. Nonperiodic power variations of less than a second in duration are not considered continuous.	SEMI S22
maximum operating pressure	operation is permitted up to this inlet pressure, but performance is not specified above normal operating pressure.	SEMI E28

Term	*Definition*	*Standard(s)*
maximum operating pressure (MOP)	the maximum pressure at which a vessel or piping system is normally operated (that is Process Pressure), generally less than, and never greater than, MAWP.	SEMI S18
maximum overrange pressure	the maximum gas pressure to which the MFC may be subjected without degrading specified performance. When returned to normal operating pressure, the MFC must require no adjustment to return to specified performance.	SEMI E28
maximum permissible exposure (MPE)	level of laser radiation to which, under normal circumstances, persons may be exposed without suffering adverse effects.	SEMI S2
maximum pressure	the highest supply pressure that can be used for the equipment to operate correctly. Maximum pressure should be measured at the equipment point of connection and may be driven by process requirements or component limits.	SEMI E6
maximum pressure fluctuation	the maximum supply pressure change during the processing cycle for the equipment to operate correctly.	SEMI E6
maximum rated flow	a recommended flow rate specified by the manufacturer.	SEMI F101
maximum saw marks depth/height SMT, of a CSW	the maximum absolute value of SMF and SMB.	SEMI HB5
maximum service temperature (for plastic materials)	the highest temperature at which a plastic material has sufficient strength to perform the function for which it was intended.	SEMI S3
maximum shape deviation SXGM, of CSW	largest deviation of the CSW unconstrained median surface from a reference plane. The reference plane is determined by a least-square fit to the median of the measurement points around the periphery of the point pattern used for *TAGU*.	SEMI HB6
maximum wafer back face waviness WMB, of a CSW	the maximum waviness measured on the wafer back face.	SEMI HB7
maximum wafer front face waviness WMF, of a CSW	the maximum waviness measured on the wafer front face.	SEMI HB7
maximum waviness WMT, of a CSW	the maximum of WMF and WMB.	SEMI HB7
may	a term indicating that a provision is neither required nor prohibited by this specification.	SEMI F1
ME manufacturer	the party that has control of the design and manufacturing of ME.	SEMI S27
mean	the sum of a group of measurements divided by the number of measurements; average.	SEMI E77
mean focus	the z-axis position representing the area average focal surface for point-like objects in the optical image.	SEMI P25
mean linewidth bounding box	a bounding box between inner and outer linewidth bounding boxes, whose right and left edge positions at any height above the substrate are the means of the edge positions of the inner and outer linewidth bounding boxes at that height.	SEMI P35
mean-square roughness, R_q^2 [nm^2]	ensemble-average value of the square of the height of the detrended profile.	SEMI MF1811
mean-square slope, Δ_q^2 [units of choice]	average value of the square of the slope of the detrended profile.	SEMI MF1811
mean X-Y deviation	the difference between the mean of considered feature widths in X and Y directions (horizontal and vertical direction), stating the same information as feature width uniformity.	SEMI P43
meandering	of or pertaining to a weld bead that deviates from side to side across the weld joint rather than tracking the joint precisely.	SEMI F78, F81

Term	*Definition*	*Standard(s)*
measurable range	measurement range to guarantee static and dynamic repeatability as well as linearity. Measuring dimensions guaranteed to be within the specification of static repeatability, dynamic repeatability, and linearity.	SEMI P30
measurand	particular quantity subject to measurement.	SEMI E141, P35
measurand	particular attribute of a phenomenon, body, or substance subject to measurement [VIM].	SEMI E35, E89, M59
(measured) CD mean-to-target	the special case of (measured) feature mean-to-target where the selected feature is the critical dimension.	SEMI P43
(measured) CD uniformity	the special case of feature width uniformity where the selected feature is the critical dimension.	SEMI P43
measured corner area difference	measured value of corner area difference, stating as mandatory information, in addition to that of corner rounding.	SEMI P43
measured corner area difference uniformity	measured value of corner area difference uniformity, thereby stating as mandatory information in addition to that of corner area difference uniformity and of measured corner area difference.	SEMI P43
measured edge profile	a finite array of *q*, *z* points representing the cross-sectional view of a wafer edge profile that is acquired by a measurement system.	SEMI M59
measured feature edge	position determined from the measured signal obtained on the mask feature edge. For example position determined at a certain level of the signal, as defined by the bounding box model of SEMI P35. The same mandatory/optional information must be stated as for measured feature width.	SEMI P43
measured feature inter-proximity error	measured value of feature inter-proximity error, stating as mandatory information in addition to that of measured feature width and feature inter-proximity error.	SEMI P43
measured feature linearity error	measured value of feature linearity error, stating as mandatory information in addition to that of measured feature width and feature linearity error.	SEMI P43
measured feature mean-to-target	the difference between the mean of measured feature widths and the targeted feature width, stating the same information as for measured feature width uniformity.	SEMI P43
measured feature proximity error	measured value of feature proximity error, stating as mandatory information in addition to that of measured feature width and feature proximity error.	SEMI P43
measured feature width	width determined from the measured signal obtained on the mask feature. For example, the width may be determined at a certain level of the measured signal.	SEMI P43
measured feature width deviation (from target)	difference between measured and nominal feature width.	SEMI P43
measured feature width uniformity	measured value of feature width uniformity, stating as mandatory information in addition to that of measured feature width and feature width uniformity.	SEMI P43
measured leak rate	the leak rate of a given system measured under specified conditions and employing a specified test gas (helium). For the purposes of comparison with rates determined by other methods of testing, measured leak rates must be converted to equivalent standard leak rates. For the purposes of this document, the measured leak rate shall be corrected to standard leak rate by multiplying by the ratio of 101.32 kPa to the absolute value of the pressurizing helium unless otherwise called for by the MFC specifications.	SEMI E16
measured leak rate	the rate of leakage of a given component, subsystem, or system measured under specific conditions and employing a tracer gas.	SEMI F1
measured leak rate	the leak rate of a given package as measured using a specific set of operationally defined conditions and test media, often referred to as the apparent leak rate.	SEMI MS3, MS8, MS10
measured maximum feature width deviation from target	maximum deviation of the measured width of a feature from its target width in the population of measurements, stating the same information as in measured feature width uniformity.	SEMI P43

Term	*Definition*	*Standard(s)*
measured mean X-Y deviation	the difference between the mean values of measured feature widths in X and Y directions, stating the same information as for measured feature width uniformity.	SEMI P43
measured profile parameters and functions	quantities derived from detrended profile data that include the bandwidth and transfer function effects of the particular measurement system used.	SEMI MF1811
measured value	the actual flow through a device under test, expressed in sccm or slm, as measured by a standard, preferably primary.	SEMI E56, E69, E77
measured value	the actual flow through a DUT, expressed in sccm or slm.	SEMI E80
measured value	a value representing a measurement, with a numerical value, measurement units, and a valid range.	SEMI E98
measured value, average	the sum of all readings (both up cycle and down cycle) for all cycles, at a single setpoint, divided by the number of these readings.	SEMI E56
measured value, average	the sum of all readings (both upscale and downscale) for all cycles, at a single setpoint, divided by the number of these readings.	SEMI E69, E77
measured value of feature width uniformity	stating as mandatory information in addition to that of measured feature width and feature width uniformity.	SEMI P43
measured X-Y deviation uniformity	the spread of the distribution of the difference between the width of the measured feature widths in X and Y directions (horizontal and vertical direction), including/stating the same information as measured feature width uniformity.	SEMI P43
measurement	making a test, contacting the probe card and the die. The tester sends to the prober a categorized data as a result of test.	SEMI E91
measurement	set of operations having the object of determining a value of a quantity.	SEMI E141
measurement equipment	equipment whose intended function is to measure or inspect the product and to report results. Measurement of the product is the factory's means of gaining feedback on the manufacturing process.	SEMI E98
measurement error	result of a measurement minus a true value of the measurand. The measurement error is unknown because the true value is unknown. Otherwise there would be no need to measure.	SEMI P35
measurement field	a rectangular area of the surface of the test specimen for which a local value of the dislocation etch pit density is determined.	SEMI M83
measurement location	the center of the measurement field specified by coordinates or an index which refers to a measurement location plan.	SEMI M83
measurement location plan	list of measurement locations for which measurements of local etch pit density (EPD) are performed.	SEMI M83
measurement module	an equipment module whose intended function is to measure or inspect the product and to report the results. Measurement of the product is the factory's means of gaining feedback on the manufacturing process.	SEMI E127, E131
measurement pattern determination method	identifies the pattern to be measured. This method is used to identify the pattern to be measured. It is performed by automatic pattern recognition, or instructions from the operator.	SEMI P30
measurement port	the port on the integrating sphere which the beam of the LMD is aligned through it to focus on the surface of DUT.	SEMI D56
measurement recipe	a recipe or portion of a recipe intended for use during a measurement, that describes among other things the locations for measurement. This does not need to be a physically separate recipe.	SEMI E127
measurement resolution	smallest difference in the measurand that can be meaningfully distinguished (usually limited by noise or quantization).	SEMI P35
measurement resolution, of a gauge	smallest difference in measurand that can be meaningfully distinguished by the gauge.	SEMI E89

Term	*Definition*	*Standard(s)*
measurement subsystem	any set of entities, processes, or conditions that share a common purpose in the measurement.	SEMI E89
measurement system (MS)	all entities, procedures, and conditions that can influence the test result obtained with a given measurement process.	SEMI E35, E89
measurement system analysis (MSA)	procedure in which relevant sources of bias and variability associated with a measurement system (MS) are estimated.	SEMI C101, E89
measurement target	kind of measurement pattern. The measurement pattern, such as line, space, pitch, hole, box-in-box, etc.	SEMI P30
measurement uncertainty	parameter, associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand.	SEMI P35
measurement variability	differences assocated with making multiple measurements on a given measurand under specific conditions.	SEMI E35, M59
measuring distance	the distance between display screen center and front edge of LMD main body at the measuring location. In this measurement, it is recommended as 3 times of the screen height.	SEMI D76
measuring distance	the distance between display screen center and front edge of noncontact LMD's main body at the measuring position.	SEMI D82
measuring instrument	device intended to be used to make measurements, alone or in conjunction with supplementary device(s).	SEMI E141
measuring points	the number of CCD sensors.	SEMI D41
measuring system	complete set of measuring instruments and other equipment assembled to carry out specified measurements.	SEMI E141
measuring time t_c	duration of recording of γ-spectrum. An additional index I is used, such as t_{ci} with I = 1, 2,… for several measurements.	SEMI PV10
mechanical debond	debond using a physical process (i.e., cleaving, etc.).	SEMI 3D8
mechanical deformation	the alteration of a seal caused by mechanical means, such as abrasion, rubbing, and compression	SEMI F51
mechanical set position	before applying positional accuracy test, the calibration between machine and panel coordinate should be executed. The mechanical set position is the calibrated original position that based on the panel coordinate.	SEMI D73
mechanical signature, of an instrument	that component of a measurement that is introduced by the instrument and that is systematic, repeatable, and quantifiable.	SEMI M59
mechanical strength	the physical condition a pellicle must meet to withstand a specified force from a blow-off gun without suffering any damage to the film due to stretching or breakage.	SEMI P5
mechanical test wafer	silicon wafer suitable for testing equipment with emphasis on dimensional and structural characteristics only.	SEMI M59
mechanical tube length	*in microscopy*, the distance between the shoulder or flange of the objective and the eyepiece seating face.	SEMI MF728
mechanical wafer	a silicon wafer suitable for equipment or process testing which is usually only used outside of a cleanroom environment.	SEMI M59
media	communication means that perform communication between equipment.	SEMI A1
media	a temporary material carrier used to hold and transport units/devices (tubes, trays, etc.).	SEMI E123
media map	formatted data used to map functionally good and bad units/devices to an X, Y, Z location in the media. Maps can be requested by the handler for use prior to processing and then updated after processing.	SEMI E123
median surface	the locus of points in the wafer equidistant between the front and back surfaces of a silicon or other semiconductor wafer.	SEMI M59
median surface, of a wafer	the locus of points equidistant from the front and back surfaces of the wafer.	SEMI HB1

Term	*Definition*	*Standard(s)*
medium-pressure UV units	units that use UV lamps that have a positive pressure within. Used with bacterial inactivation/ozone destruction lamps or TOC reduction lamps.	SEMI F61
membrane	in pH probe designs, this is a semipermeable barrier which allows an electro-potential to develop between a known concentration of hydrogen ions in the probe to a variable concentration of hydrogen ions in the SUT.	SEMI C101
memory bank	a memory can be organized as set of sub-blocks. Each such block is called a bank.	SEMI G91
memory core	a memory block that can be used in integrated circuits.	SEMI G91
memory instance	a memory instance in an integrated circuit is an instance of memory block.	SEMI G91
memory test algorithm	a sequence of march elements.	SEMI G91
mercury	a discharge gas and an emission source of ultraviolet. The symbol of the element in the periodic table is Hg.	SEMI D36
message	a complete unit of communication in one direction. An HSMS Message consists of the Message Length, Message Header, and the Message Text. An HSMS Message can be a Data Message or a Control Message.	SEMI E4, E37
message	a complete unit of communication.	SEMI E5
message	in object oriented systems a message is the means by which a client object invokes the behavior specified by an operation of a server object.	SEMI E96
message broker	wide area message distribution system.	SEMI A4, A4.1
message bus	a software infrastructure that provides distributed communication between objects in component implementations. It can refer to an Object Request Broker, Microsoft DCOM, Java Remote Method Invocation or other infrastructure for conveying messages between objects.	SEMI E96
message character	a character that contains data, encoded into a bar or matrix code symbol.	SEMI T3
message character	a character that contains data, encoded into a Data Matrix.	SEMI T20.1
message document	an XML document that contains the message envelope and encapsulated message header and message content.	SEMI E128
message envelope	the encapsulating XML structures that define an overall framework for expressing what is in a message; who should deal with it, and whether it is optional or mandatory.	SEMI E128
message fault	occurs when the equipment receives a message that it cannot process because of a defect in the message.	SEMI E30
message header	information about the message passed by the message transfer protocol.	SEMI E5
message ID	a 15-bit field in the header used in the process of message identification.	SEMI E4
message interleaving	the practice of sending a new message request before receiving the reply to an earlier request.	SEMI E99, E118
message length	a 4-byte unsigned integer field specifying the length of a message in bytes.	SEMI E37
message length	the number of message characters contained in a single encoded message.	SEMI T3, T20.1
message service/service	a service (or a message service) represents a set of functions offered to a user by a provider. An unconfirmed service consists of a sequence of service primitives—the request from the sender to the communications facility and an indication to the receiver from the communications facility. Each of these service primitives is described by a list of parameters. A confirmed service adds a response to the initial request. The primitives for a response are called the response and the confirmation. A service excludes definition of message structure and protocol.	SEMI E32
metadata	data used to describe data. For example, if a tool can report an event with several associated variables under certain conditions, the metadata for that event would provide a description of what condition will produce the event, what the type and units are of each variable, and the id of the event itself.	SEMI E125
metadata	a synonym of equipment metadata in this document.	SEMI E147

Term	*Definition*	*Standard(s)*
metadata	a collection of attributes, defining the provenance of a RITdb object, stored external to the object.	SEMI E183
metal	an absence of refractory metallization, braze, or plating material from a designated area greater than 0.075 mm (0.003 in.) in diameter.	SEMI G50
metal wrap through (MWT)	where the metallization on the front of the cell is connected to the backside of the cell through a number of vias in the cell.	SEMI PV62
metal wrap through (MWT) PV module	the laser boring and back wiring technologies have been applied in the MWT solar cells, which can eliminate the main grid line in the positive electrode. The electric current collected by the main grid line in the positive electrode will be led to the back side through the silver paste in the hole. That's to say, both the positive and negative electrodes are distributed on the back of cells.	SEMI PV85
metallization void	the absence of a clad, evaporated, plated or screen-printed metal layer or braze from a designated area.	SEMI G1, G58, G61
metallurgical grade Si (mg-Si)	silicon chunks of irregular shapes with a typical purity of 98% or more Si. Mg-Si is obtained by carbothermal reduction of lumpy SiO_2 in submerged electric arc furnaces. It is the raw material for metallurgical refining processes.	SEMI PV17
method	an operation upon an object defined as part of the declaration of a class. In general, the terms message, method and operation can be used interchangeably. Technically, a method is defined within a class and an operation is defined within the IDL. An operation is implemented by a method.	SEMI E81
method blank	a solution of acid prepared using the preparation method without a specimen or test sample used to establish the contribution of trace metal contamination from the laboratory environment, reagents or labware to the background.	SEMI PV49, PV64, PV74
method detection limit (MDL)	a statistically derived figure of merit for a measurement system.	SEMI C64
metrology	the science of measurement. In semiconductor manufacturing, metrology denotes the science of measurement to ascertain dimensions, quantity, or capacity; the techniques and procedures for using sensors and measurement equipment to determine physical and electrical properties in wafer processing.	SEMI E141
metrology	any device or process which measures a quality or property of any process fluid, solid or gas.	SEMI F31
metrology equipment	any equipment that collects and reports information on specific predetermined sites or features on a substrate with consistent data structure, or reports general information about the entire substrate.	SEMI E30.1, E30.5, E141
metrology module	a measurement module that collects and reports information on specific predetermined locations or features on a substrate with consistent data structure, or reports general information about the entire substrate.	SEMI E127
MFC calibration pressure, inlet and outlet	the inlet and outlet pressure at which the MFC was calibrated.	SEMI E28
micro chevron	a wedge-like pattern in the wafer bond interface used to determine wafer bond strength.	SEMI MS3, MS5
micro ID	micro ID consists of the data matrix code symbol, which is formed with some protruding marks on the silicon wafers.	SEMI T14, T14.1
micro level	level of material movement characterized by peer-to-peer interaction of the transfer partners to achieve synchronization of the detailed mechanical steps of material transfer.	SEMI E32
micro-crack	micro cleavage or fracture in a cell which is mainly caused by bending or impact during manufacturing, transportation, or installation, etc.	SEMI PV94
micro-defect	the defects that cannot be identified by the naked eye, but can be observed by electroluminescence, such as micro-cracks, scratches, finger interruption, etc.	SEMI PV94

Term	*Definition*	*Standard(s)*
microelectro mechanical systems	a term used to describe micron-scale structures, sensors, actuators, and technologies used for their manufacture (such as, silicon process technologies), or combinations thereof.	SEMI MS2, MS4, MS5, MS10
microelectro mechanical systems (MEMS)	the integration of mechanical and electronic elements (sensors, actuators, etc.) on a common substrate. The micromechanical components are fabricated using 'micromachining' processes that selectively etch away parts of the substrate or add new structural layers to form the mechanical or electro-mechanical devices.	SEMI F107
microelectronic devices	extremely small electronic devices that consume very little electric power and encompass a variety of components used in normal electronic design.	SEMI F57
microfiltration	generally refers to filters designed to remove suspended solids less then one micron in size but greater than 0.1 micron in size.	SEMI F61
microfluidic interface design	provisions for mechanical clamping, fluidic sealing, and port array locations that define how two mating fluidic components fit together.	SEMI MS11
microfluidic subsystem	a microfluidic subsystem in a fluidic system may contain one or many MEMS components. The subsystem contains control and signaling elements. The subsystem, in turn, is attached to a larger system or subsequent process (e.g., mass flow controller for fluid delivery in lab-on-a-chip).	SEMI MS3, MS6
microfluidics	the science and technology of formulating, designing, and manufacturing devices and processes that deal with minuscule flows or volumes of fluids.	SEMI MS3, MS6
micro-fluid engineering	applying the technology of scaled-down fluid dynamics, which differ from those of the macro world.	SEMI MS3
micromachine	a structure or mechanical device with microscopic dimensions.	SEMI MS3
micromachining	processes for microstructure (or MEMS or MST) fabrication.	SEMI MS3
micrometer attachment	an instrument used with an optical microscope for measuring small distances.	SEMI MF728
micromirror	microscopic mirror that is commonly arranged in a rectangular array of typically several hundred thousand, which correspond to the pixels in the image to be displayed for its most common application. The mirrors can be individually rotated, typically ±10–12°, to an on or off state. Also refer to digital light processor.	SEMI MS3
micropipe	small hollow tube basically parallel to the crystallographic c-axis and extending typically larger parts of the crystal boule and thus affecting several neighboring wafers.	SEMI M55
micropipe	small hollow tube basically parallel to the crystallographic c-axis and extending typically through larger parts of the crystal boule and thus affecting several neighboring wafers. Micropipes may be generated at bulk defects, for example, inclusions, polytype defects or crystallites.	SEMI M92
microroughness	surface roughness components with spacing between irregularities (spatial wavelength) less than about 100 µm.	SEMI M59
microscale	generally, the scale of dimensions between 0.1 microns to 100 microns.	SEMI MS3, MS6
microscratch	a scratch that is not visible to the unaided eye under fluorescent (diffuse) illumination but is visible to the unaided eye under incandescent (high intensity) illumination.	SEMI M59
microscope equipment	a diameter of the circle through solder sphere contact with at least three points is measured directly by microscope. The diameter of a circle fit through three edge points. The three points are selected from the contact points with adjacent solder spheres.	SEMI G93
microsealing	sealing on components at the microscale.	SEMI MS3, MS6
microsealing dimensions	flow channel cross sections having an effective diameter of <25 micrometers; optionally flow channel cross sections having an effective diameter of 25 to 100 micrometers.	SEMI MS3, MS6
microstructure	a physical structure having small (submicron to mm) dimensions.	SEMI MS3
midrail	the linear element of a guardrail system that is approximately midway between the toprail and the walking or working surface.	SEMI S2

Term	*Definition*	*Standard(s)*
Miller indices, of a crystallographic plane	the smallest integers proportional to the reciprocals of the intercepts of the plane on the three crystal axes of unit length.	SEMI HB8, M59
millimeter of water gauge, mm. w.g.	the pressure that supports a column of water one millimeter tall. It is a common, not SI, unit for pressure. (It is also called mm Aq.) Refer to the definition for static pressure.	SEMI S6
minienvironment	a localized environment created by an enclosure to isolate the product from contamination and people.	SEMI E45, E47.1, E62, E63, E70, E78, E92, E100, E108, E111, E112, E119, E129, E146, E163, M31, M51, S28
minienvironment	a localized environment for transport and storage created by an enclosure to isolate the product from contamination and people.	SEMI E108
minimal waiting time t_{w0}	time after end of irradiation until the activity of Si matrix has decayed to ≤1 *MBq*, typically $t_w \geq 36$ h.	SEMI PV10
minimum counting particle diameter	a predefined minimum diameter of particles to be counted.	SEMI F70, F70.1
minimum detectable particle size	smallest particle size that LPC can show as threshold.	SEMI C77
minimum luminance	minimum value among the measured luminance.	SEMI D36
minimum pattern	the minimum line and space pattern and minimum pattern which is possible to be separated.	SEMI P21
minimum pressure	the minimum supply pressure that must be maintained or exceeded for the equipment to operate correctly. Minimum pressure should be measured at the equipment point of connection.	SEMI E6, PV81
minimum zone method straightness	the smallest distance between two parallel straight lines between which all of objective profile is included.	SEMI D15, D24
minor diameter	the length of the shortest chord that passes through the center point of the major diameter. Under this definition the minor diameter need not be at 90° to the major diameter, and no relationship is specified or assumed between the length of the minor diameter and the area of the TSV opening. The unit for this dimension shall be the micrometer.	SEMI 3D1
minor flat	straight segment of the wafer edge, abbreviated IF, oriented 90 degrees clockwise from the major flat.	SEMI F107
minority carrier	type of charge carrier constituting less than one half the total charge-carrier concentration in extrinsic semiconductor (e.g., electrons in *p*-type material). Although to be absolutely correct, the relative mobility of the charge carriers must also be taken into account, this is not essential in practical cases because the charge carrier densities differ by orders of magnitude while the mobilities differ by up to a factor of only two or three at the most. In an ideal intrinsic semiconductor, the concentrations of conduction electrons and holes are identical. In this case, a measurement of the conductivity type (*p*- or *n*-type) would identify the majority charge carrier, as the charge carrier that has the higher mobility.	SEMI M59
minority carrier diffusion length	the distance minority carriers in semiconductors diffuse in their lifetimes.	SEMI M88
minority carrier lifetime	the average time interval between the generation and recombination of minority carriers in the bulk of a homogeneous semiconductor.	SEMI M59
mishap	an unplanned event or series of events that results in death, injury, occupational illness, damage to or loss of equipment or property, or environmental damage.	SEMI S14

Term	*Definition*	*Standard(s)*
mismatch	misalignment between the top and bottom cavities. The measurement of mismatch is stated as the difference between the center lines of the top and bottom cavities. All statements regarding mismatch of cavities are applicable to both the X and Y axis. All measurements are made prior to lead trim and form.	SEMI G54
mismatch and offset	defined with respect to package only. All statements will be equally applicable in two (2) axes. All mismatch and offset measurements are made after molding and prior to trimming.	SEMI G14, G16, G36, G37
mismatched load	a load impedance Ih is purposely made to be different (either larger or smaller) in magnitude, phase, or both than 50 Ω in order to produce a determined VSWR value. As an example, a 3:1 mismatched load could be produced by using either a 150 + j0 or 16.7 + j0 Ω load and varying the electrical length up to a half wavelength to outline a contour of 3:1 VSWR magnitude through all phase angles.	SEMI E143
misplacement error	the magnitude of a misplacement error is equal to its x and y displacement from its intended position.	SEMI P22
missing count	in an SSIS, the case in which an LLS fails to produce a laser-light scattering event; also called *false negative*.	SEMI M59
mission critical system	a system that is not permitted to be interrupted for an incident, and is required to be available throughout a year.	SEMI E169
mixed acid etchant	any combination of nitric, hydrofluoric, and acetic acids with the relative composition expressed in terms of volumes of 70% nitric acid, 49% hydrofluoric acid, and glacial acetic acid, respectively. In the expression, all the relative volumes shall be reduced to a ratio of the smallest whole numbers.	SEMI C34
mixed-beds	ion exchange vessels used to polish already purified water, in which both cation and anion exchange occurs.	SEMI F61
mixing	mechanical energy imparted to a combination of two or more chemical constituents used to create a homogenous solution.	SEMI F39
mixing gas	an inert gas used to dilute another gas.	SEMI S5
mixing gas	the gas mixed Neon and Argon gas etc is needed to open and maintain the discharge.	SEMI D36
mixture	two or more species that are combined physically, but not chemically. That is, the species within the mixture are the species that would exist if the mixture were separated.	SEMI S10
mizo	a term (plural form = mizo) describing a family of rails that support the substrates. They may be smooth-sided, toothed symmetrically, or toothed non-symmetrically. Precise mizo contours are not described in this document.	SEMI D11
mizo base	the innermost portion of a mizo.	SEMI D11
mizo centerline	½ the mizo clearance.	SEMI D11
mizo clearance	the minimum dimensions between two adjacent mizo teeth, into which a substrate can be placed.	SEMI D11
mizo depth	the distance between the base of the mizo and the top of the tooth. It is also called ‘tooth height.’	SEMI D11
mizo flat	the distance along the mizo base between two adjacent mizo teeth.	SEMI D11
mizo opening width	the distance between the extreme ends of two adjacent mizo teeth.	SEMI D11
mizo pitch	the distance between adjacent mizo centerlines.	SEMI D11
mizo plate	a plate that contains mizo teeth and may provide structure to the cassette.	SEMI D17, D18
mizo plate	a plate that contains mizo for supporting glass substrates.	SEMI D11
mizo plate space	the distance between adjacent mizo plates. It is used in the alignment of substrates after loading.	SEMI D11
mizo size	the distance between opposite mizo bases.	SEMI D11
mizo teeth	elements that support the substrates in the cassette.	SEMI D17, D18

Term	*Definition*	*Standard(s)*
mobile oxide charge density, Q_m	the calculated charge/cm^2 that moves in the oxide under temperature and electrical field stress, creating shifts in surface photo voltage, flat band voltage, and contact potential difference (or surface voltage).	SEMI M59
mobilization	initial assignment of resources to a project resulting in measurable work being accomplished.	SEMI E70
mock up	a full size physical model of the equipment, generally made of relatively inexpensive materials, used for human factors evaluation.	SEMI S8
Modbus/TCP	an open protocol established at The University of Michigan's Electronics Manufacturing Laboratory as a standard means of interconnection for simple field devices. The Modbus/TCP over TCP/IP standard specifies OSI reference model layers 1, 2, 3, 4 and 7 specifically the physical signaling, the media access/data link protocols, internetworking capability, the transport capability of end-to-end transmission of data, and the application layer.	SEMI E54.9
Mode Resolution	a process in which an agreement is made on transfer mode and transfer direction between a pair of Ports in an autonomous manner.	SEMI A1
Mode Resolution Handshake	a handshake that performs Mode Resolution.	SEMI A1
model edge profile	a wafer edge profile with segments consisting only of straight lines (apex and bevel), and circular arcs (shoulder) in the cross-sectional view.	SEMI M59
modification	change of the equipment that can introduce new hazards and risks.	SEMI S10
module	hardware or logical component of a physical device.	SEMI E54.14, E54.20
module	an independently operable unit that is part of a tool or system.	SEMI E21, E166
module	hardware entity of a device or composing a device.	SEMI E54.19
module	a major component of equipment that contains at least one material location and performs some task on material. Equipment modules may be aggregates of equipment subsystems, I/O devices, and other modules.	SEMI E116
module	test sample assembled should be included seal, package, the least two cells than one and four well-attached wires (or terminal wires). Terminal wires are used to multiply set designed for the safety of the rated current, and length is 5 cm.	SEMI PV76, PV80, PV89
module dimension	the length and width of the photovoltiac modules.	SEMI PV86
module parameter	settings that affect processing on an equipment module (typically a Process Module). For a Process Module, the Module Parameters might represent temperatures, pressures, flow rates, etc. An equipment recipe typically manipulates Module Parameters to accomplish its purpose.	SEMI E139
modulus	the ratio of stress to strain when a force is applied to give a certain amount of change to the cured product of encapsulation materials. Generally, it shows the difficulty of deformation.	SEMI G101
molar flow	the number of moles per unit of time flowing in a closed channel.	SEMI E29
molding die	typically a metal mold for forming encapsulation materials by heating and pressure within a molding machine.	SEMI G99
molding preform	mold compound powder compressed into a cylindrical shape and size with specified diameter, weight, and density.	SEMI G49
molecular weight	the sum of the atomic weights of all the atoms in the molecule.	SEMI C3
monitor cost of ownership	effective cost of ownership (COO) per production unit based on the sampling rate for performing measurements, inspections, or tests on samples.	SEMI E35
monitor photo-detector	a photo detector incorporated into the optical system to monitor the amount of light reaching the device under test, enabling adjustments to be made to accommodate varying light intensity.	SEMI PV69, PV76, PV80, PV89
monitor unit	test or filler unit (e.g., wafer, device) consumed in the support of the equipment. Also called test unit.	SEMI E35, E140

Term	*Definition*	*Standard(s)*
monochromatic beam	a chopped light from a monochromatic source reaching the reference photo-detector or device under test.	SEMI PV69
monochromator	an optical device that allows a selected wavelength of light to pass while blocking other wavelengths.	SEMI PV69
monocrystalline, adj.	property of crystalline material that contains no large-angle boundaries or twin boundaries, also called *single crystal*, which can also be used as a noun.	SEMI M59
monodisperse aerosol	an aerosol having a narrow distribution of particle sizes.	SEMI F54
monodisperse calibration particles	particles with known optical properties, a sizing accuracy of at least 95%, and a size distribution in which the coefficient of variation is 5% or less.	SEMI E104
monotonic predicted response curve (MPRC)	a predicted response curve derived from a PRC and modified to be monotonic. A subscript appended to the MPRC (e.g., $MPRC_{silica}$ or $MPRC_{PSL}$), indicates the sphere material for which the MPRC applies.	SEMI M53
monotonic response curve (MRC)	the monotonic relation between the actual SSIS signal and sphere diameter, which differs from the RC_{PSL} by being derived from the MPRC rather than the PRC_{PSL}. A subscript appended to the MRC (e.g., MRC_{silica} or MRC_{PSL}), indicates the sphere material for which the MRC applies.	SEMI M53
Monroe probe	a reference electrode that is stationary and generates an AC signal by the horizontal vibration of a grounded fork which shields the probe from the wafer.	SEMI M59
mound	on a semiconductor wafer surface, a rounded protrusion that may have one or more partially developed facets.	SEMI M59
mounting bases	plates which are attached to diaphragm valves to mount the valves to equipment or a facility.	SEMI F65
mounting hole	used to fix photovoltaic modules to the bracket holes.	SEMI PV86
mounting surface	the mounting surface is the surface of the chuck in direct contact with the mask. The backside of the mask, which is the unpatterned side, shall be in direct contact with the mounting surface while the mask is being used in the tools.	SEMI P40
mounting surface temperature, T_M	in degrees Celsius. The mounting surface temperature is the temperature of a specified point at the device-heat sink mounting interface (or primary heat removal surface).	SEMI G30
move-in	the movement of the process equipment from the loading dock into the fab area, and into the final taped position. The piece of equipment is defined as the main body of the equipment and all its subsystems, assemblies, and components, excluding the hookup. If major subsystems such as pumps or chillers are missing, move-in will not be considered complete until they arrive.	SEMI E70
move-in date	milestone date indicating completion of step when processing equipment is moved into designated location in fab.	SEMI E70
moving average	the average defocus at a point on the wafer, a metric for wafer thickness variation simulating the operation of a scanning lithography system.	SEMI M72
moving standard deviation	the standard deviation of the defocus at a point on the wafer, a metric for wafer thickness variation simulating the operation of a scanning lithography system.	SEMI M72
MTBFp	mean productive time between failures; the average time the equipment performed its intended function between failures per SEMI E10; productive time divided by the number of failures during that time. Only productive time is included in this calculation.	SEMI E113
multi-block message	a message sent in more than one block by the message transfer protocol.	SEMI E4, E5
multi-chamber equipment	equipment that has more than one process module.	SEMI E157
multicrystalline, adj.	property of polycrystalline material that contains large-angle boundaries or twin boundaries; in material referred to as *multicrystalline*, most of the crystallites have dimensions in the millimeter to centimeter range.	SEMI M59
multi-employer fab	a fab in which employees of more than one company work. The workers may or may not be present at the same time for a fab to be considered ‘multi-employer.’	SEMI S24

Term	*Definition*	*Standard(s)*
multi-employer work area	a work area in which employees of more than one company work. The workers may or may not be present at the same time for an area to be considered 'multi-employer.'	SEMI S24
multilayer attenuated phase shift mask	an attenuated phase shift mask having multiple thin films of different material compositions to give a certain phase angle and transmittance. The layer that adjoins the substrate shall be called the first layer.	SEMI P29
multilayer film stack	stack of film layers deposited on the EUV Substrate to provide high EUV reflectivity, and any capping layers for environmental protection and absorber film etch stops.	SEMI P37
multilayer interference CF (Dichroic CF)	multiple layers of inorganic transparent thin films are patterned by photolithography method.	SEMI D13
multimedia filter	generally refers to a suspended-solids removal piece of equipment that contains two or more filtering media such as anthracite and sand, or anthracite, sand and garnet.	SEMI F61
multi-module equipment	equipment that has more than one distinct processing resource (e.g., chamber).	SEMI E94
multi-outlet assemblies	assemblies whose primary function is to provide electrical connections and that have multiple receptacles which are intended for electrical connections.	SEMI S22
multi-part equipment	equipment that has a capability to accomplish multiple operations that require recipe execution by multiple users simultaneously.	SEMI E170
multi-path cluster tool (MPCT)	a cluster tool in which the units visit a subset of the equipment modules in sequences that vary from unit to unit.	SEMI E10, E35, E79, E140
multi-site testing	testing of multiple units with one execution of the test program. Each unit has it own test results.	SEMI E122
multitone mask	a mask with three or more tones, such as white-gray-black. There is no function for phase shift. This is used to reduce the patterning process of TFT array for FPD, etc.	SEMI D84
multi-view autostereoscopic display	a display with more than two viewing zones. The viewing zone forming optics of such a display includes parallax barrier or lenticular lens array, etc. The viewer should stay at designated eye positions to watch this kind of display. The viewing distance is limited in a certain range. The more the viewing zones are, the bigger the range is. Although the lateral position is not limited as strictly as a 2-view 3D display, it is still restricted. As the number of viewing zones increases, the transverse freedom increases in size.	SEMI D59
multiple ID reader/writer controller	a unit controlling the Reader/Writer function of one or multiple ID Reader/Writer Heads, communicates the command/data with the equipment controller or the equivalent controller such as Load Port Controller in the equipment configuration.	SEMI E99
multiple wafer ID reader controller	a unit controlling the Reader function of one or multiple ID Reader Heads, communicates the command/data with the equipment controller or the equivalent controller such as equipment controller.	SEMI E118
Mura	a display defect characterized by low contrast and unclear boundaries.	SEMI D57
name	a text-based attribute of an object that may be used as all or part of its identifier.	SEMI E42
nameplate gas	for mass flow controllers and mass flow meters, the gas, as labeled on the product, intended to be controlled or measured.	SEMI E29
nameplate gas	the gas intended to be controlled by the MFC in operation.	SEMI E77, E80
namespace	in general, a domain within which object identifiers are unique. In RMS, the term namespace is used as a synonym for recipe namespace, unless otherwise stated.	SEMI E42
namespace	a namespace is a bounded collection of names with a constraint to ensure that each name is unique within the collection.	SEMI E96
name-value pair	a data structure that associates a name with an arbitrary value, typically used as an extensibility mechanism for conveying information by name-based retrieval.	SEMI E96
nanotopography	the nonplanar deviation of a wafer surface within a spatial wavelength range of approximately 0.2 to 20 mm.	SEMI M59
nanotopography metric	the parametric technique applied to data within each analysis area of filtered height map to quantify Nanotopography, for example, the P-V metric or deviation metric.	SEMI M78

Term	*Definition*	*Standard(s)*
nanotopography, of a wafer surface	the non-planar deviation of the surface within a spatial wavelength range of approximately 0.2 to 20 mm.	SEMI M59
navigation model	the navigation model determines how a user interacts with a system to access functionality and information.	SEMI E95
near-edge geometry	the topography of a surface of a large diameter silicon wafer in the outer region of the fixed quality area (FQA).	SEMI M59, M77
near-edge region	the annulus of the wafer between the inner boundary of the edge (inner end of the edge profile) and the outer region of the fixed quality area. The near-edge region may stop at the outer boundary of the FQA or extend a small distance into the FQA depending on the context.	SEMI M59
near hermetic package	at least a portion of the package materials are formed of materials having permeability as high as 10^{-8} to 10^{-10} atm-cc/sec. One such material is liquid crystal polymer (LCP).	SEMI MS3, MS8, MS10
nebulization and condensation particle counting (NCPC)	a measurement technique that uses aerosol particle detection, reconfigured to measure particles in liquids as small as 4 nm.	SEMI F63
nested design	experimental design in which different levels of one factor appear in each level of a second factor.	SEMI E89
nested factor(s)	factor that has a different set of levels appearing within each level of a second factor. Factor B is nested in factor A when randomization of the levels of factor B is restricted to specific levels of factor A.	SEMI E89
network	general term for a bus technology which includes field bus technology or local area networks.	SEMI F97
network latency	the amount of time taken by a signal or message to travel from the equipment to its destination through the factory network.	SEMI E151
network management	refers to management of information related to the network status and settings, starting and stopping cyclic transmission, distribution of parameters required for cyclic transmission, and information notification.	SEMI E54.23
network variable	this is a network-visible data attribute of a device, with a well-defined data type. Network variables are either input variables, output variables, or configuration variables. The value of a network variable may be updated either by the device itself, or over the network by some other device. This corresponds to a SetAttribute operation. The value of a network variable may be polled over the network by some other device, or retrieved by the device itself. This corresponds to a GetAttribute operation.	SEMI E54.16
neutral conductor	an earthed (grounded) AC current carrying conductor.	SEMI S22
neutral posture	the position of the human body in which the joints are least stressed. Generally, the body in its neutral position is standing erect with the eyes looking forward, and the arms hanging by the sides.	SEMI S8
nibble	a string of four adjacent binary bits.	SEMI E54, E54.1, E54.10
nine-log retention	number of particles upstream of the purifier or filter are 1,000,000,000; number of particles down-stream of the purifier or filter is 1.	SEMI F43
nitrogen generation plant	a system which separates and purifies nitrogen from ambient air.	SEMI F22
Node	a communicational representation of the production line components such as the host or equipment.	SEMI A1, A5
node	devices of MECHATROLINK master station and slave station.	SEMI E54.19
node	devices of MOTIONNET master station and slave station.	SEMI E54.21
node	an element that forms a network and performs data transmission, reception, and transfer.	SEMI E54.23
nodule (of plated particle)	a protrusion or lump of plating material above the plated surface.	SEMI G62

Term	*Definition*	*Standard(s)*
nodules	lumps of plating extending above the surface of the lid.	SEMI G53
noise (electrical)	unwanted electrical signals that produce undesirable effects in the circuits of control systems in which they occur.	SEMI F53
noise equivalent BRDF, NEBRDF	the root mean square (rms) of the noise fluctuation expressed as equivalent BRDF.	SEMI ME1392
nominal center line	the intersection of the facial and bilateral datum planes.	SEMI D17, D18
nominal diameter, of a semiconductor wafer	the specified target diameter (e.g., 150 mm, 200 mm, or 300 mm) of the wafer around which there is an allowed tolerance.	SEMI M59
nominal feature	feature as it is intended. This usually corresponds to the data used for mask making, including any pre-compensation to overcome process biases of the wafer process (e.g., subresolution features such as hammerheads and serifs), but excluding any pre-compensation that is purely done to deal with mask process limitations (e.g., chrome etch bias). In the simplest case it corresponds to the original design itself.	SEMI P43
nominal feature size	the intended or specified dimension of a feature.	SEMI P35
nominal location	the value a dimension would have if its tolerance were reduced to zero.	SEMI E154, E158, E159, E181, E181.2, E181.3, E181.4, E182, E184, HB3, M80
nominal ocular hazard distance (NOHD)	distance at which the beam irradiance or radiant exposure rquals the appropriate corneal maximum permissible exposure (MPE).	SEMI S2
nominal panel seating plane	a horizontal plane that bisects the panel pickup volume.	SEMI E181, E181.2, E181.3, E181.4
nominal reticle center line	the line that is defined by the intersection of the two vertical reference planes (facial and bilateral) and passes through the nominal center of the seated reticle (which must be horizontal when the carrier is placed on the SMIF as defined in SEMI E19.4).	SEMI E100
nominal reticle center line	the line that is defined by the intersection of two perpendicular vertical planes each of which bisect the reticle at the mid-point of a side.	SEMI E111, E112
nominal substrate seating plane	a horizontal plane that contains the nominal bottom surface of the substrate as it rests on the mizo teeth.	SEMI D17, D18
nominal surface	the intended surface contour, the shape and extent of which is shown and dimensioned on a drawing or descriptive definition.	SEMI F19
nominal volume (NV)	approximate inner volume of a canister.	SEMI F103
nominal wafer centerline	the line that is defined by the intersection of the two vertical datum planes (facial and bilateral) and that passes through the nominal centers of the seated wafers (which must be horizontal when the carrier is placed on the coupling).	SEMI E1.9, E47.1, E57, E119, M31
nominal wafer seating plane	horizontal plane that bisects the wafer pick-up volume.	SEMI E1.9, E131, E158, E159, M80
noncluster tool	an equipment system made up of only one processing equipment module.	SEMI E10, E79
noncombustible liquid	a liquid that does not have a flash point. i.e., there is no temperature to which it can be heated at which it produces flammable vapor in a concentration in air through which a flame will propagate. (The absence of a flash point on an MSDS (e.g., blank space or 'N/A') does not mean that the liquid does not have a flash point.)	SEMI S3

Term	*Definition*	*Standard(s)*
noncombustible material	a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Typical noncombustible materials are metals, ceramics, and silica materials (e.g., glass and quartz).	SEMI S14
noncombustible material	a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Typical noncombustible materials are metals, ceramics, and silica materials (e.g., glass and quartz). See also the definition for combustible material.	SEMI S2, S30
noncombustible material	a material that, in the form in which it is used and under the conditions anticipated, does not ignite, burn, or release flammable vapors when subjected to fire or heat.	SEMI S6
nonconforming document	a non-conforming document is one that does not use the markup properly or follow the markup rules defined in Semiconductor Equipment Manufacturing Information Tagging.	SEMI E36
nonconforming system	a system that does not provide all of the services defined in this standard. A non-conforming system may interact with a conforming system.	SEMI E36
noncontact	metrology that allows a wafer to be measured without physical contact to the wafer surface, preventing contamination or damage to the wafer substrate.	SEMI 3D4
noncontact-metrology	a measurement technique that allows a surface to be measured without the requiring physical contact with the surface, preventing contamination or damage to the wafer substrate.	SEMI 3D12
nonconsumable part	component part of the equipment that is not normally used up, depleted, damaged, or destroyed by the process operation of the equipment. It may require replacement (e.g., due to a failure) with another component part to allow equipment to perform its intended function.	SEMI E10, E35, E140
noncritical seal area	those portions of the sealing surface falling outside of the critical area.	SEMI G1, G34
noncritical seal area, on a semiconductor package that uses a lid, cap, or cover to effect the seal	the area of the sealing surface outside the critical sealing area.	SEMI G58
noncritical side	major side not intended for patterning. Any and all chamfered corners are on the non-critical side.	SEMI P34
nondestructive	operations that allow a wafer to be processed through the subsequent bonding, thinning, edge-bevel trimming, and thermal processes in 3D integration.	SEMI 3D5
nonhazardous electrical energy	electrical energy of which voltage considered to need no further protection to be safe for human contact. Includes voltages less than the value specified as ‘hazardous voltage’ and power less than 240 volt-amps (VA) (as used in EMO circuits and interlock circuits that must remain active during maintenance).	SEMI S21
noninteractive gas	a gas that will not adsorb to the surface of a vessel used to contain or transport it. Examples of non-interactive gases are oxygen and nitrogen.	SEMI F29
nonionizing radiation	forms of electro-magnetic energy that do not possess sufficient energy to ionize human tissue by means of the interaction of a single photon of any given frequency with human tissue. Non-ionizing radiation is customarily identified by frequencies from zero hertz to 3×10^{15} hertz (wavelengths ranging from infinite to 100 nm). This includes: static fields (frequencies of 0 hertz and infinite wavelengths); extremely low frequency fields (ELF), which includes power frequencies; subradio-frequencies; radiofrequency/microwave energy; and infrared, visible, and ultraviolet energies.	SEMI S2
nonliquified compressed gas	a gas, other than a gas in solution, which under the charging pressure is entirely gaseous at a temperature of 21.1°C (70°F).	SEMI C3
nonneutral (awkward) postures	the position of a joint(s) away from its neutral, or least stressed, posture.	SEMI S8
nonprocessing equipment module	an equipment module within an equipment system that supports the movement or conditioning of units through the equipment system. Examples of nonprocessing equipment modules include robotic handlers, load/unload locks, and prealigners.	SEMI E10, E79

Term	*Definition*	*Standard(s)*
nonproduction wafer (NPW)	a wafer which is used not for production but for tuning of equipment and its process performance.	SEMI E171
nonprovisional STC limits	these limits are used to determine whether or not a measured product property is in statistical control. An STC limit is non-provisional when there is enough uncensored data used in STC limit estimation. Non-provisional STC Limits are changed upon Annual Review only when significant differences are found between the Reference Data and the Test Data.	SEMI C64
nonrecycling, deadman-type abort switch	a type of abort switch that must be constantly held closed for the abort of the fire detection or suppression system. In addition, it does not restart or interrupt any time delay sequence for the detection or suppression system when it is activated.	SEMI S2
nonrepudiation	a method by which the sender of data is provided with proof of delivery and the recipient is assured of the sender's identity, so that neither can later deny having processed the data.	SEMI E142.3
nonscheduled state (NST)	the equipment state when the equipment system is not in the productive state (PRD), standby state (SBY), engineering state (ENG), scheduled downtime state (SDT), or unscheduled downtime state (UDT).	SEMI E10, E79
nonscheduled time	during an observation period, the accumulated time when the equipment system is in the nonscheduled state (NST). NST includes any activities required to restore the equipment system to a condition where it can perform its intended function, but no activities that would normally be tracked in the productive state (PRD), engineering state (ENG), scheduled downtime state (SDT), or unscheduled downtime state (UDT).	SEMI E10, E79
non-SOI edge area, of bonded SOI wafers	an annulus between the nominal radius of the surface silicon layer and the nominal radius of the base silicon wafer (for bonded SOI wafers) substrate. The annulus, which implies an area, is determined by its width as one dimension. It is the difference in the nominal radius of the surface silicon layer and that of the base silicon wafer substrate.	SEMI M59
nonspecific binding	the binding (reaction) of compound of interest to unwanted compounds or molecules. The reaction is thus unintentional, unexpected or desired. This binding results in either a decrease in the potency of the compound or target or will provide by-products that may give a false positive result to the reaction. In most cases it lowers the sensitivity of the signal or efficiency of the reaction and contributes to an increase in noise or background.	SEMI MS3, MS6
nonsupplier	an acting agent of relevance to an equipment system other than the primary equipment supplier used for classifying the source of maintenance delay. Examples include the user (operator or host) as well as agents that provide parts, materials, information, or other resources to an equipment system such as in-house maintenance personnel, independent third-party maintenance personnel, and independent third-party suppliers.	SEMI E10
nonvolatile memory	memory that can retain it storage even when the power is turned off.	SEMI G91
normal astigmatism	the difference in z axis position at each image site between the Saggital focal surface and the tangential focal surface. Astigmatism is a map of scalar values over the (x,y) coordinates of the image field.	SEMI P25
normal line of sight	the line extending from the eyes, perpendicular to the intraocular line and 15° below the horizontal position of the eye.	SEMI S8
normal operating conditions	the condition of the equipment reasonably foreseen by the manufacturer, including specified conditions of use, during operation, maintenance and servicing while the equipment is operated, maintained and serviced according to the manufacturer's instructions and with no unauthorized equipment modifications. Normal operating conditions should include consideration of reasonably foreseeable misuse.	SEMI S22
normal operating differential pressure	the range of differential pressure required by the MFC to meet its stated performance specifications.	SEMI E28
normal operating pressure, inlet and outlet	the pressure range within which the MFC meets its stated performance specifications.	SEMI E28
normal operating temperature	the temperature range within which the influence of ambient temperature on the performance is stated.	SEMI E18

Term	*Definition*	*Standard(s)*
normal operation	operation of SME to perform its intended function to modify, transfer, inspect or measure wafers under local or remote control.	SEMI S28
normal statistical distribution	standard normal distribution with a mean of zero and standard deviation of one.	SEMI E66
normal temperature	a temperature of 21°C ± 6°C (70°F ± 10°F).	SEMI F4
normal test conditions (NTC)	for test sample; sample temperature: 35°C, AM 1.5G, Irradiance: 1000 $W \cdot m^{-2}$.	SEMI PV69
normalized production efficiency	the production efficiency to the power of the normalizing exponent (measures the normalized efficiency of the process with respect to factory dynamics).	SEMI E124
normalizing exponent	power that normalizes the production efficiency so that a value of ½ for normalized production efficiency indicates that the factory is performing at the level of the threshold case (which differentiates a well-run factory from one badly operated).	SEMI E124
normally closed	a design in which the cylinder valve closure member automatically assumes the closed position upon loss of compressed gas to the actuator.	SEMI F4
notch	a U-shaped cut on the edge of a substrate that is commonly located with respect to a specific crystal plane.	SEMI E30.1
notch	a cut on the edge of a wafer that is commonly located with respect to a specific crystal plane that adheres to the SEMI M1 standard.	SEMI E30.5
notch	an intentionally fabricated indent of specified shape and dimensions on a silicon wafer oriented such that the diameter passing through the center of the notch is parallel with a specified low index crystal direction.	SEMI M59
notification	a message that is sent to a consumer where no reply is expected.	SEMI E128
notification service	initiated by the service provider and sent to the service consumer/subscriber. No response is expected.	SEMI E39
not-to-exceed (NTE)	an agreement to guarantee that the charges for a service or services will not be greater than a specified amount.	SEMI E70
NP test methodology	nonparametric test methodology, a particular combination of the use of Tukey's Quick Test and the 90th Percentile Test in the Annual Review Process.	SEMI C64
n-type	a variety of semiconductive material in which the majority current carriers are electrons, formed when donor impurities incorporated into the crystal dominate.	SEMI M59
nuisance count	in an SSIS, a signal pulse that arises from discrete or area surface or near-surface features other than the localized light scatterers being investigated; compare *false count*. The presence of nuisance counts is dependent on the threshold and gain settings and may be a function of the optical configuration of the SSIS, the orientation of the wafer surface, or both.	SEMI M59
null character	a byte with a value of zero.	SEMI E54.1, E54.10, E54.22
number of unit	quantity of a unit in one leadframe strip.	SEMI G89
n_x	atomic concentration of element x.	SEMI F79
Nyquist frequency [1/μm]	spatial frequency equal to the reciprocal of twice the sampling interval.	SEMI MF1811
object	in the software world, an object is a combination of attributes and behavior. It may refer to something concrete or perceptible, such as a transfer object, or to a concept, such as a transfer job.	SEMI E32
object	an entity with a specific set of data and behaviors. Objects may be physical or conceptual.	SEMI E39, E53
object	an entity with a specific set of data and behaviors. Objects may be physical or conceptual. An object may be described in terms of its attributes, services it provides, and behavior it exhibits.	SEMI E54, E54.1, E54.10

Term	*Definition*	*Standard(s)*
object	an identifiable encapsulated entity that implements one or more services that can be requested by a client. An instance of a class.	SEMI E81
object	a software entity that has state, behavior, and identity. The terms instance and object are interchangeable. An object is an instance of an interface if it provides the operations, signatures, and semantics specified by that interface. An object is an instance of an implementation if its behavior is provided by that implementation.	SEMI E96
object	functional blocks defined as a set of one or more network variable inputs and/or outputs, implemented as Standard Network Variable Types, and a set of configuration properties, implemented as Standard Configuration Property Types. Functional blocks form the basis of interoperability at the application layer. The functional blocks describe standard formats for how information is input to, and output from, a device, and shared with other devices on the network.	SEMI E54.16
object attribute (attribute)	information concerning an object. Examples for object type 'equipment': manufacturer, model, and serial number.	SEMI E39
object-based	a programming language, or database, is called object-based if it supports the concept of data abstraction, but partly or entirely lacks more advanced concepts such as class, inheritance, polymorphism, and so on.	SEMI E127
object handle	a numeric or binary identifier assigned by an application for internal use.	SEMI E39
object identifier	a set of one or more items of information, concerning a particular instance (instantiation) of an object of a given type, that together uniquely distinguish that instance from all other instances of that object within a defined scope.	SEMI E39
object instance	an instance of an object type. An object type is like a template, while an object instance is the actual object. Example: an actual and specific optical stepper installed in a particular fab is an instance of the type 'Optical Stepper.'	SEMI E39
object instantiation	the act of storing of information related to a physical or logical entity so that it can be recalled on demand based on its public identifier.	SEMI E87, E109, E170, E171
Object Management Group (OMG)	an international consortium dedicated to the development of open specifications for distributed, heterogeneous, object-oriented systems.	SEMI E81
object model	a static graphic model of objects to show structure, the identity of objects, their attributes and operations, and their relationships with one another.	SEMI E39
object services	interfaces for general services that are likely to be used in any program based on distributed objects.	SEMI E81, E96
object specifier	defined in the Object Services. [SEMI E39]	SEMI E53
object specifier	designates a logical path pointing to a specific instance of an object through a hierarchy of owners.	SEMI E98
object type	a formal classification of a group of similar objects. Some examples are equipment, wafer, and carrier.	SEMI E39
object type	a declaration (specification) that describes the common properties and behavior for a collection of objects. Types classify objects according to a common interface; classes classify objects according to a common implementation.	SEMI E98
object-based equipment model	a model of equipment, its components, behaviors, attributes, and services, as defined by this document.	SEMI E98
objective	a statement describing an intended outcome.	SEMI E150
objective aperture	*in microscopy*, a fixed opening that controls the light passing through the objective and determines the value of the objective numerical aperture.	SEMI MF728
objective, flat-field	*in microscopy*, an objective that is designed to show little or no field curvature over the useful field of view.	SEMI MF728
objective numerical aperture	*in microscopy*, the product of the index of refraction in object space multiplied by the sine of half the angular aperture of the objective.	SEMI MF728
observation	a sample/data collection period.	SEMI E66

Term	*Definition*	*Standard(s)*
observation period	a specified continuous interval of calendar time (e.g., 72 hours, 6 weeks, 3 months, 1 quarter, 90 days) during which equipment system performance is tracked.	SEMI E10, E79
occupational exposure limits (OELs)	OELs are generally established on the basis of an eight hour workday. Various terms are used to refer to OELs, such as permissible exposure levels, Threshold Limit Values®, maximum acceptable concentrations, maximum exposure limits, and occupational exposure standards. However, the criteria used in determining OELs can differ among the various countries that have established values. Refer to the national bodies responsible for the establishment of OELs.	SEMI F5
occupational exposure limits (OELs)	for the purpose of this Safety Guideline, OELs are generally established on the basis of an eight hour workday. Various terms are used to refer to OELs, such as permissible exposure levels, Threshold Limit Values®, maximum acceptable concentrations, maximum exposure limits, and occupational exposure standards. However, the criteria used in determining OELs can differ among the various countries that have established values. Refer to the national bodies responsible for the establishment of OELs.	SEMI S2
occupational exposure limit (OEL)	the maximum airborne concentration of a substance to which a worker may be exposed for the specified time. OELs include TWAs, STELs, and Ceiling limits, which differ in the time period for which they specify concentrations. Various terms are used to refer to OELs, such as permissible exposure levels, Threshold Limit Values®, maximum acceptable concentrations, maximum exposure limits, and occupational exposure standards. The criteria used in determining OELs can differ among the countries that have established values.	SEMI S6, S18
octet	a unit expressing data of an 8-bit unit. One octet is within the range of '-128-127' in decimal format when signed, and '0-255' in decimal format and '0x00-0xFF' in hexadecimal format when unsigned.	SEMI E54.23
offcut	the angle between the vector normal to the wafer surface and GaN [0001] direction.	SEMI M86
off-line programming (OLP) utility	utility to create, edit, and format process programs on a computer, as opposed to creating process programs at the equipment.	SEMI E123
offline storage facilities	storage facilities for flammable silicon compounds containers (e.g., gas cylinders or liquid containers) that are not physically connected to any distribution system.	SEMI S18
off-orientation	the tilt angle between the crystallographic c-axis and the wafer surface normal.	SEMI M55
off-orientation	the tilt by which the wafer surface is inclined with respect to the crystal lattice.	SEMI M75
off-orientation	deviation of a crystal surface from a crystallographic plane, characterized by an angle (ϕ) and a direction of tilt, which is given by the projection of a vector normal to the crystal surface onto the referenced crystallographic plane.	SEMI M83
offset	a component of error that is constant and independent of the input, often used to denote bias. [IEEE]	SEMI E151
offset	the difference in the bottom cavity position from a leadframe datum when compared to design. This measurement ignores leadframe tolerances. All statements regarding offset are applicable to both the *X* and *Y* axis. All measurements are made prior to lead trim and form.	SEMI G54
offset (of the end region of a flat on a silicon wafer)	a perpendicular deviation at either end region of a flat from the horizontal reference line, used to define the flat boundaries.	SEMI M59
offset alignment accuracy	the top to bottom alignment accuracy of the etched leadframe operation.	SEMI G19
offset distance (OD)	the distance between the trigger point where the measurement is started or terminated and the point where the first or last data, respectively, are recorded.	SEMI PV41
oil canning	lid concavity after sealing.	SEMI G53
Omega (ω)	the angle between the incident beam direction and the sample surface in the scattering plane.	SEMI M63
on-line equipment	equipment that is connected to, and able to communicate fully with, the host.	SEMI E87, E109

Term	*Definition*	*Standard(s)*
on-site gas-to-chemical generation	the contacting of a liquid and gas phase to create a liquid solution. The chemical is generated on-site in a form suitable for distribution through a dispense system.	SEMI F31
on-site blending	chemical blending equipment used for blending chemical on location of the semiconductor manufacturing facility.	SEMI F39
on-the-job training (OJT)	the instruction of personnel in the operation or maintenance, or both, of equipment done during the course of normal work functions. On-the-job training typically does not interrupt operation or maintenance activities and, therefore, can be included in any equipment state without special categorization.	SEMI E70
one-way hash	a one-way transformation of an arbitrary length of data into a fixed-length code. The transformation is computationally difficult to reverse, and unlikely to have collisions. The same message will always result in the same hash, and any slight modification to the original message will result in a different hash, thus providing message integrity. The terms One-way Hash, Hash and Digest are used interchangeably in this document.	SEMI E132
OOC product	out of Control product, product for which one or more STC parameters exceed its STC upper control limit or, if applicable, fall below its STC lower control limit.	SEMI C64
opaque film reflectivity	a ratio of the intensity of reflected light to the intensity of incident light into the surface of opaque film. The reflectivity depends on the incident angle, the wavelength of the light, and the extent of polarization of the incident light. The intensity of the incident light is usually calculated by the intensity of the reflected light measured using a reference mirror.	SEMI D84
opaque frame	an area of a certain width, adjacent to the periphery of the desired exposure area on a reticle. It is located in the non-exposure area of the reticle to prevent exposure outside the desired printed field on the wafer.	SEMI P29
open area	in a bulk-micromachining process, a region on the chip where the silicon surface is exposed to the ambient after fabrication but before the post-processing etch that releases the beams.	SEMI MS4
open area	the percentage of the total wafer area that is exposed/available for etching. The area that is not protected by the mask.	SEMI MS13
open bubble	a gaseous inclusion which is so close to the surface that it is obviously open and/ or one so close to the surface that it may be broken open with the point of a soft lead pencil.	SEMI D9
open cassette	an open structure that holds one or more wafers.	SEMI E82
open cassette	an open structure that holds one or more substrates.	SEMI E153
open cassette (OC)	a cassette without a protective barrier around it.	SEMI E101
open circuit potential	the potential between the test specimen and the counter electrode with no electrical connection.	SEMI F120
open load port	a load port with overhead clearance unobstructed by the tool.	SEMI E15
open message	a multi-block message for which not all of the blocks have been received.	SEMI E4
open process equipment	equipment in which at least some of the process and chemical handling take place inside of components the interiors of which are in communication with ambient air. In equipment of this type, such areas of the primary containment are ventilated.	SEMI S6, S30
open secondary containment	secondary containment with an open-ended annular space. This annulus must be directed to a system designed to handle the contained HPM.	SEMI F6
open transaction	a transaction in progress.	SEMI E4, E37
open vessel	a container, typically used for the heating, mixing, or application of process liquids, in which pressurization is not possible, because there is open communication between the vapor space and some region of near-atmospheric pressure. Open top immersion baths and ventilated storage containers are examples of open vessels.	SEMI S3
opening area transmittance	a ratio of the intensity of light transmitted through an opening area of a patterned attenuated phase shift mask to the intensity of vertical incident light measured with air reference.	SEMI P29
operate	the act of using equipment for its intended purpose without change.	SEMI E149

Term	*Definition*	*Standard(s)*
operating conditions, normal	the range of operating conditions within which a device is designed to operate and for which operating influences are stated. [ISA S51.1]	SEMI E56, E69
operating conditions, reference	the range of operating conditions of a device within which operating influences are negligible. [ISA S51.1]	SEMI E56, E69
operating influence	the change in a performance characteristic caused by a change in a specified operating condition from reference operating conditions, all other conditions being held within the limits of reference operating conditions. [ISA S51.1]	SEMI E56, E69
operating range	the range of operating conditions within which a device is designed to operate and for which operating conditions are stated.	SEMI F113
operating temperature limits	operation is permitted within this range but performance is not specified beyond the Normal Operating Temperature. If the instrument is operated outside these limits damage may occur.	SEMI E18
operating temperature range	the range of ambient temperatures, given by their extremes, within which the transducer is intended to operate; within this range of ambient temperature all tolerances specified for temperature error, temperature error band, temperature gradient error, thermal zero shift and thermal sensitivity shift are applicable.	SEMI F113
operation	a function performed by, or inherent to, an object. Example for equipment: ‘run,’ ‘stop,’ ‘abort.’	SEMI E39
operation	an operation is an entity, identified by an operation identifier that denotes a service that can be requested. An operation has a signature that describes the legitimate values of request parameters and returned results, including any exceptions.	SEMI E81
operation	an operation is a specification entity, identified by an operation identifier, that denotes a service that can be requested. An operation has a signature that describes the legitimate values of request parameters and returned results, including any exceptions.	SEMI E96
operation	consists of functions by which the operator causes the equipment to perform its intended purpose; these may include loading product and setting or manipulating external controls.	SEMI S8
operation	the use of equipment to perform its intended function.	SEMI S10
operation method	the control method of operation sequence. There are three methods: auto,-auto, and manual.	SEMI P30
operational efficiency	the fraction of uptime that an equipment system is performing its intended function.	SEMI E79
operational efficiency (time divided by time)	the fraction of equipment uptime that the equipment is processing actual units.	SEMI E124
operational message	type of message sent by the Equipment Server to a Consumer Session with collected or analysis data from the equipment.	SEMI E125
operational script	a collection of scenarios arranged in a sequence typical of actual factory operations. Example sequences are system initialization power up, machine setup, and processing.	SEMI E30
operational uptime (OU)	the percentage of time the equipment is in a condition to perform its intended function during the period of operations time. This calculation is intended to reflect overall operational performance for the equipment.	SEMI E35
operations time	the time when the equipment system is in the productive (PRD), standby (SBY), engineering (ENG), scheduled downtime (SDT), and unscheduled downtime (UDT) states (i.e., total time minus nonscheduled time).	SEMI E10, E79
operator	a human who operates the equipment to perform its intended function (e.g., processing) and typically interacts with the equipment via the equipment supplied console.	SEMI E30
operator	the user who interacts locally with agent through the agent’s interface.	SEMI E42
operator	any person who communicates locally with the equipment through the equipment’s control panel.	SEMI E10, E58, E79

Term	*Definition*	*Standard(s)*
operator	a person who interacts with the equipment only to the degree necessary for the equipment to perform its intended function.	SEMI S2, S21, S22, S28, S30
operator	a user that interacts with the equipment only to the degree necessary for the equipment to perform its intended function.	SEMI S8
operator access	an area to which, under normal operating conditions, one of the following applies: access may be gained without the use of a tool, the means of access is deliberately provided to the operator, or the operator is instructed to enter regardless of whether or not a tool is needed to gain access (if the operator is so instructed, this area becomes evaluatable as an operator accessible area).	SEMI S22
OPM flow rate	that portion of the total flow rate that flows through the OPM and is measured by the OPM flow meter.	SEMI F104
OPM FM	flow meter for measuring the OPM flow rate. This may be built within the OPM and may have the capability of controlling flow as well. It should have a flow rate range and accuracy corresponding to the OPM manufacturer's recommendations. In addition, this device should be downstream of the OPM sensor to avoid contributing particles to the UPW being measured.	SEMI F104
OPM particle size channel	an instrument defined bin used to accumulate the counts of particles. Typically, channels can refer to either cumulative (i.e., particles ≥0.1 μm) or differential particles (i.e. ≥0.1 μm but ≤0.15μm).	SEMI F104
optic axis	of a doubly refracting crystal, that direction through the crystal along which no double refraction occurs.	SEMI MF576
optical equivalent size	the diameter of a monodisperse calibration particle that produces the same detected scattering intensity as the localized light scatterer (LLS) under investigation under identical test conditions.	SEMI E104
optical interferometric flatness measuring instrument	instrument that analyzes the surface irregularities of a target, from the distribution of light intensity of laser interferometer between the target surface and datum flat.	SEMI D15
optical stylus method measuring instrument	instrument that uses the same profile method that a stylus method instrument uses. This instrument uses the displacement transducer to apply the spotlight to the target surface instead of using the stylus to apply the spotlight.	SEMI D15
optical substrate sensing paths	lines of sight for optically sensing the positions of the substrates.	SEMI D17, D18
optical wafer sensing paths	lines of sight for optically sensing the positions of the wafers. Several horizontal optical wafer sensing paths are present in between the cassette side domains. In addition, two vertical optical wafer sensing paths are created by rectangular exclusion zones in the front of the cassette top and bottom.	SEMI E1.9, E119, M31
optimum energy (Eop)	the exposure energy where the mask dimensions can be reproduced faithfully.	SEMI P26
optional attribute	an attribute that is required only in support of one or more optional standard services.	SEMI E39
optional capability	a specification that is not required for an implementation to be compliant to a standard.	SEMI E99, E118
opto-electronic (OP)	application employing heteroepitaxy on conductive SiC substrates.	SEMI M55
opto-isolator	a solid-state device with input and output devices coupled by an optical signal path but electrically isolated from each other.	SEMI S28
orange peel	large-featured, roughened type of surface visible to the unaided eye whose surface appearance pattern is like that of an orange peel.	SEMI F19
orange peel	large featured roughened type of surface visible to the unaided eye, occasionally seen on all types of polished wafers.	SEMI M10
orange peel	large-featured, roughened type of wafer surface visible to the unaided eye.	SEMI M59
orange peel (of leadframe)	micro roughness on surface of outside of lead caused by bending.	SEMI G65

Term	*Definition*	*Standard(s)*
orbital welding	automatic or machine welding of tubes or pipes in-place with the electrode rotating (or orbiting) around the work.	SEMI F78, F81
ordered list	a list for which the order in which items appear is significant.	SEMI E39, E40, E41, E53, E58, E90
orientation	the lattice plane nominally parallel to the wafer surface plane.	SEMI M75
orientation convention	a means for denoting the rotational orientation of a substrate.	SEMI D12
orientation corner	the corner of a substrate which identifies the front surface and the rotational orientation.	SEMI 3D23
orientation corner	the corner of a substrate which identifies the pattern surface and the rotational orientation.	SEMI D12
orientation corner	the corner of a substrate which identifies the pattern surface and the rotational orientation. It is defined by the *X*- and *Y*-dimensions. It is also commonly known as 'orientation flat' or 'orifra.'	SEMI D9, D44, D48, D49, D52
orientation corner, of a lead-frame strip	the strip corner used to assure correct die assembly orientation. It is denoted by an identification mark.	SEMI T9
orientation, of a single crystal surface	the crystallographic plane, described in terms of its Miller indices, with which the surface is ideally coincident.	SEMI HB8, M59
orientation mark	a mark expressed on a part for confirmation of cassette direction.	SEMI M29
orientation notch	notch located at the pod handles to allow sensing the orientation of the pod.	SEMI E47
orifice coefficient	the ratio of actual flow to the theoretical flow through an orifice.	SEMI S5
origin	the intersection of the BP and FP.	SEMI E158, E181, E181.2, E181.3, E181.4, M80
origin	the intersection of the BP, FP, HP.	SEMI E159
Originator	a communication role that initiates a General Data message or a thread of General Data messages.	SEMI A1
originator	the creator of a primary message.	SEMI E5
orthogonal misorientation	in {100} wafers cut intentionally 'off-orientation', the angle between the projection of the vector normal to the slice surface onto the {100} plane and the projection on that plane of the nearest direction.	SEMI M9, M23
orthogonal misorientation	in {0001} wafers cut intentionally 'off-orientation,' the angle between the projection of the vector normal to the wafer surface onto the {0001} plane and the projection on that plane of the specified direction of tilt in the {0001} plane.	SEMI M55
orthogonal misorientation	in wafers cut intentionally 'off orientation,' the angle between the projection of the vector normal to the wafer surface onto a {111} plane and the projection on that plane of the nearest <110> direction.	SEMI M59
OSCG system	the stand-alone unit that produces (or uses) a high purity gas and reacts it with water (or the appropriate aqueous solution) to produce the desired ultra pure chemical solution. This unit is intended for use on the manufacturing site and in a centralized scheme to support all or a portion of the site's chemical requirement(s).	SEMI F46
other health hazard	a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term 'health hazard' includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.	SEMI S4
others	fabrication methods other than those above.	SEMI D13

Term	*Definition*	*Standard(s)*
outer bound linewidth	width of smallest linewidth bounding box encompassing the line segment. Line edge asperities may reasonably be excluded. Its width is the largest linewidth that is ordinarily associated with the feature.	SEMI P35
outer bounding box	smallest bounding box encompassing the feature.	SEMI P35
outer box	a container part of a shipping box, surrounding the whole objects so as to protect a shipping cassette, except gasket and clamps.	SEMI 3D3, M29
outer pod	a device for holding an inner pod during shipping/transport/storage and for various processing steps. The outer pod interfaces with process and exposure equipment. The outer pod positions and protects the inner pod and does not directly contact the reticle. The outer pod has two major elements, a door and a shell.	SEMI E152
outer pod door (or, door)	a device to hold and position the inner pod within the outer pod. It allows for access to the inner pod. The outer pod door will interface with automated process equipment, exposure equipment and material handling systems.	SEMI E152
outer pod shell (or, shell)	a device to isolate and protect the inner pod. It is a component of the outer pod and is used with the outer pod door. The outer pod shell will interface with automated process equipment, exposure equipment and material handling systems.	SEMI E152
outer scan line	a scan line, parallel to the center scan line and removed from it toward a wafer edge.	SEMI PV41
outer surface alignment	an operation in which the illumination and viewing axes observe alignment marks on the opposite, nonadjacent (outer) surfaces of the two wafers to be aligned.	SEMI MS1, MS3
outboard leak rate	leakage rate expressed in $Pa.m^3/s$ (*atm·cc/sec*) occurring from inside to outside when an internal pressure is greater than the external pressure acting on the component or system. Outboard leakage is typically determined by introducing a tracer gas into the interior of the piping system or component under test.	SEMI F74
outgassing	a phenomenon wherein a substance spontaneously releases volatile constituents in the form of vapors or gases. In rubber compounds, these constituents may include water vapor, plasticizers, air, inhibitors, etc.	SEMI F51
outgassing	release of gases absorbed on interior package surfaces or evolution of gases due to chemical change of enclosed materials.	SEMI MS8, MS10
outlet pressure	the pressure at the outlet fitting of the MFC.	SEMI E28
out-of-plane measurements [L]	measurements taken on structures that are curved out-of-plane in the *z*-direction (i.e., perpendicular to the underlying layer).	SEMI MS3
output	direction of transfer-out from the transfer point.	SEMI D54
output port	port location on a stocker output shuttle, typically accessible by the stocker crane. Contains carrier presence sensors so that the host can be notified when a carrier is situated at this position.	SEMI E88
outside diameter tolerance	allowable deviation of the outside diameter of PFA tube from the specified dimension.	SEMI F52
outsize dimension	vertical and horizontal dimensions of the glass substrate.	SEMI D9
overall equipment efficiency (OEE)	a metric of equipment system performance, expressed as the fraction of total time the equipment system is processing effective units assuming theoretically efficient time standards.	SEMI E79
overall equipment efficiency (OEE) (time divided by time)	a metric of equipment performance, expressing the theoretical production time for the effective unit output divided by the total time. [CSM 21]	SEMI E124
overall flicker	flicker which is measured overall field of display.	SEMI D79
overall implementation	this term is used to refer to the entire scope for an OSCG installation, including the Gas Storage/Supply system, the OSCG system, chemical storage tanks, chemical plumbing, and interface with the chemical distribution system. Gas supplies are covered in related guides.	SEMI F46
overall factory efficiency *(*OFE)	the volume efficiency multiplied by the yield efficiency (shows how well a factory is operating compared to how well it could be operating for the given product mix).	SEMI E124

Term	*Definition*	*Standard(s)*
overcoat layer	transparent material deposited over the color filter material. This provides a smooth surface and enough adhesion for subsequent transparent conductive films deposition.	SEMI D13
overcurrent	any current in excess of the rated current of the equipment or the rated ampacity (current-carrying capacity) of the conductor; it may result from overload, short circuit, or ground fault.	SEMI S22
overhang, on a semiconductor package	the horizontal extension of the sealing glass past the vertical wall of a cavity cut into the ceramic layer on which the glass is printed.	SEMI G1, G26, G34, G58
overhaul	major disassembly, replacement of components as necessary, and reassembly.	SEMI S24
overhead buffer (OHB)	hanging shelf for placing FOUP temporarily under or on same height of OTV hanging from the ceiling.	SEMI S17
overhead delivery	an interbay transport system that transfers the carrier to and from the stocker interbay loadport itself from directly above the loadport (raises and lowers the carrier to the loadport).	SEMI E85
overhead hoist transport (OHT)	a rail guided vehicle and hoist used to transport material above the factory floor over the heads of factory personnel.	SEMI E156, E168.2, E168.3
overhead hoist transport (OHT)	a vehicle that travels overhead on a rail (or rails) and does have a hoist.	SEMI S17
overhead shuttle (OHS)	an AMHS vehicle that does not use a vertical hoist mechanism to transfer the carrier from one piece of equipment to another. An OHS is typically supported on top of transport rail while overhead hoist transport (OHT) vehicles hang from underneath the transport rail.	SEMI E84, E156
overhead shuttle (OHS)	a vehicle that travels overhead on a rail (or rails) and does not have a hoist.	SEMI S17
overhead traveling vehicle (OTV)	OHS or OHT, a vehicle that travels overhead, and may or may not have a hoist.	SEMI S17
overlap	the difference in length or width between the top and bottom cavities. Overlap may be a feature designed into the mold to avoid mismatch. All statements regarding overlap of cavities are applicable to both the X and Y axis. All measurements are made prior to lead trim and form.	SEMI G54
overlay	the actual distance between two features on different layers of a substrate, compared to the expected distance.	SEMI E30.1
overlay	vector distance between the feature placements of two corresponding features created at different processing levels, in the reference plane coordinate system.	SEMI P35
overlay accuracy	relative deviation of pattern position between two masks.	SEMI P21
overlay (micropatterning)	a vector quantity defined at every point on the wafer. It is the difference, $\vec{O}$, between the vector position, $\vec{P}_1$, of a substrate geometry, and the vector position of the corresponding point, $\vec{P}_2$, in an overlaying pattern, which may consist of photoresist .	SEMI P28
overload	operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload (see short circuit and ground fault).	SEMI S22
override	to take precedence over the current control system state.	SEMI S8
oversize and undersize	oversize and undersize are defined as follows: Ex = b – a Ey = d – c ‘a’ and ‘c’ are intended value; ‘b’ and ‘d’ are actually measured value. When Ex or Ey is a positive value, the pattern is oversized, and when Ex or Ey is a negative value, the pattern is undersized.	SEMI P22
overtime	time spent in excess of normal working hours.	SEMI E70

Term	*Definition*	*Standard(s)*
owned object	an object that is a component of, contained in, or supervised by, another object. The owned object is said to be owned by the other object.	SEMI E39
owner	the entity that has the highest level of access authority or legal right to a system or equipment.	SEMI S12
owner buys	material purchased by the owner and consigned to subcontractors for use in construction.	SEMI E70
owner object	an object that is an aggregation, container, or supervisor of another object. The owner object is said to *own* the other object.	SEMI E39
ownership	an equipment is said to 'own' a transfer object from the time the object is transferred into one of its ports until it is transferred out of the equipment. This indicates that the equipment has physical control of the transfer object.	SEMI E32
oxidation	the formation of an oxide layer on a metal surface. When excessive oxidation occurs as a result of welding, it is visible as *discoloration.*	SEMI F78
oxidation	the formation of an oxide layer on a metal surface.	SEMI F81
oxidation induced stacking fault	a stacking fault that typically arises during wafer oxidation from precipitates located at arbitrary distances from the wafer surface.	SEMI M59
oxide bonding process	process of applying heat and pressure to a pair of oxidized wafers placed surface-to-surface, with no other material placed between them, to produce a mechanical bond between the wafers.	SEMI 3D13
oxide defect	an area of missing oxide on the back surface of back-sealed wafers discernible to the unaided eye.	SEMI M59
oxide island	nonstandard term for *slag.*	SEMI F78
oxide precipitates	silicon oxide deposits in Czochralski-grown silicon arising from the reaction of oxygen atoms, existing between lattice sites, with silicon.	SEMI M90
oxide thickness	the thickness of the passive Oxide layer on the surface. Generally determined from the depth profile analysis as the sputter depth at which the Oxygen concentration decreases to ½ its maximum value.	SEMI F60
oxide thickness	the thickness of the passive oxide layer on the surface, determined from the depth composition profile as the sputter etch depth at which the oxide concentration decreases to ½ its maximum value.	SEMI F72
oxides	compounds of oxygen with other elements.	SEMI F105
oxidizer gas	a gas which will support combustion or increase the burning rate of a combustible material with which it may come in contact.	SEMI S18
oxidizer chemical	a chemical which will support combustion or increase the burning rate of a combustible or flammable material with which it may come in contact.	SEMI S4
oxygen deficient atmosphere	an atmosphere without enough oxygen to protect a typical worker from impairment or harm resulting from insufficient oxygen.	SEMI S2
ozone	ozone (O_3) may be injected into the Supply and/or Return line to control microbiological contaminants and also to enhance the action of TOC breakdown in downstream TOC reducing UV units.	SEMI F61
package	a finished form of semiconductor device that includes several materials such as encapsulant, wire, die attach material, interposer (metal or organic) and so on.	SEMI G89
package size	three-dimensional sizes (width, length, height) of a IC package body. In this document, width, length and height are referred as package body size without leads.	SEMI G89
package warpage	any nonlinear dimensional change from the mold cavity characteristic, usually caused by incorrect package design or molding practices.	SEMI G14, G16, G36, G37
package warpage	loss of planarity of a molded surface excluding protrusions and intrusions. Each package type has a maximum allowable warpage and a warp factor is used to determine the maximum warpage for a particular package dimension. The Warp Factor (WF) is defined as follows: WF = Total Warp in inches (mm) (1000/Package dimension in inches (mm). Package warpage is usually caused by incorrect package design and/or poor molding conditions.	SEMI G54

Term	*Definition*	*Standard(s)*
packaged device	a Device which is not exposed in bared shape on substrate for passivation, physical protection and manipulation purposes. It is often independently packaged by ceramic base or plastic molding with leads. Sometimes it has more than one dice and some separated electric elements packaged in a package.	SEMI T13
packaged device	the component.	SEMI T20.1
packaged or sealed device mark	marking placed on the surface of packaged or sealed semiconductor device to identify the individual device; that is, often the individual die in the package.	SEMI T19
packet	a physical division of a message used by the message transfer protocol.	SEMI E5
packless valve	a valve with a diaphragm or bellows stem seal instead of a packing or O-ring seal at the stem.	SEMI F4
pad cut rate	the rate with which top layer of the pad is being removed during conditioning.	SEMI C103, C104
pad surface roughness	morphology/roughness of the pad surface after conditioning with CMP disk.	SEMI C103
paddle	a blade transport module end effector designed to support the wafer.	SEMI E22
pallet	a flat container used for collecting and holding a suitable amount of secondary containers that hold wafers, to make handling with forklifts easier.	SEMI M45
palmar pinch	grip where the fingers press against the palm of the hand, with the object held between the fingers and the palm. Thumb is not used (e.g., picking up a sheet of plywood).	SEMI S8
panel	the rectangular base material to implement panel level packaging processes.	SEMI 3D20, E181, E181.1, E181.2, E181.3, E181.4
Panel	a printed circuit board under production and assembly that may contain multiple products not cut out as products yet.	SEMI A2, A5
panel	a rectangular or square substrate on which an array of devices are fabricated.	SEMI E142
panel	area of a safety label having a distinctive background color which is different from other areas, or which is delineated by a line, border, or margin.	SEMI S1
panel deflection	change in Panel shape (TIR) due to gravity while the panel is resting on the Panel FOUP Panel supports with the Panel FOUP door open.	SEMI E181, E181.1, E181.2, E181.3, E181.4
Panel FOUP	type of FOUP used for storage of panels and/or for transportation.	SEMI E181, E181.1, E181.2, E181.3, E181.4
panel seating plane	the bottom surface of an ideally rigid flat panel as it rests on the panel supports.	SEMI E181, E181.1, E181.2, E181.3, E181.4
panel substrate	the rectangular starting material (often epoxy or glass) that can be used to implement panel level packaging processes.	SEMI E181, E181.1, E181.2, E181.3, E181.4
parallelism tolerance	the minimum and maximum dimension allowance for the opposite pockets to vary in relation to their distance from the crossbar end of the carrier.	SEMI E1
parallelism tolerance	the minimum and maximum dimension allowance for the opposite pockets to vary in relation to their distance from the crossbar end of the cassette.	SEMI HB2
parameter	parameters necessary for drawing masks such as the size of mask and the reference point of placement.	SEMI P45

Term	*Definition*	*Standard(s)*
parameter, of an edge profile segment	characteristic of the segment (length, angle, or radius).	SEMI M59
parameter source	a physical or logical entity associated with the equipment that is capable of providing parameters independently of other sources. This term may be used interchangeably with ‘data source’.	SEMI F96
parametric limited yield (PLY)	the fraction of units that are not lost from device parameters being outside the required range.	SEMI E35, E140
parametric test	the test method that determines the data for which reliability information is sought (e.g., accuracy test or particle test, SEMI E66).	SEMI E67
part	the glass substrate with TGVs to be measured.	SEMI 3D22
part	replaceable or maintainable unit, or a set of the units on equipment. From the point of traceability, this is the general name of jigs, components or consumable parts.	SEMI T17, T18
part coordinate system	the coordinate system of the to be measured component or part.	SEMI 3D22
partial analysis area	an analysis area whose area is partly outside FQA while its center is still inside FQA.	SEMI M78
partial site, on CSW	a site the area of which is only partially within the FQA.	SEMI HB6
particle	a small, discrete piece of foreign material or silicon not connected crystallographically to the wafer.	SEMI E146
particle	a micron-size piece of foreign material on the glass surface.	SEMI D9
particle	a minute fragment or quantity of matter.	SEMI F51
particle	an ensemble of molecules large enough to be detected by the analytical method used to detect it.	SEMI F104
particle	a foreign solid material attached to the wafer surface and partly buried in the epilayer.	SEMI HB9
particle	materials which can be distinguished from the film whether on the film surface or embedded in the film.	SEMI P5
particle	a small, discrete piece of solid foreign material, condensed from liquids or gases, or silicon on the surface of a wafer, but not connected crystallographically to the wafer. Particles on wafer surfaces can usually be removed by non-etching cleaning.	SEMI M59
particle concentration	the total number of particles counted, divided by the total gas sample volume, and corrected for background count, rounded to the nearest integer, for particles equal to or larger than the specified. Particle concentration is referenced to a volume of 25 standard liters.	SEMI C97
particle concentration	the number of particles per unit volume in a gas.	SEMI F54
particle counting wafer	wafers intended for use in evaluating the particulate contamination added by a process tool. LLSs (Localized Light Scatterers) include particles and COP (Crystal Originated Pits).	SEMI M59
particle counts	a counted value from a laser particle counter (LPC) or condensation nucleus counter (CNC) obtained for particles or larger than or equal to the minimum counting particle diameter.	SEMI F70, F70.1
particle filter	a device that removes small particles from a gas stream with high efficiency.	SEMI F76
particle number after handling and transport (PNH)	the particulate contamination on a silicon wafer measured by an analytical equipment after handling and transport of the minienvironment.	SEMI E146
particle number initial (PNI)	the initial particle contamination on a silicon wafer measured by an analytical equipment.	SEMI E146
particle number after static or dynamic test (PNT)	the particulate contamination on a silicon wafer measured by an analytical equipment after the static or dynamic test of the minienvironment.	SEMI E146

Term	*Definition*	*Standard(s)*
particle size	for applications, size is the optical equivalent diameter of a reference sphere with known properties as detected by a given light-scattering particle counter. For calibration, size is the mean diameter of the monodisperse sphere.	SEMI E104
particle size/particle diameter	the optical equivalent diameter as detected by a given light scattering particle counter.	SEMI C97
particle wafer	a silicon wafer suitable for monitoring area or process cleanliness, used only in a cleanroom environment.	SEMI M59
particles added during handling and transport (PAH)	the particulate contamination on a silicon wafer added during handling and transport of the minienvironment, calculated from the vales PNI and PNH.	SEMI E146
particles added during static or dynamic test (PAT)	the particulate contamination on a silicon wafer added during the static or dynamic test of the minienvironments, calculated from the values PNT, PNH, and PAH.	SEMI E146
particles per wafer pass (PWP)	average number of particles added to a wafer as it passes through an equipment, expressed in particles per wafer pass or in (particles/m^2)/pass.	SEMI E146
particulate	(dust): discrete particle of material which can usually be removed by (non-etching) cleaning.	SEMI M10
particulate contamination	on a semiconductor wafer, a particle or particles on the surface of the wafer.	SEMI E146
parting line protrusions	those plastic excesses which remain as a normal characteristic after normal molding, deflashing, trimming, and singulation operations.	SEMI G14, G16, G36, G37
parting line protrusions or intrusions	plastic excesses (flashes or losses, chips or voids) at the parting line after normal processing to mold, deflash, trim, and singulate the packages.	SEMI G54
partition coefficient or equilibrium constant	the ratio of gas concentration at the solid-gas interface at the package exterior to the partial pressure of the gas in the surrounding medium. Symbol K is used.	SEMI MS10
parts-cleaning hood	exhausted hood used for the purpose of cleaning parts or equipment. Synonym: equipment cleaning hood.	SEMI S2
passivation	the chemical treatment of a stainless steel surface with a mild oxidant for the purpose of enhancing the corrosion resistant surface film.	SEMI F72
passivation	the chemical treatment of a stainless steel surface with an oxidizing solution for the purpose of enhancing the corrosion resistant surface film.	SEMI F19, F60
passive equipment	equipment that is loaded or unloaded by the active equipment.	SEMI E23, E84
passive interbay transport system	an interbay transport system that requires the stocker to transfer the carrier to and from the stocker interbay loadport (stocker has robotics that transfers the carrier).	SEMI E85
passive OHS vehicle	an active OHS vehicle that does not contain a device that loads or unloads the carrier from once piece of equipment to another.	SEMI E84
passive oxide layer	the Chromium enriched oxide adherent surface film resulting from the passivation process that gives stainless steel its enhanced corrosion resistance.	SEMI F60
passive process module	a process module that has no wafer moving mechanism for wafer handoff.	SEMI E166
passive potential range	the potential range over which the current density is independent of potential. The current is a very low value due to formation of an oxide layer.	SEMI F77
passive transfer	a transfer that involves one active and one passive partner. During a passive transfer, the active partner retains control of the transfer envelope during the entire physical transfer.	SEMI E32
passive transfer partner (opposite of active transfer partner)	a transfer partner is considered passive when it takes no part in the physical micro level transfer, moving nothing within the transfer envelope. This term refers to the physical micro level transfer phase only. Setup activities prior to the transfer may be performed by a Passive Transfer Partner (e.g., a port door may be opened during setup phase).	SEMI E32

Term	*Definition*	*Standard(s)*
passive transport system	a transport system that requires the equipment to transfer the carrier to and from the equipment load port to the transport.	SEMI E156
passive vehicle	a vehicle in the transport system that does not contain a robot or other transfer agent for providing the acquiring (loading) and depositing (unloading) actions. The vehicle simply contains a position(s) to carry the transfer unit. The loading and unloading action must be accomplished at the load or unload port by a different system (e.g., stocker port robot).	SEMI E82
passively controlled blending	a blending process in which the constituents are added into the blend fluid stream or vessel in a fixed proportion that does not change.	SEMI F39
pattern	(1) the physical features on a substrate surface. (2) An ideal pattern is the arrangement of features expressed in a calculated or mathematical manner.	SEMI E30.1
pattern	the physical features on a substrate.	SEMI E30.5
pattern	the micro- or nano-scale geometrical structures (e.g., cone) on the surface of sapphire substrate.	SEMI HB12
pattern	geometric structures aligned array or individually on the surface of sapphire substrate.	SEMI HB14
pattern	set of one or more features.	SEMI P35
pattern	subset of a layout containing one or more features.	SEMI P43
pattern bilateral symmetry	the symmetry of a pattern on the center plane of itself. The pattern bottom diameter is divided into two halves from the center, one half of length A and other half of length B, ｜A-B｜represents the magnitude of symmetry.	SEMI HB12
pattern bottom angle	the included angle between the pattern triangular cone and the planar base of the etching.	SEMI HB12
pattern bottom diameter	the diameter of pattern bottom circle on the planar base of the etching.	SEMI HB12
pattern defect	missing pattern or disordered pattern, etc., on the surface of wafer.	SEMI HB12
pattern distortion ratio	absolute magnitude of the quotient of (1) the difference between the width of the pattern on the substrate and the width of the pattern on the top surface of the epitaxial layer and (2) the thickness of the epitaxial layer.	SEMI M61
pattern distortion ratio, in buried epitaxial wafer technology	absolute magnitude of the quotient of (1) the difference between the width of the pattern on the substrate and the width of the pattern on the top surface of the epitaxial layer and (2) the thickness of the epitaxial layer.	SEMI M59
pattern edge determination method	uses a computer or an operator to look at the image. This is the method for determining the edge position of a given pattern, which is calculated by computer algorithm or by operator instructions.	SEMI P30
pattern element	(1) any recognizable set of features. (2) A rectangular sub-unit of a pattern or a pattern element. There may be multiple levels of pattern elements.	SEMI E30.1
pattern height	the normal height of the pattern based on the plane of the sapphire substrate.	SEMI HB12
pattern pitch	the distance between the geometric centers of adjacent pattern features on patterned sapphire substrate.	SEMI HB12
pattern placement	coordinates describing the centroid of the set of features comprising the pattern in the reference plane relative to a coordinate system in that plane.	SEMI P35
pattern positioning error	distance from the center of screen after positioning. This is the maximum distance between the screen center and a target pattern after pattern positioning.	SEMI P30
pattern shift ratio	lateral distance between the center point of the pattern on the surface of the substrate and the center point of the pattern on the surface of the epitaxial layer divided by the epitaxial layer thickness.	SEMI M61
pattern shift ratio, in buried epitaxial wafer technology	lateral distance between the center point of the pattern on the surface of the substrate and the center point of the pattern on the surface of the epitaxial layer divided by the epitaxial layer thickness.	SEMI M59

Term	*Definition*	*Standard(s)*
pattern step height	difference in vertical position of the diffused (buried layer) surface and the original substrate surface, after removal of oxide.	SEMI M61
pattern step height, in buried epitaxial wafer technology	difference in vertical position of the diffused (buried layer) surface and the original substrate surface, after removal of oxide.	SEMI M59
pattern stitching accuracy	position errors at the stitching boundary of writing fields, stripes, and shots.	SEMI P21
pattern surface	the main area where device patterns can be formed, determined by the orientation corner, etc.	SEMI D9
pattern surface	a surface defined as the orientation corner, where device patterns are mainly formed.	SEMI D44, D48, D49, D52
pattern, overlay test	a group of features for overlay metrology.	SEMI P28
patterned sapphire substrate (PSS)	sapphire substrate with periodically arrayed patterns on the surface.	SEMI HB12, HB14
patterned transparent conductive film method	color filter layers are accumulated using a micell distribution liquid for each color of the transparent conductive pattern formed according to the various RGB color filter layers.	SEMI D13
PDEbody	the executable portion of a Process Definition Element. The PDEbody is typically contained within the PDE construct. In some cases, a PDEbody may exist as a separate entity, but it is always exclusively related to its PDE.	SEMI E139
PDEeditor	a software system that provides the ability to create, delete, and modify a PDE. A PDEeditor may exist as a subsystem of an equipment or as a standalone system provided either by the manufacturer of the equipment or a third party.	SEMI E139
PDEheader	the descriptive portion of a Process Definition Element. The PDEheader is a collection of information related to a PDEbody. This information is sufficient to manage and utilize the PDE without accessing its PDEbody.	SEMI E139
PDO assign	defines how process data objects shall be assembled to the output and input data which will be transferred cyclically with IO data exchange.	SEMI E54.20
PDO mapping	defines how CoE Attributes shall be assembled to a process data object.	SEMI E54.20
peak height	the maximum moisture concentration recorded when a moisture input of predefined length and concentration is introduced to a DUT.	SEMI C91, F118
peak height	the maximum moisture concentration recorded when a moisture input of predefined length and concentration is introduced to a test component.	SEMI F27, F58
peak height	the maximum moisture concentration recorded when a moisture input of predefined length and concentration is introduced to a test system.	SEMI F112
pedestal	a support pillar axially symmetric to the wafer transport position in a process or cassette module.	SEMI E22
pedestal	structural support element upon which equipment or raised floor rests.	SEMI E70, E76, F107
peeling	the lifting of plating from a surface.	SEMI G53, G62
peeling (flaking)	any separation of a plated, vacuum deposited or clad metal layer from the base metal of a leadframe, pin, heatsink, or seal ring, from an underplate, or from a refractory metal on a ceramic package. Peeling exposes the underlying metal.	SEMI G1, G8, G58, G61
peeling (flaking)	any separation of metallization from the base material that exposes the base material.	SEMI G22
peeling (flaking)	any separation from the basis material that exposes the basis material.	SEMI G33, G39, G50

Term	*Definition*	*Standard(s)*
peer-to-peer	on Modbus/TCP over TCP/IP networks, messages formatted according to the Modbus/TCP protocol are embedded into the TCP packet structure that is used on the TCP/IP network. The Modbus protocol over TCP/IP supports the asynchronous or unsolicited bi-directional transmission of data between nodes. This type of communication is referred to as peer-to-peer.	SEMI E54.9
peer-to-peer	on SafetyBUS p networks, messages formatted according to the SafetyBUS p protocol are embedded into the SafetyBUS p packet structure that is used on the CAN network. The SafetyBUS p protocol over CAN supports the asynchronous or unsolicited bi-directional transmission of data between nodes. This type of communication is referred to as peer-to-peer.	SEMI E54.15
pellicle	a thin, optically transparent film, typically of a polymer, attached to and supported by a frame, and attached to a photomask (or reticle). Its purpose is to seal out contaminants and reduce printed defects caused by contamination in the image plane of an optical exposure system with a minimum decrease in the quality of optical transmission.	SEMI P5, E100, E111, E112
penetration (of PPE)	movement of a chemical through pores or imperfections in a material or an item without a change of state. Chemical penetration can occur through voids and imperfections in closures, seams, interfaces and materials.	SEMI S30
percent usable area (PUA)	fraction of area within the FQA (or sites, including full sites or all sites, as indicated) that meets a specified requirement, expressed as a percentage.	SEMI M59
perceptual angle	the angle at which the color volume and average picture brightness drops to specific level comparing to that of on-axis. The color volume and average picture brightness could represent color quality that human perceives.	SEMI D61
perceptual contrast length	the difference of black and white brightness of the screen.	SEMI D75
performance (of an objective)	the same as the task (e.g., Replace the electrode, Diagnose power distribution faults, Interpret wafer map, Debug the program). It is usually the shortest part of the complete performance objective.	SEMI E150
performance checklist	a means of tracking an individual learner's progress at gaining competency in a list of tasks. Also called, a sign-off sheet.	SEMI E150
performance efficiency	the fraction of uptime that an equipment system is processing actual units assuming theoretically efficient time standards. This metric is the same as the product of operational efficiency and rate efficiency.	SEMI E79
performance factor	a quantification of SME functional performance metrics that is not directly measured as quantity outputs (e.g., minimum detectable particle size, smallest pattern pitch that can be processed) for a given SME model relative to some other model of a similar type. The choice of which functional performance to be compared as well as the method to quantify the selected functional performance is a subjective judgement of the SME supplier.	SEMI S23
performance gap	the difference between a performer's expected (desired, required) behavior and the performer's actual behavior.	SEMI E150
performance improvement process	an analytical business tool designed to align the performance of individuals and organizations to business goals and requirements. It looks at existing (or anticipated, in the case of new products) performance gaps and seeks to apply the most cost-effective performance improvement solutions to bring about individual or organizational performance improvement.	SEMI E150
performance improvement solution, intervention	an action taken to improve individual or organizational performance by implementing systems, processes, events, or products (or a combination thereof) such as the following: reorganization; enhanced ergonomics; new or improved job aids, knowledge management systems; new or improved feedback, incentive, or reward systems; improving communication systems and methods; training products; and coaching or mentoring programs.	SEMI E150
performance objective	a statement that describes the intended performance of a worker for a single task or group of tasks. A performance objective must be a complete objective.	SEMI E150, E165

Term	*Definition*	*Standard(s)*
Performance-Based Equipment Training (PBET)	an approach to equipment training that is based on front-end analysis, that ensures that participants are able to master the tasks for their job as described by properly stated performance objectives. PBET works when the PBET steps are followed to develop and deliver the training and the PBET characteristics are present in the training.	SEMI E150
Performance-Based Equipment Training (PBET) characteristics	briefly stated: (1) Prerequisites are identified and are used to qualify for entry into a course or lesson. (2) Each part of each lesson is based on properly derived performance objectives. (3) A demonstration of the task is included in each lesson. (4) Every trainee has the opportunity to practice every task while receiving feedback. (5) Each lesson includes a performance-based test. (6) Every trainee has a reasonable opportunity to repeat the practice and/or the test of each lesson until the trainee has mastered the requirements of that performance objective.	SEMI E150
performance-based test	a test in which the learner is asked to do what is required by the task under the same conditions as stated in the performance objective and to the same standards as stated in the performance objective.	SEMI E150
performance board	printed circuit board used to interface the tester channels to the DUT.	SEMI G79, G80
performer	the individual who is performing tasks as part of a job, which is part of a function in support of a process, which is part of, or a contributor to, the value chain that delivers value to the customer and earnings to shareholders.	SEMI E150
periodic random roughness	modified version of purely periodic roughness that has a definite fundamental spatial frequency, but random variations in its phase or amplitude.	SEMI MF1811
periodic roughness	roughness with a definite fundamental spatial frequency.	SEMI MF1811
periodogram estimate	estimates of particular finish parameters that are derived from the periodogram estimator for the power spectrum.	SEMI MF1811
periodogram estimator	a particular estimator for the power spectral density that is proportional to the square magnitude of the discrete Fourier transform of the detrended data set.	SEMI MF1811
permanent inversion layer	the region of a C-V curve that exhibits a definite minimum ‘dip.’ The permanent inversion layer is an anomalous condition caused by interface charge or surface conditions and its presence prevents proper determination of the capacitance minimum, C_{min}.	SEMI M59
permanently connected equipment	equipment that is intended to be electrically connected to a supply by means of connection which can be detached only by the use of tools.	SEMI S22
permeability coefficient	a measure of the capability of a specimen to permit the flow of fluids through its surrounding walls. The product of permeance and the wall thickness. Defined as the volume of fluid passing through a material of unit thickness, per unit area and unit time, under unit partial-pressure difference between the two sides of the specimen. Determined by both the geometrical and material properties of the specimen. Symbol P is used, or $P'O_2$ to express the permeability coefficient specifically of oxygen gas, for example.	SEMI MS10
permeance	a measure of the ability of a solid specimen material to conduct fluid. Also defined as the volume of fluid which, under steady conditions, crosses unit area of the sample in unit time under unit pressure difference and at constant temperature. Permeance depends only on the specimen itself. Symbol Q is used.	SEMI MS10
permeation	process by which a gas or liquid to pass through a seal structure by diffusion.	SEMI F51
permeation	the penetration of a permeate (fluid = gas or liquid) through a solid.	SEMI MS10
permeation (of PPE)	movement of chemicals through materials or items without passing through voids or imperfections. Permeation includes: absorption into the contact surface, diffusion of the absorbed molecules through the material or item, and desorption from the opposite surface.	SEMI S30
permissible air vibration	the maximum air vibration that can provide the guaranteed resolution.	SEMI P30

Term	*Definition*	*Standard(s)*
permissible exposure limit (PEL)	is the maximum permitted eight hour time-weighted average concentration of an airborne contaminant. The maximum permitted time-weighted average exposures to be used are those published in 29 CFR 1910.1000.	SEMI F6
permissible floor loading capability	the minimum floor loading capability where the equipment can be settled.	SEMI P30
permissible floor vibration	the maximum floor vibration that can provide the guaranteed resolution.	SEMI P30
permissible stray magnetic field	the maximum change in the stray magnetic field that can provide the guaranteed resolution.	SEMI P30
permits	legal governmental documents granting permission for specific construction activities.	SEMI E70
persistent object	an object that can survive the process or thread that created it. A persistent object exists until it is explicitly deleted.	SEMI E81
persistent object	an object that can survive the process or thread that created it.	SEMI E96
Persistent Session	an *Authenticated Session* established that survives equipment shutdowns or power offs. Behavior of a persistent session during equipment shutdown and startup is as defined by the session state model described in this Standard.	SEMI E132
person	personnel performing manufacturing operations within a factory.	SEMI E86
person responsibility	the concept of 'responsibility' implies that factory personnel are authorized to perform, operate or access a specific factory object (but it does not imply ownership).	SEMI E86
personal guided vehicle (PGV)	a manually guided and operated vehicle capable of placing and removing carriers to and from a carrier port.	SEMI E98
personal protective equipment (PPE)	equipment and clothing worn to reduce potential for personal injury from hazards associated with the task to be performed (e.g., chemical gloves, respirators, safety glasses, etc.). In the context of this Document, cleanroom attire (e.g., gloves, smocks, booties, hoods) is not considered personal protective equipment.	SEMI S8, S30
personal protective equipment (PPE)	equipment and clothing worn to reduce potential for personal injury from hazards (e.g., chemical gloves, respirators, safety glasses).	SEMI S10
pH	a measure of alkalinity or basicity expressed as the logarithm of the reciprocal of hydrogen ion concentration in gram atoms per liter on a scale of 0 to 14. pH values are generally represented as unit-less numbers. Values less than 7 represent acidity and more than 7 basicity.	SEMI C101
phase angle	a difference in the phase of light generated by vertical transmission through a shifter area and that through an opening area, with an optical path through air equivalent to the shifter film in thickness.	SEMI D84, P29
phase correct filter	a profile filter which does not cause phase shifts between total profile and filtered profile. The standard transmission coefficients at cut-off wavelength are 50%.	SEMI D15
phase shift alignment error	a placement error between phase shift layer and opaque film layer, for double-layer phase shift masks.	SEMI D84
phase shift and half tone mask	single-layer phase shift mask or double-layer phase shift mask with the added function of half tone mask.	SEMI D84
phase shift mask	a photomask designed to increase resolution and depth of focus through the control of the phase angle. Also referred to as 'PSM' for short.	SEMI D84, P29
phase shift overlay error	a placement error between phase shift layer and opaque film layer, for additional film type attenuated phase shift masks.	SEMI P29
Phi	the angle which rotates the sample about the normal to the surface.	SEMI M63
phonon	a quantum of lattice vibrational energy, as a photon is a quantum of electromagnetic energy.	SEMI MF1389
phosphor	the substance with commonly red, blue and green color phosphor that transfers the ultraviolet came from the mercury to the visible ray.	SEMI D36
photochemical decomposition	chemical reaction caused by light in which the material is decomposed into other materials.	SEMI S25

Term	*Definition*	*Standard(s)*
photo-coupled interface	a parallel I/O interface connected without contact by means of a photo-coupled device.	SEMI E23
photolithography	patterning method by using mico photolithograph machines and photopatternable materials. Precise patterns can be formed.	SEMI D13
photomask pattern	pattern on photomask surface.	SEMI P23
photometer	the equipment that measures the luminance.	SEMI D36
photoresist lifting	the loss of adhesion of a photoresist coating to its substrate.	SEMI P3
photovoltaic module roof	the combination of photovoltaic modules and panels and the securement means for installing the photovoltaic modules and panels as a roof covering and generating power.	SEMI PV100
photovoltaic modules	complete and environmentally protected assembly of interconnected photovoltaic cells as defined in IEC/TS 61836.	SEMI PV100
physical edge	the farthest extremity of the wafer. It is used as a reference point of an edge-referenced coordinate system when finding the profile of the edge region.	SEMI M77
physical location	a location that can hold at most one carrier. It includes a *port*, *storage location*, *vehicle location* and *transfer location*. They are not exclusive each other. For example, a transfer location may be a storage location.	SEMI E153
physical properties	physical properties shall not usually be employed for specification purposes; for information, however, representative values for a particular gas, as supplied, may be included as an item in the monograph for that gas.	SEMI C3
physical step height standard	the artifact used to calibrate the optical interferometric microscope or comparable instrument in the out-of-plane *z*-direction.	SEMI MS2, MS3
pickling	conditioning of the system by filling it with the actual chemical or another chemical for which the system is designed. This chemical will stay in the system for a specified period of time. The purpose of this conditioning is to leach out impurities prior to actually using any chemical in the manufacturing process.	SEMI F31
pickling	to condition the BCDS by exposing to an aggressive chemical that extracts impurities from the internal surfaces of the system.	SEMI F41
PID auxiliary sample	potential-induced degradation of the shunting type	SEMI PV75
PID sensitivity	qualitative and relative characteristic of solar cells that is used to describe how fast and how strong PID-s occurs under high voltage stress or qualitative and relative characteristic of encapsulation components (glass, polymer foils) that is used to describe their ability to promote PID-s when combined in solar modules with PID-s sensitive solar cells.	SEMI PV75
PID test specimen	a sample whose PID sensitivity is to be probed in a specific PID test experiment.	SEMI PV75
piezoelectric element	an material that both changes length in proportion to an applied electric field, and produces an electric potential in response to physical force.	SEMI MS3
pigment	this can be pigment in fine powder form dispersed into plastic, or it can be pigment in fine powder form then capsulated in micelle (microcell) and dispersed in a water solution.	SEMI D13
pigtail bleed	a pigtail bleed is a reverse flow of purge gas from the pigtail to minimize atmospheric intrusion into the gas panel.	SEMI F29
Pilot	the fifth step in the performance improvement process, as applied to a training solution: This is where the design plan (i.e., the combination of all lesson plans), together with the created materials, are tested (i.e., tried out) for effectiveness. The purpose is to determine where improvements should be made, and to make them, before deploying the training.	SEMI E150
pin	the mass of material which enters the hole or slot of another carrier for transferring wafer.	SEMI E1
pin	the mass of material which enters the hole or slot of another cassette for transferring wafer.	SEMI HB2

Term	*Definition*	*Standard(s)*
pin	tester channel.	SEMI G79, G80
pin and hole center distance from pocket centerline	the distance from centerline of either the pin or hole to the closest pocket centerline.	SEMI E1, HB2
pin offset	the variation in position from the centerline of the pin to the centerline of the braze pad to which it is mounted.	SEMI G61
pin or pedestal	if the surface of the chuck consists of an array of pins or pedestals, pins are protrusions from the chuck surface that come to a point at the location on their surface farthest from the chuck. Pedestals have a nominally flat surface at their surface farthest from the chuck.	SEMI P40
pin sweep	pin movement, measured with respect to a datum, perpendicular to the top or bottom of the package that passes through the designed mid-point of pin where the pin is attached to the package (e.g., pin grid arrays). The movement is viewed form the side of the package, not the ends.	SEMI G61
pin tweeze	pin movement, measured with respect to a datum, perpendicular to the top or bottom of the package that passes through the designed mid-point of pin where the pin is attached to the package (e.g., pin grid arrays). The movement is viewed form the ends of the package, not the side and the pin movement is from the edges of the package in toward the centerline of the package.	SEMI G61
pinhole	a hole deep through the whole epitaxial layer with exposure of substrate.	SEMI HB9
pinhole	a small opening extending through a cover as a photoresist coating or an oxide layer.	SEMI P2, P3
pinhole	a small opening completely through a polymer film.	SEMI P5
pin-to-pin separation	the distance between adjacent pins when measured from their centerlines at the point of connection to the package.	SEMI G61
pipeline	an equipment configuration consisting of multiple stages through which the equipment sequences material in succession.	SEMI E130
pipette, v.	to measure or transfer a quantity of a liquid with a pipette.	SEMI E180
pit	small dot-shaped depression on the surface of the glass.	SEMI D20
pit	a surface cavity or crater with a defined edge not caused by impact.	SEMI F19, F73
pit	a shallow surface depression or crater with a visible edge.	SEMI G2
pit	shallow surface depression or crater in the leadframe material.	SEMI G9, G19, G27, G28, G41, G47, G51
pit	any unspecified depression in the package.	SEMI G22, G33
pit	a hole or depression extending below the surface of the lid or preform.	SEMI G53, G62
pit	a depression at the surface of wafers, typically with inverted pyramid shape for GaN LED wafer.	SEMI HB9
pit	a depression in a wafer surface where sloped sides of the depression meet the surface in a distinguishable manner in contrast to the sides of a dimple, which are rounded.	SEMI M59
pit	(dislocation, etch pit): depression in the wafer surface which has a definite and distinguishable shape, that is, a place where the sloped sides of the pit meet the wafer surface.	SEMI M10
pit, in semiconductor packages, plastic or ceramic, or in the leadframes	a shallow depression or crater. The bottom of the depression must be visible in order for the term to apply. A pit is formed during component manufacture.	SEMI G44, G61
pit/dig	small indentation on the glass substrate surface.	SEMI D9

Term	*Definition*	*Standard(s)*
pitch	distance between the centroid of a TSV and the centroid of an adjacent TSV.	SEMI 3D1
pitch	designed distance from center-to-center of adjacent ports along one axis of a two-dimensional array of ports.	SEMI MS11
pitch	the distance between a point on an image and the corresponding point on the corresponding image in an adjacent functional pattern.	SEMI P28
pitch, average	average spacing between centroids of a specified group of TSV arranged along a line.	SEMI 3D1
pitch between parallel lines	(a) the centroid-to-centroid distance between the linewidth bounding boxes describing two parallel lines, over a specified length segment common to both, and perpendicular to their edges. (b) right edge to right-edge or left-edge to left-edge distance between corresponding line edge bounding boxes, or the centerline-to-centerline (preferred) distance, can also be used where appropriate, if so specified.	SEMI P35
pitch in general	the centroid-to-centroid distance between the feature models describing two features, i.e., the distance between the two feature placements.	SEMI P35
pitch measurement uncertainty	parameter that characterizes the dispersion of the values that could reasonably be attributed to the pitch between two parallel lines.	SEMI P35
pitch, minimum	minimum spacing between centroids of any two neighboring TSV within a group of TSV arranged along a line.	SEMI 3D1
pitting	corrosion of a metal surface, confined to a point or small area, that takes the form of cavities.	SEMI C92, F77, F119, F120
pitting (plated metal layer)	unspecified depressions in the plated layer, not the underlying layer(s). Such pits may be caused by incorrect plating conditions.	SEMI G8
pitting potential range	the range of measured potentials where pitting is initiated. This potential range only exists above the minimum CPT.	SEMI F77
pixel	physical unit on the image sensor that is photosensitive.	SEMI PV94
pixel resolution	the precision in pixels at which all measurements are performed. The maximum pixel resolution shall be one pixel.	SEMI T10
pixel width and height, effective	the distances on the wafer surface imaged by one picture element, or pixel, of the image sensor in perpendicular directions.	SEMI PV40, PV42
pixels	picture elements. In a two-dimensional digital image, pixels are individual elements to which a grayscale value is associated. The combination of grayscale values for each pixel and its respective location in a two-dimensional plane form a digital representation of a real scene.	SEMI T10
placed on the market	made physically available, regardless of the legal aspects of the act of transfer (loan, gift, sale, hire).	SEMI S2
placement	a specification by reference that a copy of a cell is to be placed within the coordinate space of another cell at a particular location, orientation, and scale. Cell placement is the fundamental mechanism which makes hierarchy within the OASIS file possible.	SEMI P39
placement volume	a specified volume within which one or more specified objects are placed.	SEMI E152
plaintext	unencrypted information that is input into a cryptographic algorithm.	SEMI E132.2
planar defect	small cavity in a SiC bulk crystal with large width-to-height ratio roughly parallel to the {0001} lattice plane. The lateral boundaries are parallel to crystallographic directions.	SEMI M55
planarity	total indicator reading of the lead tips in the Z direction relative to datum M.	SEMI G2
plane	a theoretical surface which has infinite width and length, zero thickness and zero curvature.	SEMI E154, E158, E159, E181, E181.1, E181.2, E181.3, E182, E184, G92, G95, HB3, M80

Term	*Definition*	*Standard(s)*
plane of incidence, PLIN	the plane containing the sample normal and central ray of the incident flux.	SEMI ME1392, PV15
plasma ion source mass spectrometry	a method that isolates and measures quantitative metal element by mass spectrometer using plasma as excitation source. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and Microwave Induced Plasma Mass Spectrometry (MIP-MS) belong to this category.	SEMI P32
plasma process time	the total time the plasma is applied (i.e., ignited).	SEMI MS13
plastic tape frame	a ring-shaped plastic frame to fix a wafer to itself using wafer tape. It is used between the dicing process and the die bonding process, and for the handling and shipping of wafers.	SEMI 3D3, G87
plate	a part on which material be set.	SEMI G103
platform	a horizontal elevated location intended by the supplier to support the weight of personnel, their tools, and equipment while working.	SEMI S2
platform height	the distance in the *z*-direction that a flat, processed surface of interest is from a designated flat, processed reference surface.	SEMI MS2, MS3
platform stand	a fixed-height, self-supporting, movable unit consisting of one or more platforms on a rigid base (with or without wheels or casters) and a means of ascending or descending between levels.	SEMI S2
plating nonuniformity	the lack of consistency of brightness of silver as plated, or after the application of heat. These changes in the plated grain structure causes the inconsistency.	SEMI G62
pneumatic actuator	a device which converts compressed gas pressure into mechanical motion and force to move the cylinder valve closure member.	SEMI F4
pneumatic noise	localized, random variations in pressure and flow.	SEMI E56
pocket	the area in which the wafer is located in the carrier.	SEMI E1
pocket	the area in which the wafer is located in the cassette.	SEMI HB2
pocket centerline	the imaginary line which bisects each pocket.	SEMI E1, HB2
pocket depth	the distance from the pocket flat to its own pocket nose, not to the opposite pocket.	SEMI E1, HB2
pocket flat	the width of the pocket along the vertical walls at its narrowest distance.	SEMI E1, HB2
pocket nose	the top of the mass of material between adjacent pockets.	SEMI E1, HB2
pocket nose radius	the radius on the pocket nose.	SEMI E1
pocket size	the distance between opposite pocket flats.	SEMI E1, HB2
pocket spacing	the distance between pocket centerlines.	SEMI E1, HB2
pocket width	the width of the pocket at its widest distance.	SEMI E1, HB2
pocketting	accumulation in a portion of a ventilated enclosure of a released SOC at a concentration greater than the ratio of the rate of release to the volumetric airflow through the enclosure. Pocketting may result if the linear velocity and mixing of airflow within the enclosure is not uniform.	SEMI S6
pod	a container providing environmental control, such as a SMIF or FIMS pod.	SEMI E98
pod	an RSP or a multi reticle SMIF pod.	SEMI E109
pod	a box having a standardized mechanical interface.	SEMI E1.9, E15, E19, E19.4, E45, E47, E47.1, E57, E62, E63, E92, E159, M80, S28, T4
pod identification tag	information carrier mounted to a pod.	SEMI T4
pod latch holes	holes near the center of the pod door bottom which accept the latch pins.	SEMI E19.4
PodID	a readable and unique identifier for the pod.	SEMI E109

Term	*Definition*	*Standard(s)*
PodID read	the process of the equipment reading the PodID from the carrier.	SEMI E109
PodID tag (tag, ID tag)	a physical device for storing PodID and other information. There are two basic types of tags, read-only tags and read/write tags.	SEMI E109
point accuracy	the deviation of the touched point to the reported data, it means the distance between touched position and reported coordinate.	SEMI D73
point defect	a localized crystal defect such as a lattice vacancy, interstitial atom, or substitutional impurity. Contrast with *light point defect*.	SEMI M59
point-like object	a circular or square form in the image where the diameter or width is equal to the practical resolution.	SEMI P25
point of connection (POC)	the physical location where the equipment connector and the facility connector are connected to each other.	SEMI F107, F63
point of distribution (POD)	is at Outlet of final filtration in UPW system.	SEMI F63
point of entry (POE)	is at Inlet of wet bench or sub-equipment.	SEMI F63
point of process (POP)	is at Wafer in production.	SEMI F63
point of use (POU)	the final connection between the gas distribution system and the process equipment; often used interchangeably with point of connection (POC).	SEMI F22
point of use (POU)	is at Inlet of wet bench bath, spray nozzle, or connection point to piping, which is also used for other chemicals.	SEMI F63
point-of-use abatement	abatement technologies that can be fitted at the point of discharge of the gaseous emission from semiconductor process equipment. These devices are also called exhaust conditioners.	SEMI F5
point-of-use purifier	an inline device that removes homogeneous impurities such as moisture and oxygen. An integral particle filter is typically included in the same housing to remove particles.	SEMI F76
Poisson's ratio	the ratio between Young's modulus and shear modulus.	SEMI D9
Poisson ratio, v	an elasticity parameter which describes how a material expands or contracts in one direction if compressed or extended in the orthogonal direction. It is composition-dependent.	SEMI M63
poka-yoke	a device applied to a rib so as not to be set in an incorrect direction in order to avoid an orientation failure when the part is set.	SEMI M29
polarization	in optics, the term used to describe the orientation of the time-varying electric field vector in an electromagnetic wave.	SEMI MF576
polarized light	in optics, light exhibiting different properties in different directions at right angles to the line of propagation.	SEMI MF576
polishing	the process of flowing chemical through a filter one or more times to reduce the particulate concentration in the chemical.	SEMI F31
polishing ion exchange	a cation/anion exchange step located downstream of primary ion exchange.	SEMI F61
pollution	any addition of foreign matter, solid, liquid or gas, that may produce a reduction of dielectric strength or increase of surface resistivity.	SEMI S22
pollution degree	for the purpose of evaluating clearances the following two degrees of pollution in the microenvironment are recognized for use with this Document: • pollution degree 1 — no pollution or only dry, non-conductive pollution occurs. The pollution has no influence. Cleanroom Class 1000 or less. • pollution degree 2 — normally only nonconductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation is expected. Cleanroom Class greater than 1000.	SEMI S22

Term	*Definition*	*Standard(s)*
polycrystalline, adj.	property of crystalline material that contains large-angle boundaries or twin boundaries. Generally material referred to as *polycrystalline*, such ass that deposited on silicon wafers during processing or occurring as part of the silicon refining process contains fine crystallites (grains), while material with grain sizes larger that about 1mm is referred to as *multicrystalline, q.v.*	SEMI M59
polycrystalline	(poly): body of semiconductor materials that contain large-angle grain boundaries, twin boundaries, or both.	SEMI M10
polycrystalline silicon	silicon, formed by chemical vapor deposition from a silicon source gas, having a structure that contains large angle grain boundaries, twin boundaries, or both. Also known as *poly*, or *polysilicon*.	SEMI M16
polydisperse aerosol	an aerosol having a wide distribution of particle sizes.	SEMI F54
polymeric pads	relatively hard one or two-layered polymer-based pad with usually grooved surface.	SEMI C100, C102, C103
polynomial-referenced ROA (P-ROA)	the roll off value when a cubic curve is employed as the reference.	SEMI M59, M77
polyolefin elastomer (POE)	a kind of hot melt adhesive film.	SEMI PV62
polysilicon for photovoltaic applications	the designation is given to silicon solid materials in accordance to SEMI PV17 and SEMI PV22.	SEMI PV88
polystyrene latex (PSL)	a colloidal aqueous solution of polystyrene microspheres from which certified depositions can be made.	SEMI M59
polystyrene latex sphere (PSL)	reference material used to calibrate surface inspection systems.	SEMI D17
polytype	one possible crystallographic modification of a substance which shows the phenomenon of polytypism. All polytypes of a substance have the same lattice layers with nearly the same lattice constant in common. However the stacking sequence of these layers differs between different polytypes.	SEMI M55
polytype	one of the modifications of monocrystalline material which shows polytypism.	SEMI M92
population standard deviation (σ)	square root of the population variance.	SEMI E89
population variance (σ^2)	measure of dispersion associated with a population distribution.	SEMI E89
poromeric pad	relatively soft two multilayered polymer-based pad with embossed surface.	SEMI C100, C102, C103
porous junction	a permeable barrier in pH probe designs which allows contact between the solution to be measured and the reference. This junction is typically designed to minimize outflow of reference electrolyte while maintaining minimal electrical resistance.	SEMI C101
porous surface	an uncompacted ceramic surface often showing fine pits.	SEMI G61
Port	a portion of equipment to send/receive a Material by Material Handshake.	SEMI A1, A5
port	a port assembly appropriately sized for the wafers or disks that are to be transferred. Three port sizes are specified for the purposes of this standard: 100 mm (4 in.) for 100 mm (4 in.) wafer cassettes, 125 mm (5 in.) for 125 mm (5 in.) wafer cassettes, and 150 mm (6 in.) for 150 mm (6 in.) wafer cassettes.	SEMI E19
port	a point on the equipment at which a change of equipment ownership of a transfer object occurs. A port is not itself a material location, but shall have an associated location. A port may be thought of as an access point to an a material location on an equipment. The definition of the term port includes any dedicated mechanisms that either prepare for, facilitate, or are capable of interfering with the transfer. All equipment shall have a minimum of one port.	SEMI E32

Term	*Definition*	*Standard(s)*
port	a particular interface (e.g., ground port) of the specified equipment with the external electromagnetic environment.	SEMI E33, E176
port	an endpoint of a TCP/IP connection whose complete network address is specified by an IPAddress and TCP/IP port number.	SEMI E37
port	a specific type of *carrier location*, which can be accessed by both this *TS system* and other system(s) or person(s). It can hold at most one carrier.	SEMI E153
port	an end of a tube attached to a vessel.	SEMI F66
port	hole through which fluid can pass at the interface between two microfluidic components or layers.	SEMI MS11
port array	designed set of ports arranged a two-dimensional planar array, each with a designed [*X*, *Y*] location.	SEMI MS11
port array origin	position in the *X*-*Y* plane that defines the [0, 0] location for the port array.	SEMI MS11
port assembly	an assembly of the port plate and port door that includes the guide rails, registration pins, latch pins, box hold-down latches, and latch cavities.	SEMI E19
port assembly	an assembly of the port plate and port door that includes the guide rails, registration pins, latch pins, and pod hold-down latches.	SEMI E19.4
port converter	a sandwich component that either changes the port count or port direction.	SEMI C88, F116
port door	a door for the port plate opening that provides a mating surface for the bottom of the box door when the box is in place on the port plate. The port door contains the registration pins and the box door latch pins.	SEMI E19, E19.4
port group	a destination which represents a group of ports.	SEMI E153
port location	the [*X*, *Y*] coordinates of the center of a given port, with respect to the port array origin.	SEMI MS11
port number	the address of a port within an attachment to a TCP/IP network which can serve as an endpoint of a TCP/IP connection.	SEMI E37
port plate	a horizontal mating surface for the base of the box that provides a seal surface for the bottom surface of the box perimeter. The port plate contains the guide rails and the box hold-down latches.	SEMI E19, E19.4
port type	a port type is a named set of abstract operations and the abstract messages involved.	SEMI E139.3
position notch	notch located at the center lines of the pod handles to allow positioning.	SEMI E47
position of mounting holes	indicated by the distances along the longer side and shorter side of the PV modules.	SEMI PV86
position start (PS)	three grooves parallel to CL denoted as PS_1, PS_2 and PS_3 that define the start of the slice ID.	SEMI PV32
position value (PV)	a diagonal groove between PS_3 and CU in the slice ID.	SEMI PV32
positioning of measured patterns	moving pattern to the center screen (center of image field).	SEMI P30
positive integer	may take the value of any positive whole number. Messaging protocol may impose a limit on the range of possible values.	SEMI E39, E40, E41, E53, E58, E90
positive-opening	as applied to electromechanical control devices. The achievement of contact separation as a direct result of a specified movement of the switch actuator through non-resilient members (i.e., contact separation is not dependent upon springs).	SEMI S2
post-chemical mechanical planarization (pCMP)	typically used to describe a cleaning process that occurs immediately after planarization steps.	SEMI C101
post-conditioning	activities performed by the processing resource after departure of the material being processed but related to the processing of that material (e.g., cleanup).	SEMI E40
post-etch feature size	as measured on the top wafer surface.	SEMI MS13

Term	*Definition*	*Standard(s)*
post-processing	a neutralization action which is done by a process means after a wafer is unloaded from the process means such as post-conditioning of a chamber with gas flow.	SEMI E174
posting	all exception agent to decision authority reporting associated with an exception condition while the related abnormal situation is apparent and relevant.	SEMI E41
post-metallization	the process by which metallization is applied to a body (substrate) after the body has been fully sintered.	SEMI G33
post or column spacer	a fixed pillar-shaped spacer formed outside of the pixel opening.	SEMI D13
postural stress	stress occurring when a body position places undue load on the muscles, tendons, nerves, and blood vessels, or produces pressure on a joint.	SEMI S8
pot life	a measure of the maximum time a chemical or slurry blend is usable after the addition of constituents.	SEMI F39
potential dependent CPT	the CPT determined at a potential within the pitting potential range of the tested surface.	SEMI F77
potential independent CPT	the CPT determined at a potential above the pitting potential range, but below the transpassive potential range.	SEMI F77
potential-induced degradation	change of physical properties of solar modules under high electrical potential drop between surfaces and encapsulated solar cells with (potentially) detrimental effect on the power output.	SEMI PV75
potentially hazardous non-ionizing radiation emissions	non-ionizing radiation emissions outside the limits shown in Appendix 4 are considered potentially hazardous.	SEMI S2
powder, polysilicon, also called fines	polysilicon particles with a maximum dimension ≤500 μm.	SEMI PV17
powder process	homogeneously decomposing distilled silane or a halosiliane compound in a reactor by thermolysis to create Si powder.	SEMI PV17
power dissipation, PH	in watts, is the heating power applied to the device causing a junction-to-reference point temperature difference.	SEMI G30, G38, G42, G43, G68
power efficiency	the power efficiency of a matching network is defined as the power exiting the network (output power) divided by the power entering the network (input power).	SEMI E113
power efficiency	the ratio of the power exiting the matching network divided by the power entering the matching network.	SEMI E115
power line communication (PLC)	a communication technology for sending data over power cables.	SEMI E176
power grip	a grip in which the fingers and thumb wrap entirely around the handle such that the thumb contacts or overlaps the index finger.	SEMI S8
power spectral density (PSD) function	statistical function that shows how the mean-square $(rms)^2$ of a given quantity is distributed among the various spatial frequencies inherent in the profile height. Also known as *power spectrum.* It may be considered as a roughness power per unit of spatial frequency.	SEMI M59, MF1811
practical significance test	a test of whether STC Limits have changed by enough to be concerned about in the Annual Review Process.	SEMI C64
practice	repeated exercise in or performance of a task or skill so as to acquire or maintain competency in it.	SEMI E150
pre-align	any alignment done prior to placing a substrate on a measurement process location.	SEMI E30.5
pre-align	set up a substrate to be processed on the chuck. The equipment may have a separate stage for performing the pre-align function.	SEMI E130

Term	*Definition*	*Standard(s)*
pre-processing	an action which is done by a process means before a wafer is loaded to the process means such as preconditioning of the chamber with a gas flow, preheating of the chamber or hot plate.	SEMI E174
precipitates	a localized concentration of dopant at its solubility limit formed during crystal growth.	SEMI M10
precise monofilament	a single solid filament with measurably accurate dimensions.	SEMI 3D12
precision	the closeness of agreement among the measured values at a setpoint. It is often expressed as a standard deviation.	SEMI E56, E69
precision	general estimator of the variability of a measurement process about the mean value of the test results obtained.	SEMI E89
precision or repeatability	a quantity describing the degree of achieving the same ratio of chemical constituents in the blend over time.	SEMI F39
precision positioning	manipulation of an object into a desired position in space within a very narrow range of tolerance.	SEMI MS3
precision-to-tolerance (P/T) ratio	ratio of the precision of a measurement system (MS) to the tolerance (i.e., absolute magnitude of the full range of the product specification).	SEMI E35, E89, M59
pre-conditioning	activities performed by the processing resource before arrival of the material being processed but related to the processing of that material.	SEMI E40
predicted response curve (PRC)	the model-predicted relation between scattered light intensity (or SSIS signal response) and sphere diameter that is used to analyze scanner response near various sphere diameters. The PRC depends upon sphere material and scanner design and is in general non-linear. It may contain regions with response curve oscillations that make the response-diameter relationship multi-valued. A subscript appended to the PRC (e.g., PRC_{silica} or PRC_{PSL}), indicates the sphere material for which the PRC is calculated.	SEMI M53
Predictive Carrier Logistics (PCL)	transportation control of carriers in a factory, which uses predictive information from composing elements to minimize delay due to the system inertia.	SEMI E171
predictive maintenance (PdM)	preventive maintenance (PM) actions that are scheduled based upon results from an advanced notice model (ANM) calculation.	SEMI E10
predictor variable	variable that can contribute to the explanation of the outcome of a designed experiment. Also called ‘input variable,’ ‘descriptor variable,’ and ‘explanatory variable.’	SEMI E89
pre-etch feature size	as defined on wafer in the mask material.	SEMI MS13
prefacilitation	a stage in the equipment installation process that follows base build and precedes tool hookup. Prefacilitation brings the various facilities services close to the new equipment location, including new facilities services and structural modifications required to prepare the facility to accept the equipment. Also known as rough-in, this step is performed as a time-saving operation.	SEMI E70, E76
prefacilitation	the stage in the equipment installation process that follows base build and precedes chassis placement. Prefacilitization brings the various utilities close to the new equipment location, including new utilities required to prepare the facility to accept the equipment.	SEMI F107
prefacilitation pedestal	a matching equipment floor mounting surface intended to act as a means to expedite equipment hookup, as well as, save fab floor space by having pre-plumbed connections. Ideally, the pedestal would be installed and facilitated to the UPOC’s prior to the equipment arrival.	SEMI E76
preferential etch	a selective etch that etches regions of different crystal strain or conductivity at different rates, used to delineate crystal defects or regions of differing conductivity on wafer surfaces.	SEMI M59
perform	a solder material of defined volume that is attached to the base material.	SEMI G53
premium wafer	silicon wafer suitable for particle counting, metal contamination monitoring, and measuring pattern resolution in the photolithography process. The premium wafer has tighter specification values in some specific items for the specific usage, and looser or equal specification values for other items than a prime wafer has.	SEMI M59

Term	*Definition*	*Standard(s)*
prepared plane	the plane to be tested.	SEMI HB8
prepurchase	purchase of materials and equipment in advance of total scope definition to accommodate long lead times.	SEMI E70
prerequisite	competence required by a student in order to learn designated new information or gain competence in designated new tasks.	SEMI E150
prescriptive maintenance (RxM)	specific preventive maintenance (PM) action(s) to perform that may include predefined procedures or predictive maintenance recommended by an advanced notice model (ANM). Depending on the complexity of the predefined procedures or the ANM, the recommended PM action(s) may change based on the specific set of conditions.	SEMI E10
presentation document	a presentation document is a document that has gone through the document presentation process.	SEMI E36
pressure cylinder	a metal cylinder used to store gases under pressure.	SEMI F78
pressure decay method	the method of detection of leakage through pressure loss, over a period of time, within a vessel or piping system.	SEMI F6
pressure difference	absolute air pressure difference between indoor and external surfaces of photovoltaic module roof. When the pressure on the outdoor surface is higher than that on the indoor surface, the pressure difference is positive; otherwise, it is negative.	SEMI PV100
pressure regulator	a valve designed to reduce a high incoming pressure (e.g., from a cylinder) to a lower outlet pressure by automatically opening to allow flow until a desired, preset pressure on the outlet side is reached, then automatically throttling closed to stop further pressure increase.	SEMI F36
pressure relief valve	a device which, at a given design pressure set point, releases gas pressure to prevent system over-pressurization.	SEMI F22
pressure sensor	a device that produces a response proportional to an applied force.	SEMI MS3
pressure standard	a device used to measure the actual test gas pressure through the device under test (DUT).	SEMI F113
pressure transducer	a component which mechanically or electrically senses the pressure within a gas system and transmits a signal to a readout or a control device.	SEMI F22
pressure transducer	a component which mechanically or electrically senses gas pressure. It typically consists of a sensor and signal-processing electronics which enables remote indication of gas pressure.	SEMI F36
pressure-containing envelope	the internal area of a specimen which contains the fluid media.	SEMI F10
pressurization	the use of high purity nitrogen or other appropriate gas to apply pressure to or displace liquid through the distribution system.	SEMI F31
pre-travel (and post-travel), Lp	eliminated portions from a traced length for avoiding the profile distortion caused by transient response of the cut-off filter. Recommended pre-travel with 2CR filter is double the long wavelength cut-off, λ_L, at the beginning of the traced length and no post-travel. Recommended both pre-travel and post-travel with phase correct filter are the same as long wavelength cut-off, λ_L.	SEMI D15
pretreated water	generally refers to treated water that is fed to reverse osmosis (RO) units.	SEMI F61
preventive maintenance (PM)	the performance of preventive actions (e.g., scheduled inspections, maintenance tasks) during a scheduled downtime state designed to reduce the likelihood of equipment failure during operation when it is performing its intended function (e.g., running production units). Also sometimes called scheduled maintenance.	SEMI E149
preventive maintenance (PM)	the performance of PM actions during a scheduled downtime state designed to reduce the likelihood of equipment system failure or performance degradation during operation. PM may be scheduled based upon accumulated time, equipment system usage, equipment system conditions, or outputs of a descriptive model (DM) or an advanced notice model (ANM). One type of PM is sometimes called scheduled maintenance.	SEMI E10

Term	*Definition*	*Standard(s)*
preventive maintenance (PM) action	a predefined PM procedure (including equipment ramp-down and ramp-up), which could be scheduled at intervals or based upon advanced notice models designed to reduce the likelihood of equipment system failure during operation.	SEMI E10
preventive maintenance (PM) event	a downtime event into a scheduled downtime state (SDT) where the SDT PM equipment substate occurs before the equipment exits the scheduled downtime state (SDT).	SEMI E10
primary color	a set of colors that can be combined to produce any desired set of intermediate colors, within a limitation called the 'gamut'.	SEMI D61
primary color	one of a set of colors that are combined to produce any desired set of intermediate colors, within a limitation called the 'gamut.' The primary colors for color television are red, green, and blue. The exact red, green, blue colors used are dependent on the television standard. Display devices do not usually use the same primary colors, resulting in minor color changes from ideal.	SEMI D71
primary containment	the first level of containment (i.e., the inside portion of the container that comes into immediate contact on its inner surface with the material being contained).	SEMI F6
primary containment	tubing, piping, or components whose wetted surface is directly in contact with the chemical. These components are generally made from high purity polymeric materials.	SEMI F31
primary containment	the first level of containment (i.e., the container, piping, or other component) that is intended to come into immediate contact on its inner surface with the material being contained during normal operation, maintenance and service. Primary containment does not include exhaust handling components (e.g., ducting and exhausted enclosures).	SEMI S6, S10
primary exhaust ventilation (PEV)	airflow that, in normal operation, extracts substances of concern from the equipment.	SEMI S6, S18, S30
primary fiducial	a key characteristic of a substrate used to align the substrate during processing (such as a notch or major flat).	SEMI E30.1
primary flat	the flat of longest length on the wafer, oriented such that the chord is parallel with a specified low index crystal plane; sometimes called *major flat*.	SEMI M59
primary flow standard	a device or system which measures flow using a method based on some or all of the primary measurements of length, time, temperature, volume, pressure, or mass.	SEMI E29
primary frame	a communication frame or interval frame generated before corresponding second frame.	SEMI E54.21
primary ions	in secondary ion mass spectrometry, ions created and focused by an ion gun onto the specimen surface to sputter ionize surface atoms.	SEMI M59
primary ion exchange	the first cation/anion exchange step in a high purity water treatment scheme.	SEMI F61
primary message	an HSMS Data Message with an odd-numbered Function. Also, the first message of a data transaction.	SEMI E4, E37
primary message	an odd numbered message. Also, the first message of a transaction.	SEMI E5
primary mode decay time (τ_1)	the decay time constant obtained from an exponential part of the decay curve (primary mode part) of microwave reflectance.	SEMI PV9
primary viewing area	the 30° cone around the normal line of site (15° above, below, and to either side of the line of sight).	SEMI S8
primary/secondary attribute	the least significant bit of the lower message ID which indicates whether a block belongs to a primary or secondary message.	SEMI E4
printed circuit board (PCB)	printed circuit board with circuitry to interconnect devices mounted on it meet a specific application.	SEMI E142
printed circuit board equipment communication interface (PCBECI)	the PCBECI is a SECS-II compliant interface. Messages are recommended to be transmitted via an Ethernet network using HSMS protocol but RS-232-C using SECS-I protocol also applicable for small amount and simple data transmittal.	SEMI A3
printing	pigment-dispersed color ink is placed and patterned on the substrate by printing method.	SEMI D13
prism sheet	the film which improves condensation efficiency and brightness by optimizing the prism shape, in general.	SEMI D36

Term	*Definition*	*Standard(s)*
private attribute	an attribute that is used strictly for internal purposes and is unknown (invisible) through public services.	SEMI E39
privilege	a right granted to an individual, a program, or a process.	SEMI E169, E187
privileged user	a user who is allowed to use system functions that are not available to other users.	SEMI E170
probability density function (PDF)	a mathematical formula that specifies the relationship between values that a random variable may assume and their likelihood of occurrence. It is the first derivative of the CDF.	SEMI E35
probability density function (PDF)	mathematical formula that specifies the relationship between values that a random variable may assume and their likelihood of occurrence. This function It is the first derivative of the cumulative distribution function.	SEMI M59
probe card	the electromechanical interface necessary to enable temporary electrical contact between the substrate to be tested and the tester resource. May consist of multiple components.	SEMI E91, E130
probe card	an interface to connect device pads on the wafer to channels of an ATE.	SEMI G91
probe damage	any damage to the wafer surface caused by mechanical probing or measurement.	SEMI M10
probe head, of a four-point probe	the mounting that (1) fixes the positions of the four pins of the probe in a specific pattern such as an in-line (collinear) or square array and (2) contains the pin bearings and springs or other means for applying a load to the probe pins.	SEMI M59
probe pin, of a four-point probe	one of the four needles supporting the probe tips; mounting in a bearing contained in the probe head and loaded by a spring or dead weight.	SEMI M59
probe tip, of a four-point probe	the part of the pin that contacts the wafer.	SEMI M59
probe-tip spacing, of a four-point probe	the distance between adjacent probe tips.	SEMI M59
prober	an equipment that is used to move the wafer to the test bed for wafer testing.	SEMI G91
problem tasks	tasks which have been defined as presenting ergonomically incorrect conditions that are likely to cause biomechanical stresses or injury to personnel, mis-operation, or damage to equipment or the product.	SEMI S8
procedure blank extraction	a container of test fluid which does not see the component under test. It follows the entire procedure and is handled in the same manner in order to show the background of the test procedure including materials and laboratory environment.	SEMI F40
process and instrumentation drawing (P&ID)	a diagram using graphic engineering symbols to represent the components, flows, and functions that make up a process delivery system.	SEMI E70
process average flow	the average flow rate over the processing cycle. Process average flow should be measured at the equipment point of connection.	SEMI E6
process batch	a set of substrates that are processed simultaneously in a process chamber.	SEMI E1.9
process capability index (Cpk)	smaller of (upper spec limit – mean) ÷ 3 sigma, or (mean – lower spec limit) ÷ 3 sigma.	SEMI M59
process capacity	the maximum number of units of production that can be processed simultaneously throughout the factory (including units being transported by material handling vehicles).	SEMI E124
process carrier	a device or material, usually Si, ceramic, glass, or metal, that provides temporary mechanical support to hold one or more panels during processing.	SEMI 3D20, E181, E181.1, E181.2, E181.3, E181.4
process chamber	a component of the processing equipment capable of processing wafers (i.e., adding manufacturing value) and is usually a part of a process module.	SEMI E180
process chemical	a material that participates in a chemical or physical reaction on the surface of a substrate as part of a manufacturing process.	SEMI S30

Term	*Definition*	*Standard(s)*
process chemicals	solids, liquids, and gases used in the normal use of the equipment included in the scope of this document.	SEMI S14
process control system (PCS)	a system capable of performing process control, which includes one or more of R2R control, FD, FC, FP, SPC, or any future process control functionality defined in this standard for a PCS functional group.	SEMI E133
process control system job (PCSJob)	a unit of work that could be tracked and have data associated with it.	SEMI E133
process cooling water (PCW)	water provided by a facility closed loop to remove heat from semiconductor manufacturing equipment.	SEMI S23
process data object	object with attributes designated to be transferred with the IO data exchange.	SEMI E54.20
process definition	information characterizing manufacturing processes including an estimate for the time a process resource will be engaged in the process; process resource settings; and the process capabilities required for the process.	SEMI E81
process definition element (PDE)	an executable specification of an activity or process on an equipment. The recipe for a particular equipment activity may consist of multiple *PDEs*. A *PDE* is the smallest process definition unit that can be individually managed with FICS participation or knowledge. Each *PDE* includes a *PDEheader* and a *PDEbody*.	SEMI E139
process durable	a specialized durable used by process equipment and specified by the user as part of the process, such as a reticle or burin-in board.	SEMI E98
process equipment	processing equipment, testing equipment, buffer equipment, etc. that are used for FPD manufacturing.	SEMI D51
process equipment	fabrication equipment, inspection equipment, and cassette stage equipment used in semiconductor manufacturing.	SEMI E23, F49
process equipment	equipment used to make semiconductor devices. This excludes metrology and material handling equipment.	SEMI E82, E88
process equipment	equipment used to produce product, such as semiconductor devices. This excludes metrology and material handling equipment.	SEMI E87, E109, E171
process equipment	equipment whose intended function is to process product, adding value to the product.	SEMI E98
process equipment	equipment used in the design, development, manufacture, assembly, measurement and test of semiconductors.	SEMI F107
process equipment	equipment in which a wafer or other substrate is deliberately altered, such as by the addition, modification, or removal of material.	SEMI S30
process flow	the part of a product specification that defines the sequence of process steps for the manufacturing of a specific product.	SEMI E81
process flow context	navigational information pertaining to a product's progress as it traverses its context process flow.	SEMI E81
process gas	for mass flow controllers and mass flow meters, the principal gas which the user requires the device to control or measure.	SEMI E29
process gas panel	a subsystem, generally contained within a gas cabinet, that delivers process gas from the cylinder to the specialty gas distribution system.	SEMI F22
process job	a material processing job for a processing resource specifying and tracking the processing to be applied to the material.	SEMI E40, E168.1, E172
process job group (PJG)	a group of wafer which is specified by one PJ.	SEMI E174
process lines	surface features that are a result of the material removal or forming process used in manufacturing of a component.	SEMI F19
process liquid	a substance that participates, while in the liquid state, in a chemical or physical reaction on the surface of a substrate as part of the manufacturing of semiconductor or flat panel devices.	SEMI S3

Term	*Definition*	*Standard(s)*
process liquid heating system (PLHS)	a heating system comprised of the heater, its power and control systems, the vessel in which the liquid chemical is heated, and, if applicable, the heat transfer liquid and its associated piping.	SEMI S3
process marks	a surface texture or pattern that is characteristic of the surface finishing process employed.	SEMI F73
process mode	the condition where the equipment is energized and performing its intended function on target materials (such as implanting wafers, pumping gas, or inspecting photo-masks).	SEMI E167
process mode	the mode in which the SME is performing its intended function on target materials (such as implanting wafers, or inspecting photo-masks).	SEMI S23
process module	a module that accepts or presents a single wafer inside the module for intratool transport.	SEMI E21, E166
process module	a component of the equipment capable of processing material (i.e., adding manufacturing value). A process module is directed in its processing by equipment recipes, which are under the control of the factory user. Process chamber is another term for process module. The SEMI E120 Module class describes the same concept. A process module can contain other process modules (sub-modules).	SEMI E157
process module	a component of the equipment capable of processing material (i.e., adding manufacturing value). Process chamber is another term for process module. The term process module applies equally to equipment components where measurement or inspection occurs.	SEMI E168.1
process panels	a gas source control piping system for delivering process gases.	SEMI F28
process path	a specific set of equipment modules a unit passes through for which each equipment module is unique and has no alternative equipment modules.	SEMI E10, E79
process plumbing	tubing or piping whose surface is directly in contact with the chemical. Typically constructed from high purity perfluorinated materials or other high purity polymers.	SEMI F46
process program parameter	a parameter in the preplanned and reusable portion of the set of instructions, settings, and parameters under control of the equipment that determine the processing environment seen by the manufactured object and that may be subject to change between runs or processing cycles.	SEMI E126
process-site	a location on the equipment where work is performed on a packaged device (i.e, electrical test-site, lead conditioning site).	SEMI E123
process step	the smallest unit of processing activity that can be defined in a process flow. One or more process steps are sequenced to define an operation set.	SEMI E35, E81
process subsite	an addressable portion of a process-site.	SEMI E123
process test wafer	silicon wafer suitable for process monitoring as well as some processing applications in semiconductor manufacturing. Also called *monitor wafer*.	SEMI M59
process unit	refers to the material that is typically processed as a unit via single run command, process program, etc. Examples include wafers, cassettes, magazines, and boats.	SEMI E30
process vessel	a vessel in which substrates are processed by contact with a process liquid.	SEMI S3
process vessel	primary containment in which substrates are exposed to chemicals, heat, radiation, or vibration.	SEMI S6
processed image (micropatterning)	any single geometric form appearing in the realized pattern or topographical variation in a material surface or material constitution, obtained by a physical process of pattern transference from an optical image.	SEMI P25
processed wafer	finished by wafer process or assembly process including TSV fabrication and so on.	SEMI G96
processing agent	an intelligent system within a factory which is independently capable of providing manufacturing value added to material.	SEMI E40
processing cycle	a sequence wherein all of the material contained in a processing unit is processed. This is often used as a measure of action or time.	SEMI E6
processing cycle	a sequence wherein all of the material contained in a typical process unit is processed. This is often used as a measure of action or time.	SEMI E30

Term	*Definition*	*Standard(s)*
processing equipment	equipment that has process chamber(s), control mechanisms, and their controllers, and is capable of processing wafers (i.e., adding manufacturing value).	SEMI E180
processing equipment module	an equipment module within an equipment system. Examples of processing equipment modules include chambers and stations that provide functions for processing, metrology, inspection, testing, and packaging of units.	SEMI E10, E79
processing resource	an entity within a processing agent which provides the manufacturing value added to material.	SEMI E40
product	units produced during productive time (refer to unit).	SEMI E10, E79
product	(1) from the equipment's perspective, product is a synonym for substrate, and includes non-product substrates such as test substrates and send-ahead substrates. (2) from the factory perspective, product is the material being processed and produced by the factory.	SEMI E98
product	any unit intended to become a functional semiconductor device. This includes functional engineering devices.	SEMI E78, E129
product	any unit intended to become a functional semiconductor device.	SEMI E163
product	a single semiconductor device or circuit or a unit of packaged ones, usually in a sealed box for logistics or distribution.	SEMI T20
product chemical	the name given to the actual chemical produced on site by the OSCG system.	SEMI F46
product notices	documentation provided over time by the supplier about the equipment to notify the purchaser of specific updates, actions required, changes, etc.	SEMI E149
product package	the first tie, wrap, or container to a single item or quantity thereof that constitutes a complete identifiable pack. Product package may be packaged together or a group of the parts packaged together. Product package is also called unit pack.	SEMI G71
product package	the smallest package format, made by a single material. Also called a unit pack.	SEMI G83, T20.1
product standard deviation ($\sigma_{Product}$)	population standard deviation associated with the distribution of values of all possible realizations of a property of an entity manufactured under specified conditions.	SEMI E89
product time measurement (PTM)	the process for constructing an analysis-ready data set representing the time segments and time elements for a product unit over a specified period of time.	SEMI E168
product time waste	time during the life cycle of a product unit (substrate or lot) that could be eliminated without negatively affecting the resulting product. Product time waste may occur in any time segment whether it is categorized as active time or wait time.	SEMI E168
product unit	an individual substrate or cohesive group of substrates (e.g., a lot) that remain together during a specified time period.	SEMI E168
product yield (PRY)	the fraction of units that pass through the factory and result in good product. Product yield for units is the composite of all sources of yield loss.	SEMI E35, E140
production efficiency	the throughput-rate and cycle-time efficiency multiplied by the WIP efficiency (measures the efficiency of production with respect to factory dynamics).	SEMI E124
production equipment	equipment used to produce semiconductor devices, including wafer sorting, process, and metrology equipment and excluding material handling equipment.	SEMI E82, E88, E153, E157, E167, E167.1
production equipment	equipment used to produce product, such as semiconductor devices, including substrate sorting, process, and metrology equipment and excluding material handling equipment.	SEMI E87, E109, E170, E171, E174
production equipment	equipment that measures or adds value to the product.	SEMI E94
production equipment	process equipment and measurement equipment.	SEMI E98
production equipment	equipment used to produce semiconductor devices, including sorting, process, and metrology equipment and excluding material handling and storage equipment.	SEMI E168, E172

Term	*Definition*	*Standard(s)*
production equipment	equipment used to manufacture, measure, assemble, or test semiconductor products but not including AMHS.	SEMI E187
production lifetime	the number of years the equipment is used for manufacturing.	SEMI E35, E140
production lot	a group of solder spheres all produced through the manufacturing equipment at the same time.	SEMI G93
Production Recipe	a recipe which is used for host triggered process job (PJ) creation. Production Recipes are not only recipes for mass production lots but also recipes for engineering lots, etc., if the recipes are used by host triggered PJ creation. Any recipe that is prepared to be used for host triggered PJ creation shall be considered as a Production Recipe.	SEMI E170
Production Recipe Cache (PRC)	a logical recipe space which holds Production Recipes to be used for process job creation demand from the host.	SEMI E170
production time	the sum of all periods of time in which a processing equipment module is performing its intended function. For a noncluster tool, a single-path cluster tool (SPCT), or an individual processing equipment module within a multipath cluster tool (MPCT), production time is equivalent to the SEMI E10 productive time for that entity. For an intended process set (IPS) or an MPCT, production time is the sum of the SEMI E10 productive times of all processing equipment modules.	SEMI E79
productive entity	productive entity is an abstraction of a physical unit, which is involved in any way in a production process (e.g. production or supporting equipment). A productive entity has its own internal logic and provides a software interface to access this logic.	SEMI E96
productive state (PRD)	the equipment state in which the equipment system is performing its intended function.	SEMI E10, E79
productive time	during an observation period, the accumulated time when the equipment system is in the productive state (PRD).	SEMI E10, E79
profile angle, °	typically measured from the horizontal plane of the wafer surface.	SEMI MS13
profile defect	any defect or discontinuity that reduces the wall thickness below that of the parent metal.	SEMI F78, F81
profile or one-dimensional PSD of the surface height, [μm^3]	a function of the spatial frequency, f_x, in units of inverse micrometers, μm^{-1}.	SEMI MF1811
profile slope, of an epitaxial layer	the difference between the net carrier density at 0.75 of the layer thickness and the net carrier density at 0.25 of the layer thickness divided by one-half the layer thickness.	SEMI M59
profiled metal sheet	the metal plate is cold formed to be a continuous wave or other cross-section profiled metal sheet along the width direction of the sheet as defined in GB 50896.	SEMI PV100
profiles	application Object Model specifications.	SEMI E54.12
program verification	the process of monitoring robot functions after teaching that may involve operation of a robot, with interlocks defeated or barriers removed, at a speed greater than that used in teaching.	SEMI S28
programmable logic controller (PLC)	a system consisting of software and hardware usually to fulfill monitor and control tasks.	SEMI F97
programmed gas calibration	a reference to a particular gas type, range, and units for which the device is currently calibrated.	SEMI E54.22
project management	the set of activities that define, direct, monitor, and report construction activities such as workmanship, adherence to design, cost, and schedule conformance.	SEMI E70
projection	a raised portion of the surface indigenous with the parent material, other than a burr.	SEMI G2
projection	an adherent fragment of excess parent material on the component/package surface.	SEMI G3, G22, G33, G39, G50

Term	*Definition*	*Standard(s)*
projection, on a semiconductor package, plastic or ceramic, leadframe or perform	an irregularly raised portion of a surface indigenous to the parent material.	SEMI G1, G26, G34, G58, G61
projection magnification	projection magnification of a reticle.	SEMI P42
projector	an instrument used to measure shape and dimension of an object by optically projecting it at a given magnification. Also referred to as a measuring projector or profile projector.	SEMI F52
proof pressure	the maximum gas pressure the MFC may be subjected to without permanent damage. Some adjustment may be necessary to make it meet its specified performance when returning to normal operating pressure.	SEMI E28
proof pressure	a pressure greater than the cylinder valve's rated pressure that the cylinder valve can withstand without impairing its ability to meet the leak rate limits specified in SEMI F1 upon return to rated pressure.	SEMI F4
proof pressure	the maximum pressure the device could be subjected to without any permanent damage.	SEMI F113
Propagator	a communication role that relays a General Data message to the next adjacent equipment.	SEMI A1
properties	a set of name value pairs assigned to an object or used in a service message to include additional information about the object (i.e., carrier, port, etc.).	SEMI E87, E109, E170, E171, E174
property	an annotation element consisting of a name plus an optional list of values, supplying descriptive information about the characteristics of the file or one of its components.	SEMI P39
protection sheet	the sheet placed on the top of BLU for protecting other components from damage of outside.	SEMI D36
protective conductor	a conductor that provides electrical continuity between conductive components that are not intended to be energized during normal operations and the equipment's protective earthing conductor terminal.	SEMI S22
protective container	a sealable plastic bag or other container which will keep hazardous material from the mass flow device from contaminating the outer package. The container should be transparent, if possible.	SEMI E34
protective earthing conductor	a normally non-current carrying conductor connected between earth (ground) at the source of supply and the protective earthing (grounding) terminal on the equipment enclosure.	SEMI S22
protective earthing conductor terminal	a terminal bonded to conductive parts of an equipment enclosure for safety purposes and intended to be connected to an external protective earthing (grounding) conductor (the protective earthing conductor).	SEMI S22
protective earthing system	the earthing (grounding & bonding) system connecting accessible conductive parts of the equipment to an external earth (ground) at the source of supply. The protective earthing system may include bonded structural members, bonding jumpers, the protective earthing conductor terminal on the equipment and the protective earthing conductor in the incoming supply wiring to the equipment.	SEMI S22
protocol	description of procedures, materials, and practices used to define a methodology for accomplishing a specific task. Typically refers to material and personnel handling to maintain cleanroom integrity.	SEMI E70
protocol independent	for software, this means that the message descriptions are independent of delivery mechanisms.	SEMI E94
protrusion	an adherent fragment of excess material on the surface of lid or perform.	SEMI G53
protrusion	a large, severe projection larger than the cell gap width. Will cause cell gap defect.	SEMI D13
protrusion dot	a locally protruded region with a reflectance which differs from that of the surrounding surface.	SEMI T14, T14.1

Term	*Definition*	*Standard(s)*
protrusion dot misalignment, within a cell	the distance between the physical center point of a protrusion dot and the cell center point.	SEMI T14, T14.1
provenance	the chronology of the contents, ownership, custody, or location of a RITdb object.	SEMI E183
provider	node or source sending data to one or many consumers.	SEMI E54.14
provisional STC limits	an STC limit is provisional when there is too little uncensored data used in STC limit estimation. A provisional STC Limit is always updated upon Annual Review. How these limits are applied for the purpose of shipping material is left to the individual suppliers and producers to decide.	SEMI C64
proximity range	distance over which a feature influences another significantly (criterion to be stated). It applies to mask fabrication, mask metrology and/or printed wafer image, defining three types of proximity range (e.g., *mask fabrication proximity range*). It is mandatory to state which of the 3 types is referred to.	SEMI P43
proxy server	a server that services the requests of its clients by forwarding those requests to other servers.	SEMI E169
PSS pattern missing	absence of at least one PSS pattern in an otherwise perfect periodic patterned sapphire substrate.	SEMI HB9
PSS shot fail	grid lines of epitaxial wafers formed by mismatch or gap between adjacent shots in processing patterned sapphire substrate.	SEMI HB9
p-traps	mechanical drain connections designed to prevent air transfer between drain systems and points of use.	SEMI S12
p-type	variety of semiconductive material in which the majority current carriers are holes, formed when acceptor impurities incorporated into the crystal dominate.	SEMI M59
public attribute	an attribute that is known (visible) and whose current value is provided as a service to other entities upon request.	SEMI E39
public key cryptography (PKC)	also known as Asymmetric Key Cryptography, a cryptographic algorithm that employs two keys for encryption and decryption of data. One key is designated as the public key and can be freely advertised, while the other key, designated as the private key, is never revealed. Data encrypted with one key can only be decrypted with the other key. PKC is widely used for key exchange and message signing.	SEMI E132
public rootCA	rootCA by which the certificate is registered in common operating systems (OS) and browsers.	SEMI T21
published port	a TCP/IP IP Address and Port number associated with a particular entity (server) which that entity intends to use for receiving TCP/IP connection requests. An entity's published port must be known by remote entities intending to initiate connections.	SEMI E37
pullback, on a semiconductor package	a dimension covering the linear distance between the edge of a cavity cut into a ceramic layer and the first measurable glass or metallization layer interface coated onto the top surface of that layer. The total pullback may be the result of the high temperature processing required to manufacture the package or to coat the surface. It may also be the result of design considerations.	SEMI G1, G3, G5, G22, G26, G33, G34, G39, G50, G58, G61
pulsed gas tungsten arc welding	a gas tungsten arc welding process variation in which the current is varied in regular intervals.	SEMI F78, F81
pulsed test	a test performed to determine particle contribution as a result of actuation of valves in the gas delivery system.	SEMI F70.1
pumping	a mechanical or pneumatically operated technique used to create hydraulic force in the system.	SEMI F31
pump	a mechanical or pneumatically operated device used to create hydraulic force for chemical transfer.	SEMI F46
pump alarm	a cautionary signal that the pump has stopped or is to be stopped.	SEMI E73, E74
pump warning	a state of an abnormal or extraordinary event during pump operation which means there is a probability the pump will stop.	SEMI E73, E74

Term	*Definition*	*Standard(s)*
punch list	a list of corrective actions required to fulfill contractual obligations.	SEMI E70
purchase order (P.O.)	a document used by a buyer to acquire a product or service, usually contains the terms and conditions (including price) governing the sale.	SEMI E70
pure gas	an inert gas, minimum purity of 99.9995%, and less than 1 ppb of each impurity that is specified to be removed by the DUT.	SEMI F67, F68
purge	to dilute potentially harmful material in the mass flow device by flowing an inert gas through the device. Purging a chemical delivery line containing a mass flow device with an inert substance is intended to dilute hazardous materials and reduce the level of the hazard. To be effective, the inert substance must be able to reach all points within the chemical delivery system in sufficient quantity to dilute the hazardous material to safe levels. The nature of the hazard and the physical configuration of the chemical delivery system must be considered when developing a purge procedure.	SEMI E34
purge	the use of N2, CDA or some other inert or nonreactive gas to evacuate the line or vessel containg another chemical, waste or process media. Selection of the gas should consider that it is neither reactive nor contaminating to the process line or vessel.	SEMI F31
purge	the application of an inert gas, or gas mixture, to the OD or ID surface of the weld joint to displace non-inert atmospheric gases. A block purge is a non-flowing purge with positive pressure.	SEMI F78, F81
purge (v)	use a nonreactive fluid to remove air, process chemicals, byproducts, or other materials from fluid handling components. The fluid is one that neither reacts undesirably with any material foreseen to be in the components nor contaminates the components.	SEMI S30
purge cycle	following the initial process vent step, a cycle is defined as a pressurization step followed by an evacuation step.	SEMI F29
purge efficiency	the ratio of Gas A concentration before and after the purge event.	SEMI F80
purge gas	an inert gas, or gas mixture, used to displace the ambient atmosphere from the inside (ID) of the weld joint.	SEMI F78, F81
purge mode	control valve fully open.	SEMI E66
purging	the process of displacing gases (including vapors) from an enclosure to reduce the concentration of any flammable gases (including vapors) to no more than 25% of their LFL.	SEMI S3
purified metallurgical grade Si (pmg-Si), also called metallurgical grade Si (umg-Si)	metallurgical silicon that is purified by applying metallurgical processes to Si, such as slagging, filtering, melting with subsequent oriented solidification, leaching or etching.	SEMI PV17
purified nitrogen	nitrogen purified to meet the following characteristics: Moisture <20 ppb Oxygen <10 ppb Total hydrocarbons <1 ppm CO_2 <1 ppm CO <1 ppm	SEMI F29
purifier	generally a catalytic (getter, or reactive), resinous, or diatomaceous material within a pressure vessel which removes particulate and/or trace gas impurities from a gas stream.	SEMI F22, F67, F68
purifier	an in-line device used for the removal of homogeneous impurities from gases, typically consisting of a packed-bed of active solids contained in a stainless steel housing. The active purification media may remove impurities such as moisture, oxygen, CO, CO2, hydrocarbons, hydrogen, or nitrogen from specific gases using a variety of chemical reaction, physisorption, or chemisorption mechanisms. Point-of-use purifiers often contain a particle filter within the same housing.	SEMI F36
purifier capacity	the total quantity of each trace gas impurity that may be sorbed by the purifier media. Defined as liters impurity/liter purifier media.	SEMI F67, F68
PV module UV test chamber	an enclosure that reproduces the UV part of natural sunlight in order to verify the ability of the PV modules to resist UV radiation.	SEMI PV77

Term	*Definition*	*Standard(s)*
PV Si Feedstock or Solar Grade Silicon	the designation given to a silicon solid material by a manufacturer or purchaser whereby the characteristics of that material are sufficient to produce silicon solar cells.	SEMI PV49
PV silicon materials for photovoltaic applications	the designation is given to silicon solid materials in accordance to SEMI PV17 and SEMI PV22.	SEMI PV43
PVEC-interface	the Photovoltaic Equipment Communication Interface (PVEC-Interface) is a SECS-II compliant interface. Messages are transmitted via an Ethernet network using HSMS protocol. The functionality is based on SEMI E30 with the restrictions and additions defined in this document.	SEMI PV2
pyrophoric	capable of spontaneous ignition in air at or below a temperature of 54.5°C (130°F).	SEMI F6
pyrophoric chemical	a chemical which upon contact with air will ignite spontaneously at or below a temperature of 54°C (130°F).	SEMI S4
pyrophoric chemical	a chemical which upon contact with air may ignite spontaneously at or below a temperature of 54°C (130°F).	SEMI S18
pyrophoric material	a chemical that will spontaneously ignite in air at or below a temperature of 54.4°C (130°F).	SEMI S2, S6, S14
QC tank	storage tank for the staging of chemical to be quality verified prior to release to the Product storage tank. This optional quality verification scheme allows for 100% chemical verification.	SEMI F46
q-axis, of a cross-sectional view of the edge of a wafer	the reference line with the origin at the intersection of the reference line and the wafer periphery and the positive direction toward the wafer center.	SEMI M59
qualification	certification of compliance with contractual stipulations before release to manufacturing production use.	SEMI E70, F107
qualification test	a test conducted on samples of production articles manufactured to a single design to establish the performance rating of a product. The tests are extensive and closely controlled and completely analyze the characteristics of a component for use in a high-purity installation.	SEMI F1
qualified employee	a person trained and proficient in the equipment and operation to be performed, including recognition of the hazards and necessary protective measures.	SEMI S19
qualified person (fall arrest and restraint systems)	individual having extensive knowledge, training, and experience designing, analyzing, evaluating and specifying fall arrest and restraint systems.	SEMI S2
qualified personnel	those persons trained and capable of performing activities involving the risks associated with the defined tasks.	SEMI S18
quality	the quality is determined by subtracting the sum of the maximum acceptable gas phase impurity levels, expressed in percent, from 100. The result is truncated after the first significant figure which is not a nine. The quality does not represent an assay.	SEMI C3
quality area	the center area to the substrate where specified substrate quality criteria (primarily internal defects, surface contamination, surface defects, waviness, and surface roughness) are applicable.	SEMI D9
quality area	the central area of wafer surface, defined by a nominal edge exclusion, EE, over which the specified values of a parameter apply.	SEMI HB9
quality assurance/quality control (QA/QC)	activities performed to ensure compliance with contractually-stipulated conditions.	SEMI E70
quality efficiency	the fraction of theoretical production time for actual units that an equipment system is processing effective units assuming theoretically efficient time standards.	SEMI E79
quality efficiency (time divided by time)	the theoretical production time for effective units divided by the theoretical production time for actual units.	SEMI E124

Term	*Definition*	*Standard(s)*
quality factor	a measure of the sharpness of a resonance peak.	SEMI MS3, MS4
quality level	maximum defect level agreed upon by the user and the customer.	SEMI M59
quality traceability	in order to enable the tracing of production history data of device, the association information as a trigger is incorporated into the authentication code for the device.	SEMI T22
quantization resolution	smallest possible change in indicated value of a measurement device (e.g., the least significant bit of a digital instrument).	SEMI P35
quantum efficiency	the number of collected electrons per incident photon at a specific wavelength in percent units.	SEMI PV69
quarter wavelength	the length equal to one quarter of a wavelength at a given frequency, where the wavelength is equal to the speed of light divided by the frequency.	SEMI E114
quartz etched attenuated phase shift mask	an attenuated phase shift mask having a quartz etched portion for phase angle control.	SEMI P29
quasi-hermetic package	hermetic over a limited amount of time. Conventional package materials such as metal, glass or ceramic are used but an organic adhesive material forms the seal.	SEMI MS3, MS8, MS10
query	a message sent to a server (e.g., the productive entity) by a client interested in some information from the server (state of the productive entity). A query may or may not have arguments and it always has an answer. The semantics of a query is that some information from the server is returned, but the query cannot effect any change to the state of the server.	SEMI E96
quiet zone	an unmarked background area that surrounds the entire code symbol.	SEMI T9
quiet zone	areas of space surrounding the machine-readable symbol. Quiet zone requirements may be found in application and symbology specifications. Sometimes called ‘Clear Area’ or ‘Margin.’	SEMI T10
quiet zone	an unpatterned, unmarked area that surrounds a mark field.	SEMI D32, T11, T16
quiet zone	a region outside the finder pattern that contains no discontinuities in surface characteristics.	SEMI T24
R type U-shaped lamp	a CCFL which has a round part at the middle and two sides face each other.	SEMI D47
Ra	roughness average. The arithmetic average of the absolute values of the measure profile height deviations taken within the sampling length and measured from the graphical centerline.	SEMI F82, F83, F84, F85, F86, F87, F88, F89, F90, F91, F92, F93, F94, F95
Ra Avg.	average Ra of a set of surface roughness measurements.	SEMI F19
Ra Max	maximum Ra of a set of surface roughness measurements.	SEMI F19
Ry Max	maximum Ry of a set of surface roughness measurements.	SEMI F19
raceway	an enclosed channel of metal, or nonmetallic materials, designed expressly for holding wires, cables, or busbars.	SEMI S22
radial direction	obtaining a scan perpendicular to the length of a component, such as 90° to the extrusion direction of a piece of pipe.	SEMI C87
radial gradient	not preferred; use resistivity variation.	SEMI M59
radiant heat shield	a component, opaque to the radiant energy, intended to keep the radiant heater from heating liquid overtemperature sensors or other components by radiant heating. For example, one could place a radiant energy shield between a radiant heater and a liquid overtemperature sensor so that the liquid overtemperature sensor could be activated by heat conducted by the liquid, but not by heat radiated through the liquid.	SEMI S3

Term	*Definition*	*Standard(s)*
radiant heater sheath	a component, comprised of a material transparent to radiant heat, that contains a heating element and may contain other components. A radiant heater sheath separates the heating element and its other contents from the liquid in which it is immersed. (These sheaths are typically made of quartz and called ‘quartz sheaths.’)	SEMI S3
radiated emission	electromagnetic field (EMF) emanating from equipment.	SEMI E176
radiated susceptibility (RS)	equipment vulnerable to radiated emissions.	SEMI F53
radio frequency (rf)	electromagnetic energy with frequencies ranging from 3 kHz to 300 GHz. Microwaves are a portion of rf extending from 300 MHz to 300 GHz.	SEMI S2
radius of curvature, $\widehat{R}_x$	radius of a circle fitted to the measured surface profile.	SEMI MF1811
rail guided vehicle (RGV)	a vehicle guided by a rail (or rails) on the floor.	SEMI S17
raised floor	the floor system within the production space that is removable to allow access for utility routing and connection.	SEMI E70
raised floor	the removable floor system installed above the actual building floor within cleanroom environments to control air flow and allow access for utility routing and connection.	SEMI E76, F107
ramp	constant rate of change in pressure (dp/dt = k).	SEMI F64
ramp-down	the portion of a maintenance procedure required to prepare the equipment for hands-on work. It includes any necessary activities (e.g., purging, cool-down, warm-up, software backup, storing dynamic values [e.g., parameters, recipes]). Ramp-down occurs only in the scheduled downtime and unscheduled downtime states.	SEMI E10
ramp-up	the portion of a maintenance procedure required, after the hands-on work is completed, to return the equipment to a condition where it can perform its intended function. It includes any necessary activities (e.g., pump down, warm-up, stabilization periods, initialization routines, software load, restoring dynamic values [e.g., parameters, recipes], control system reboot). It does not include equipment or process test time. Ramp-up occurs only in the scheduled downtime and unscheduled downtime states.	SEMI E10
random effect	variable for which estimates of the mean are not obtained for each level; rather the variable is treated as a variance component.	SEMI E89
random factor	factor that has randomly sampled levels from a population of levels.	SEMI E89
random surface profile	surface height profile that involves parameters that are distributed according to statistical distribution laws rather than having fixed or deterministic values. Also known as *random roughness.*	SEMI MF1811
random variable	a measurable event occurring such that any value from its distribution is equally likely to take place.	SEMI E35
random variable	measurable event occurring such that any value from its distribution is equally likely to take place.	SEMI M59
randomization	process of moving material from a carrier source location to a carrier destination location in a mathematically random pattern.	SEMI E94
randomly shaped defects	the size of the defects to which the defect categories cannot be applied is defined by the two dimensions of the smallest rectangle that encloses the defect. If the defect affects a structure, the shape of the defect is defined by the two dimensions of the smallest rectangle enclosing this new shape.	SEMI P22
range	the region between the limits within which a quantity is measured, expressed by stating the lower and upper range values.	SEMI E27
range	the algebraic difference between the maximum and minimum values.	SEMI E77
range	a scalar value that is the difference between the maximum (max) and minimum (min) value. Range can also refer to a set of values between the max and the min.	SEMI E151
range or dynamic range	the limits of gas concentrations that the sensor is specified to detect.	SEMI MS14

Term	*Definition*	*Standard(s)*
rare gas	any of the six gases, all noble, comprising the extreme right-hand group of the Periodic Table; namely helium, neon, argon, krypton, xenon, and radon.	SEMI C3
rate efficiency	the fraction of production time that an equipment system is processing actual units assuming theoretically efficient time standards.	SEMI E79
rated pressure	the manufacturer's recommended maximum allowable operating pressure at the manufacturer's rated temperature.	SEMI F1
rated pressure	the pressure at which the cylinder valve can meet the performance and qualification requirements of this specification. Rated pressure shall be specified by the manufacturer.	SEMI F4
raw water	any untreated natural water like river water, lake water, ground water, or seawater. May also refer to the treated feed water that enters a plant from a municipal drinking water source or other source.	SEMI F61, PV3
R beveled edge	a beveled shape of an arc in respect to the surface and cut edge surface. One characteristic is that the complete cut edge surface is ground with a wheel and processed into a frosted glass state. Generally, in TFT liquid crystals, R-beveled edges are used more often.	SEMI D9
R-bit	a bit in the header signifying the direction of the message.	SEMI E4
reach	the distance measured from the interface plane to the wafer centroid within a process or cassette module.	SEMI E21, E166
reaction form, survey	a document with a series of questions that are used to obtain opinions from course participants about their participation in a current or recently completed course with the purpose of discovering aspects of the training that can be improved.	SEMI E150
reactive maintenance (RM)	the performance of corrective actions necessary to restore an equipment system that has experienced an unexpected failure event.	SEMI E10
read position	any position where the tag on a pod can be read.	SEMI E109
read position	any position on a load port or in an internal buffer from which the tag on a carrier can be read.	SEMI E87
reader head	a structured portion which functions to detect the ID code. The ID reader unifying a head function inside its body can be placed as a head. The ID reader not unifying a head function will be located separately from the head.	SEMI E118
reader/writer head	a structured portion which functions to detect the ID code and/or to write the ID code. The ID reader/writer unifying a head function inside its body can be placed as a head. The ID reader/writer not unifying a head function will be located separately from the head.	SEMI E99
readily accessible	capable of being reached quickly for operation or inspection, without requiring climbing over or removing obstacles, or using portable ladders, chairs, etc.	SEMI S2, S22
reading window	an area on a wafer in which the dot matrix symbol(s) have to be placed, in order to be read by a reader.	SEMI PV29
read-only attribute (RO)	may not be changed through public services.	SEMI E39
readpoint	cumulative cycles applied to the MFC.	SEMI E67
read/write attribute (RW)	may be changed through public services.	SEMI E39
real (REAL)	a floating point number, four bytes long, as defined by IEEE 754.	SEMI E54.1, E54.10, E54.22
real profile	an intersection of a target surface with a plane perpendicular to the surface.	SEMI D15
rear (of carrier)	the part of the carrier farthest from its door.	SEMI E158, E159, E185
rear (of carrier)	the furthest side from the equipment.	SEMI G92, G95
rear (of FOSB)	the part of the FOSB farthest from its door.	SEMI M80

Term	*Definition*	*Standard(s)*
rear (of Panel FOUP)	the part of the Panel FOUP farthest from its door.	SEMI E181, E181.1, E181.2, E181.3, E181.4
rear retainer	a retainer which is attached in a rear side of a cassette, the rear side which is defined in SEMI E1.9.	SEMI M29
reassemble	the step-by-step putting back together of a subassembly or assembly.	SEMI E149
rebuild	consists of those services/actions necessary for the restoration of unserviceable component parts, subassemblies, assemblies, or equipment to a like-new condition in accordance with original manufacturing tolerances or specifications.	SEMI E149
Receive Port	a Port that has a function of receiving in a Material.	SEMI A1, A2, A5
receiver	equipment or device that is basically on the receiving side of single substrates in the single substrate transfer process.	SEMI D51
receiver	the end of the SECS-I link receiving a message.	SEMI E4
receiver	the HSMS Entity receiving a message.	SEMI E37
receiver	a system that generally contains apertures, filters and focusing optics that gathers the scatter signal over a known solid angle and transmits it to the scatter detector element.	SEMI ME1392, PV15
receiver solid angle, Ω	the solid angle subtended by the receiver aperture stop from the sample origin.	SEMI ME1392, PV15
receiving port	for a specific transfer, the port into which a transfer object is to be placed.	SEMI E32
recipe	the preplanned and reusable portion of the set of instructions, settings, and parameters under control of a processing agent that determines the processing environment experienced by the units in the entire equipment system (i.e., processing equipment modules and nonprocessing equipment modules). Recipes may be subject to change between runs or processing cycles.	SEMI E10, E79
recipe	the pre-planned and reusable portion of the set of instructions, settings, and parameters under control of a processing agent that determines the processing environment seen by the material. Recipes may be subject to change between runs or processing cycles.	SEMI E40, E42
recipe	the pre-planned and reusable portion of the set of instructions, settings and parameters that determine how a job is to be performed. For example, recipes are used to describe Process Steps and are typically contained within a Product Specification. They determine the processing environment seen by a manufactured product (e.g., wafer). Processing recipes may be subject to change between product runs or processing cycles.	SEMI E81
recipe class	a formal grouping of recipes with a common language syntax and functionality.	SEMI E42
recipe component	an executable specification that is managed by the equipment as a separate entity (e.g., file). A recipe component represents all or part of an equipment recipe. For a multipart recipe, a recipe component may be referred to as a subrecipe. A recipe component may contain zero or more recipe steps.	SEMI E157, E172
recipe executor	a component of a module that stores and executes recipes.	SEMI E40, E170
recipe executor	a component of a module/executing agent that stores and executes recipes.	SEMI E42
recipe execution space	a recipe space in the equipment which holds the recipe(s) under execution.	SEMI E170
RecipeID	an identifier of a pre-planned and reusable portion of the set of instructions, settings, and parameters under control of a processing agent that determines the processing environment seen by the material (e.g., wafer).	SEMI E54.24
Recipe Management System (RMS)	a factory information system that manages recipes in the factory and is a part of the host. The term RMS may be replaced with the term host in some cases.	SEMI E170
recipe namespace	a logical management domain with the responsibility for the storage and management of recipes. It ensures the uniqueness of recipe identifiers and provides services pertaining to recipes stored within that domain.	SEMI E40, E42

Term	*Definition*	*Standard(s)*
recipe parameter	a control value that affects the agent's process.	SEMI E42
recipe parameter	a formally defined variable (setting) defined within a recipe, permitting the actual value to be supplied externally.	SEMI E157
recipe queue space	a recipe space in the equipment which holds the recipe(s) already referred and queued for execution.	SEMI E170
recipe step	a distinct subset of process specification of the recipe that represents a significant change in the recipe execution conditions or instructions from the steps that precede or follow. A recipe step is completely contained within a single recipe component.	SEMI E54.24
recipe step	a distinct subset of the recipe's process specification that represents a significant change in the recipe execution conditions or instructions from the steps that precede or follow. A recipe step is completely contained within a single recipe component. Steps within a recipe component proceed one at a time.	SEMI E157
recipe variable parameter (RVP)	a setting contained in a recipe component whose value can be adjusted by the host for an execution of that recipe without making a permanent change to the recipe.	SEMI E172
reclaim water	a product of water reclamation.	SEMI F98
reclaimed wafer	a silicon wafer which has been reconditioned for subsequent utilization.	SEMI M59
recognized	as applied to standards; agreed to, accepted, and practiced by a substantial international consensus.	SEMI S2
recombination	other material to which is joined after an original material is broken.	SEMI S29
recombination lifetime	the average time interval between the generation and recombination of hole-electron pairs in a homogeneous semiconductor.	SEMI M59
recondition	restore an item (e.g., component part, subassembly) to the original normal operating condition by readjustments and material replacement.	SEMI E149
reconstructed edge profile	a model edge profile constructed by using the parameters extracted from the measured edge profile.	SEMI M59
record	the principal data division in an OASIS file.	SEMI P39
record data object	object(s) which are already pre-processed and transferred acyclically for the purpose of information or further processing and referenced by device/slot/subslot/index.	SEMI E54.14
recovery action	an operation associated with an error condition with the aim of resolving the abnormal situation detected. It may supply information to the exception agent or request the exception agent to perform some activity.	SEMI E41
recovery rate	the recovery rate is the ratio (B/A) of the quantity (B) of the measured element to the quantity (A) of the element that is included in a sample, that is, the quantity (A) of the added element. The recovery rate is expressed as a percentage.	SEMI M85
recovery time	the time between when an instantaneous change between the standard test gas and clean air happens and the time when the response reaches a stated percentage (x) of the stabilized signal on the standard test gas.	SEMI MS14
rectifying barrier	a potential gradient formed at the junction between two materials which permits the flow of charge in one direction only.	SEMI M46
recurring costs	cost that is incurred on an ongoing basis, based on time and/or usage.	SEMI E35, E140
recycle	to use an already used item for some other useful purpose.	SEMI M26, M45
recycle	to put to use a part or material that may have future practical use after serving its particular original purpose and undergoing some manner of industrial reprocessing (e.g., cleaning, crushing, shredding, melting, chemical processing).	SEMI S16
reducing elbow weld fittings	machined fittings shaped like the letter 'L,' for welding tubes in a right angle.	SEMI F45
reducing tee weld fittings	machined fittings shaped like the letter 'T,' for welding tubes in a T-shape.	SEMI F45

Term	*Definition*	*Standard(s)*
reducing weld fittings	machined fittings to be welded or welded fittings.	SEMI F45
reference ambient	the composition and pressure range of the ambient medium surrounding the MFC within which performance specifications apply without requiring correction for changes in the ambient medium.	SEMI E28
reference data	data from which the current STC Limits were calculated.	SEMI C64
reference edges	the two edges adjacent to the orientation corner.	SEMI D24
reference electrode	half cell which has a constant electrode potential, such as a saturated calomel electrode, SCE.	SEMI M46
reference half-cell	the feature of a pH probe electrode responsible for providing a stable reference to the sensing half-cell measurement.	SEMI C101
reference line	either a straight line or a cubic curve extrapolated by curve fitting from a section of an ideal surface that does not include edge roll off.	SEMI M77
reference line, of an edge profile	the line, midway between the front and back surface lines, that represents the median plane in the cross-sectional view of the edge of the wafer; it is the q-axis of the q-z edge-referenced coordinate system of that cross-sectional view.	SEMI M59
reference line, of an edge roll-off determination	either a straight line or a cubic curve extrapolated by curve fitting from a section of an ideal surface that does not include edge roll off.	SEMI M59
reference load A	500 ohms in parallel with 2.5 pf (±0.5 pf) to ground.	SEMI G79
reference load B	50 ohms to ground.	SEMI G79
reference load C	50 ohms to low (for driver z to high and high to z transitions). 50 ohms to high (for driver z to low and low to z transitions).	SEMI G79
reference material	material or substance, one or more of whose property values are sufficiently homogeneous and well established to be used for the calibration of a MS, for the assessment of a measurement method or for assigning values to materials.	SEMI E89
reference material	material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, (for) the assessment of a measurement method, or for assigning values to materials.	SEMI M59
reference material	material accepted as suitable for use as a calibration/sensitivity reference standard by all parties concerned with the analyses.	SEMI PV59, PV88
reference operating pressure, inlet and outlet	the range of gas pressures on the inlet of the MFC and across the MFC within which performance specifications apply without requiring correction for gas pressure effects.	SEMI E28
reference operating temperature	the range within which accuracy statements apply without requiring correction for Temperature Effects.	SEMI E18
reference plane	a plane from which deviations of a specified surface of the wafer are measured.	SEMI HB1, M59
reference plane	the theoretical plane from which deviations are measured.	SEMI HB8
reference plane	the plane or groove, which is vertical to the end face of ingot, is also defined as the orientation flat for sliced wafers.	SEMI HB11
reference plane	a user-defined plane approximating the surface of a substrate and containing a coordinate system.	SEMI P35
reference plane deviation (RPD)	the distance along a direction perpendicular to the reference plane at any specified point between the reference plane and the wafer surface being measured.	SEMI M59
reference platform	t the flat, processed surface that is used to level and zero the measurements in the *z*-direction.	SEMI MS2, MS3
reference point, of a data matrix code symbol	the physical center point of a corner cell common to the primary border row and the solid line of the alignment bar, used to identify the physical location of the symbol on the object being marked with the symbol.	SEMI T7, T24

Term	*Definition*	*Standard(s)*
reference point, of a data matrix code symbol	the physical center point of a cell common to a designated row and column, used to identify the physical location of the symbol on the object being marked with the symbol.	SEMI 3D23, T8, T9
reference point, of a data matrix code symbol	the physical center point of cell used to identify the physical location of the symbol on the object being marked with the symbol.	SEMI PV29
reference points, of a nominally square or pseudo-square Si wafer	points on the wafer perimeter/edges used for assigning metrics to the wafer.	SEMI PV46
reference sample	material accepted as suitable for use as a calibration/sensitivity reference standard by all parties concerned with the analyses.	SEMI PV1, PV43
reference segment	the section of the ideal surface that does not include edge roll off.	SEMI M77
reference spectrum	in infrared spectroscopy, the absorption spectrum of the reference specimen, taken over a defined wavelength interval.	SEMI M59
reference spheres	spherical particles having known diameter, diameter distribution, and index of refraction.	SEMI M59
reference test sample	material accepted as suitable for use as a calibration/sensitivity reference standard by all parties concerned with the analyses.	SEMI PV49
reference voltage(s)	manufacturer's recommended power supply voltage(s).	SEMI F56
reference wafer	a cleaned wafer.	SEMI E45
reference wafer	for calibrating an SSIS, an unpatterned wafer with the same surface films and finish as the wafers to be examined by the calibrated SSIS and upon which one or more reference sphere depositions have a specified material and diameter distribution and have been certified to specified uncertainties for peak diameter.	SEMI M59
reference wafer	a wafer surface which is organic contamination free.	SEMI MF1982
reflectance	the ration of the intensity of reflected to incident light at a certain wavelength.	SEMI M64
reflectance Mura	variation in reflectance of the surface of color filter within the quality area.	SEMI D13
reflection sheet	the sheet that reflects the light to prevent the loss of the light toward back side of the BLU.	SEMI D36
reflective layer	a light-reflective layer created on the color filter substrate below the color filter layer. It is used for reflection mode and may have diffusion function.	SEMI D13
refractive index	ratio of the speed of light in the material and in a vacuum at a specific wavelength. The refractive index of substrate glass is between approximately 1.50 and 1.53.	SEMI D9
reflectivity	refers to the ratio of the power of reflected light to the power of incident. and the figures are expressed in percentages.	SEMI HB14
refractory metallization	the process by which a high melting point (typically in excess of 1800°C) metal or combination of metals is applied to a suitable substrate and fired.	SEMI G33
regenerant	a chemical solution containing the ions originally present in the chromatograph column prior to a test run and used to prepare the column for a new test.	SEMI G52, G59
regeneration	the process of reactivating the purifier media.	SEMI F67, F68
region	a single field of view which may be a collection of sites.	SEMI E30.1
region of interest (ROI)	circumscribed section of a pattern that contains (parts of) the features considered for measurement.	SEMI P43
register	an operation that adds the substrate object to the equipment's database. This operation is performed automatically when the equipment receives both a carrier and information from the host about the contents of the carrier. The operation is also performed automatically when the equipment detects the substrate ID.	SEMI E90
registration	the actual distance between two features on the same layer of a substrate, compared to the expected distance.	SEMI E30.1
registration	positioning error between two features on different layers of a substrate.	SEMI E30.5

Term	*Definition*	*Standard(s)*
registration holes	holes in the bottom of the box door that fit over registration pins in the top of the port door when the box is placed on the port door.	SEMI E19, E19.4
registration pins	pins that provide fixed position and orientation between the port door and box door and assist in final positioning of the box on the port assembly. The registration pins fit into the registration holes in the bottom of the box door.	SEMI E19, E19.4
registry	a list of approved ASBs that is maintained by an independent standards authority so that interested parties can verify the qualifications of ASBs.	SEMI T20
regular mode	one of the transmission formats to communicate less overhead time between master and slave.	SEMI E54.19, E54.21
regulator	generally a mechanical device which alters the pressure within a gas system.	SEMI F22
regulator	a valve designed to reduce a high incoming pressure to a lower outlet pressure by automatically opening to allow flow until a desired, pre-set pressure on the outlet side is reached, and then automatically throttling to stop further pressure increase.	SEMI F76
reinforced insulation	a single layer of insulation that provides a degree of protection against electric shock equivalent to double insulation.	SEMI S22
reinitialization	a process where production equipment is either powered off then on or when some kind of hardware or software reset is initiated to cause the equipment to reset and possibly reload its software. On production equipment that contains some kind of mass storage device this can also be called a 'reboot.'	SEMI E87, E109, E171
re-inspection	a process where the same substrate is tested again by using the inspected map data.	SEMI E91
relative detector efficiency	ratio of the peak area of the 1.33 MeV line of a calibrated ^{60}Co γ-source divided by the total source disintegrations during dead time corrected t_m to the efficiency of a 3×3 NaI(Tl) scintillation detector at 25 cm.	SEMI PV10
relative humidity	the ratio of the actual vapor pressure to the vapor pressure in the state of equilibrium with the liquid.	SEMI MS10
relative intensity, of γ-ray peak	probability of γ-ray peak occurring at decay of isotope.	SEMI PV10
relative minimum	in optics, a minimum in the amount of light transmitted through a polarizer and analyzer combination that results from varying either the polarizing angle or the analyzing angle (with the other angle fixed).	SEMI MF576
relative setpoint	this is a value, which equals the ratio of the setpoint amplitude (A) during scanning and the free oscillation amplitude, or the ratio of A/A0 measured at the same frequency as described in ¶ 5.3 (of SEMI C78).	SEMI C78
relatively significant flicker magnitude	higher or stronger flicker magnitude in the specific frequency domain.	SEMI D79
relay lens	*in optics*, a lens that transfers an image from one location to another along the optical axis.	SEMI MF728
release etch	etching of a sacrificial layer to release a freestanding structure, such as a rotating element.	SEMI MS3
reliability	the probability that the equipment system will perform its intended function for a specified period of time.	SEMI E10
reliability	the probability that the equipment will perform its intended function, within stated conditions, for a specified period of time.	SEMI E67, E150, PV96
reliability test	the test for checking the changes of the display quality and part size during lighting of the BLU at the measurement condition.	SEMI D36
rem	unit of dose equivalent. Most instruments used to measure ionizing radiation read in dose equivalent (rems or sieverts). 1 rem = 0.01 sievert.	SEMI S2
remote	not integral to process equipment.	SEMI S30
remote device station	station that handles bit data and word data.	SEMI E54.12

Term	*Definition*	*Standard(s)*
remote device station	a node capable of performing 1:n bit data and word data cyclic transmission and transient transmission with the master station, and transient transmission with slave stations, excluding remote I/O stations. Has server functions during transient transmission.	SEMI E54.23
remote entity	relative to a particular endpoint of a connection, the remote entity is the entity associated with the opposite endpoint of the connection.	SEMI E37
remote heater	a vessel, separate from the process vessel, intended for heating liquid.	SEMI S3
remote I/O station	station that handles only bit data.	SEMI E54.12
remote I/O station	a node capable of performing 1:n bit data cyclic transmission with the master station.	SEMI E54.23
remote liquid delivery equipment	equipment that includes a liquid material (such as a compound that is liquid at the relevant temperature, a mixture of liquids, or a solution of solid in solvent) in a storage energetic materials container and transfers it from the storage energetic materials container to a point-of-use energetic materials container. A motive force is applied to the liquid to allow the location of the storage energetic materials container to be far from the point of use energetic materials container. This does not include equipment that is within, or adjacent to, process equipment.	SEMI S30
remote station	generic name of remote I/O station and remote device station.	SEMI E54.12
removal capacity	amount of a species which can be removed.	SEMI F5
remove/reinstall	to remove and reinstall the same field-replaceable unit (FRU) when required to perform service or other maintenance tasks.	SEMI E149
repair	the act of restoring component parts, subassemblies, assemblies, or equipment to operational status by performing one or more maintenance tasks (e.g., adjust, align, calibrate, replace), thereby correcting specific damage, fault, malfunction, or failure.	SEMI E149
repair part	nonconsumable part to service the equipment purchased at the time of repair.	SEMI E35, E140
repeat counts, of an SSIS	LLSs that are found in a later scan within the scanner *XY* uncertainty distance of their location as found on an earlier scan. The implication is that if defect density is low enough, then a repeat count results from detecting the same LLS event again and is not the result of SSIS noise. Besides the absolute position of the LLS, an additional matching condition may be the LSE signal of the LLS.	SEMI M59
repeatability	the closeness of agreement among a number of measured values at a setpoint, under the same operating conditions, operator, apparatus, laboratory, and short intervals of time. It is usually measured as a nonrepeatability and expressed as a repeatability in percent of reading.	SEMI E56, E69, MS14
repeatability	closeness of the agreement between the results of successive measurements of the same measurand carried out under the same conditions of measurement.	SEMI E151
repeatability (σ_r)	variability associated with repeated measurements taken under repeatability conditions.	SEMI E89, MF1392
repeatability	the ability of a regulator to return to the same pressure after termination and restart of flow.	SEMI F101
repeatability	the closeness of agreement among a number of measured values at the same pressure setpoint, under the same operating conditions, operator, apparatus, laboratory and short intervals of time. It is usually measured as a non-repeatability and expressed as repeatability in percent of full scale.	SEMI F113
repeatability conditions	test conditions involving acquisition of a series of test results with the same test protocol and MS setup in the same laboratory by the same operator on the same equipment in the shortest practical period of time on the same test wafer without explicit recalibration.	SEMI E89
repeatability (of results of measurements)	closeness of the agreement between the results of successive measurements of the same measurand carried out under the same conditions of measurement.	SEMI P35
replace	to remove an unserviceable field-replaceable unit (FRU) and install a serviceable FRU in its place.	SEMI E149

Term	*Definition*	*Standard(s)*
reply	an HSMS Data Message with an even-numbered function. Also, the appropriate response to a Primary HSMS Data Message.	SEMI E37
reply	the particular secondary message corresponding to a primary message.	SEMI E4, E5
reply linking	the process of forming a transaction out of a primary and a secondary message.	SEMI E4
reply message	a message that contains data resulting from the completion of an action initiated by a related request message.	SEMI E128
reported horizontal dimensions	the scheme and numerical values used to specify the breadth of a TSV. The breadth of a TSV may be specified in a variety of ways depending on circumstances such as the fabrication method and the measurement tools that are available.	SEMI 3D1
reported horizontal dimensions	the scheme and numerical values used to specify the breadth of a TGV. The breadth of a TGV may be specified in a variety of ways depending on circumstances such as the fabrication method and the measurement tools that are available.	SEMI 3D11
reporting rate	the number of messages per unit of time reported through an interface.	SEMI E151
reproducibility	the closeness of agreement among repeated measured values at a setpoint, within the specified reference operating conditions, made over a specified period of time, approached from both directions. Reproducibility includes hysteresis, dead band, long-term drift, and short-term reproducibility.	SEMI E56, E69
reproducibility	measurement with the same result under a set of conditions of measurement, that includes different locations, operators, measuring systems, and replicate measurements on the same or similar objects.	SEMI E151
reproducibility	the closeness of agreement among output readings of the different devices when the same pressure setpoints are applied to them consecutively under the same operating conditions, operator, apparatus, laboratory, during the same test time frame, and approaching from both pressure directions (ascending and descending).	SEMI F113
reproducibility	variations in average measurement values acquired in a sequence during a certain period of time. This is the closeness of agreement between the mean values obtained by measuring a pattern repeatedly at stated period with wafer loading, wafer alignment, stage traveling to a measurement site, positioning of a measured pattern, measuring and wafer unloading.	SEMI P30
reproducibility (σ_R)	variability associated with the measurement system (MS) when measurements are made under different (but typical) conditions.	SEMI E89, MF1392
reproducibility (of results of measurements)	closeness of the agreement between the results of measurements of the same measurand carried out under changed conditions of measurement.	SEMI P35
reproducibility, short-term	the closeness of agreement among a number of measured values at a set point, under the same operating conditions, operator, apparatus, laboratory and short intervals of time, approached from both directions. The approach must be from beyond the dead band. Short-term reproducibility includes repeatability, hysteresis, dead band, and short-term drift.	SEMI E56, E69
reproductive toxicants	chemicals that are confirmed or suspected to cause statistically significant increased risk for teratogenicity, developmental effects, or adverse effects on embryo viability or on male or female reproductive function at doses that are not considered otherwise maternally or paternally toxic.	SEMI S2
request for information (RFI)	documentation from contractor to request clarification.	SEMI E70
request for proposal (RFP)	documentation from purchasing agent to vendor to request a proposal to provide product and/or services.	SEMI E70
request for quote (RFQ)	documentation from purchasing agent to vendor to request a firm price to provide product and/or services.	SEMI E70
request message	a message that contains necessary information to allow a server to perform a requested action on behalf of the requester.	SEMI E128
request service	is initiated by the service consumer. Requests ask for data or for an activity (operation) from the provider. Requests expect a specific response message.	SEMI E39

Term	*Definition*	*Standard(s)*
required concentration	the maximum allowable concentration of Gas A after the purge event.	SEMI F80
reset	the action of changing the value of a variable, such as wafer count (usually to zero).	SEMI E123
residual	as applied to risks or hazards: that which remains after engineering, administrative, and work practice controls have been implemented.	SEMI S2
residual level	the amount of product, as a fraction of the fill weight or fill pressure, which should be left in a container in order to minimize the impact on manufacturing processes of the higher level of impurities in the last gas fraction from a container.	SEMI C52
residual risk	risk remaining after risk controls, if any, have been implemented.	SEMI S10
residual risk	risk remaining after engineering, administrative, and work practice controls have been implemented.	SEMI S14
residual stress	the remaining forces per unit area within the structural layer of interest after the original cause(s) during fabrication have been removed yet before the constraint of the sacrificial layer (or substrate) is removed (in whole or in part).	SEMI MS3, MS4
(residual) stress gradient	a through-thickness variation (of the residual stress) in the structural layer of interest before it is released.	SEMI MS4
residue	any undesirable material remaining on a substrate after any process step.	SEMI P3
resin bleed-out (die attach)	the surface creep of a resin used for die attach beyond the outer perimeter of the bulk of the resin (filler). For a given resin formulation, the resin creep may be exacerbated by the microstructure and cleanliness of the die attach surface.	SEMI G8, G21
resist breakdown	etching under the edges of the resist causing more than a standard undercut.	SEMI G19
resist pattern method	color filter layers are accumulated on non-patterned transparent conductive film by using a micell distribution liquid through openings (windows) in the photoresist according to the RGB pattern.	SEMI D13
resist rings	build up of resist in round multicolored rings, generated by particles or bubble bursts.	SEMI P3
resistivity	the ratio of the potential gradient parallel to the current in the material to the current density. For the purpose of this method, the resistivity shall always be determined for the case of zero magnetic flux.	SEMI M39
resistivity	the reciprocal of electric conductivity.	SEMI D9
resistivity, (electrical), σ, [$\Omega \cdot$cm]	the measure of difficulty with which charged carriers flow through a material; the reciprocal of *conductivity*.	SEMI M59
resistivity, mobility and carrier concentration ranges	the allowable upper and lower limits on the electric transport parameters.	SEMI M75
resistivity reference wafer	a CRM certified reference material, working reference material, or RM reference material in the form of a silicon wafer or chip used for routine calibration or control of resistivity measuring equipment.	SEMI M59
resolution	the number of pixels on each screen line.	SEMI D65
resolution	the capability of the particle detector to differentiate between particles of similar size.	SEMI E104
resolution	smallest difference between values of a measurand that can be meaningfully distinguished.	SEMI E151
resolution	the change in the outlet pressure as the adjustment screw is adjusted at a no flow condition.	SEMI F101
resolution, practical	the minimum line width that reproduces the mask (or drafting) dimensions faithfully.	SEMI P25
resonance	internal regulator oscillation identified as either a fluctuating outlet pressure, or an audible noise noticeably louder than typical regulator sound level.	SEMI F101
resource	processing or information capability.	SEMI E54.14
Responder	a communication role that responds to a General Data message. A response may be an internal action and/or a sending back of a General Data message.	SEMI A1, A5

Term	*Definition*	*Standard(s)*
responding entity (HSMS)	the provider of an HSMS service. The responding entity receives a message from an initiator requesting the service. In the event of a confirmed service, the responding entity indicates completion of the requested service by sending an appropriate HSMS response message to the initiator of the request. In an unconfirmed service, the responding entity does not send a response message.	SEMI E37
response curve (RC)	the relation between actual SSIS signal and sphere diameter. A subscript appended to the RC (e.g., RC_{silica} or RC_{PSL}), indicates the sphere material for which the RC applies. The RC depends on scanner design and is in general non-linear. It may contain regions with response curve oscillations that make the response-diameter relationship multi-valued.	SEMI M53
response curve oscillations	peaks and valleys in the response curve, which prevent the response curve from being monotonic.	SEMI M53
response time	the time required for the DUT to reach steady state after a change in concentration.	SEMI C91, F118
response time	the time required for the test system to reach steady state after a change in concentration.	SEMI F58, F112
response time	the time between when an instantaneous change between clean air and the standard test gas is produced and the time when the response reaches a stated percentage (x) of the stabilized signal on the standard test gas.	SEMI MS14
response variable	variable representing the outcome of a designed experiment. Also called 'output variable.'	SEMI E89
rest mode	the mode, entered automatically by the SME, in which there will be a delay to return to idle but it is otherwise ready for processing. Average equivalent energy use rate in this mode is less than in idle mode.	SEMI S23
rest potential	the open circuit potential of the sample with respect to the reference electrode.	SEMI M46
restoration	signal-processing procedure in which measurements are compensated for a non-unit measurement transfer function by passing them through a digital filter that restores the effective measurement function to unity over its bandpass.	SEMI MF1811
retainer	a part to be attached to a shipping cassette for retaining wafers in transportation so that the wafers do not move. There are two types, that is, a front retainer and a rear retainer.	SEMI M29
retainer	a holding mechanism to keep a seal in place.	SEMI F74
retainer hook	a projection formed on a shipping cassette for attaching a retainer.	SEMI M29
retention time	the time required for a particular ion type to pass from the injection port to the detector. Retention time is characteristically different for each ion type.	SEMI G52, G59
reticle	a mask that contains the patterns to be reproduced on a substrate; the image may be equal to or larger than the final projected image.	SEMI E30.1, E100, E111, E112
reticle design	reticle design information.	SEMI P42
reticle ID	identifier for each reticle.	SEMI P42
reticle information	information related to reticles.	SEMI P42
reticle mark	mark used for alignment of a reticle.	SEMI P42
reticle mark ID	identifier for each reticle alignment mark.	SEMI P42
reticle mark type	type of reticle alignment mark.	SEMI P42
reticle name	names for reticle identification.	SEMI P42
reticle projection magnification	magnification of projection lens used by the exposure tool.	SEMI P42
reticle size	size of reticle blank.	SEMI P42
reticle SMIF pod (RSP)	a minienvironment compatible carrier capable of holding one 6 inch or one 230 mm reticle in a horizontal orientation during transport and storage and is compatible with a standard mechanical interface (SMIF) per SEMI E19.4.	SEMI E100, E109, S28

Term	*Definition*	*Standard(s)*
reticle SMIF pod (RSP)	a minienvironment compatible carrier that is capable of holding either one or six reticles in a horizontal orientation during transport and storage and is compatible with a standard mechanical interface (SMIF) per SEMI E19.3 or SEMI E19.4.	SEMI E117
reticle type	type of reticle.	SEMI P42
retry count	the number of unsuccessful attempts to send a block in the block transfer protocol.	SEMI E4
return	the UPW sent to but not used by end users that returns to the DI storage tank.	SEMI F61
return temperature (of cooling water)	the temperature at which cooling water exits the cooled equipment.	SEMI S23
reusable container	a container for electronics parts which is usually used more than once.	SEMI T13
re-use	to repeat use of an item in its original shape for the same purpose as initially intended.	SEMI M26, M45
reuse	to use again for its original purpose after undergoing some manner of reconditioning (e.g., decontamination, cleaning, re-packaging).	SEMI S16
reveal	distance remaining between the deepest point within a TSV opening and the bottom surface of the wafer. This dimension may be calculated as the difference between the wafer thickness and the TSV depth.	SEMI 3D1
reverse osmosis (RO)	a filtration technology that utilizes a semi-permeable membrane to remove essentially all suspended solids and the vast majority of all dissolved solids. Generally refers to water (permeate) that has passed through a reverse osmosis (RO) membrane.	SEMI F61, PV3
review	the process of classification of anomalies which may result in the appending of additional data to inspection data. Used to create a field on a substrate.	SEMI E30.1
review equipment	equipment that accepts information about anomalies on a substrate, gathers information on those anomalies, and reports that data.	SEMI E30.1
revision	the unique identification (e.g., number, letter, date) of any version of documentation content, software, hardware, etc. approved for release with changes that are strictly controlled.	SEMIM E149
rework	the percentage of units being reprocessed by the equipment because of a fault or defect. Also called redo.	SEMI E35
RF applicator/interface	the part of the chamber where the RF system is terminated. This interface can either be a chuck (driven electrode) or the coil/antenna part of a plasma source.	SEMI E113
RF generator	a component in the RF power delivery system used to develop RF energy.	SEMI E136, E143
RF load	another term used to describe an RF termination.	SEMI E136, E143
RF system	the combination of the RF generator, matching network, chamber interface, and the associated connecting cable assemblies that are specific to a particular tool/chamber.	SEMI E116, E143
RF termination	a device for terminating RF transmission systems, and converting RF electrical energy into heat. RF terminations normally have values that are the same as the characteristic impedance of the transmission system.	SEMI E136, E143
ribbon (conductor)	conductive material, typical coppers a tin coated surface, to interconnect cell to cell.	SEMI PV62
ring test	a ring is placed around a gas or chemical supply line and traced along the entire length of line either from connection where the line starts to where connection to ME is performed or in the other direction.	SEMI S12
rinse wastewater (RWW)	segregated drain for recovering water suitable for reuse after treatment.	SEMI F116
risk	the possibility of an incident that harms an information asset.	SEMI E169
risk	the expected magnitude of losses from a hazard, expressed in terms of severity and likelihood.	SEMI S2, S14, S30
risk	a function of expected severity and likelihood of harm(s) from a hazard.	SEMI S10
risk	the expected losses from a mishap, expressed in terms of severity and likelihood.	SEMI S22

Term	*Definition*	*Standard(s)*
risk assessment	a procedure through which knowledge and experience of design, use, incidents and accidents, and harm are brought together to measure the risks for specified scenarios of the equipment being assessed. Risk assessment includes determining the use and limits of the machinery, hazard identification, and risk estimation.	SEMI S10
risk control	a means of reducing the risk associated with a hazard.	SEMI S10
risk estimation	determination of the risk associated with a particular situation, including determination of the severity and the likelihood.	SEMI S10
risk evaluation	the process of deciding if risk reduction is required.	SEMI S10
risk factors	those elements of the design which allow an increased potential for injury/illness to personnel, or for damage to equipment, environment, or product.	SEMI S8
risk reduction	the process by which the risk is reduced.	SEMI S10
rms roughness (or rms microroughness), R_q	the root mean square of the surface profile height deviations $Z(x)$ from the mean line taken within the evaluation length L.	SEMI M59
rms roughness, R_q, [nm]	square root of the mean-square roughness.	SEMI MF1811
rms slope (mq)	the root-mean-square value of the rate of change of the surface profile height deviations $Z(x)$ from the mean line profile departures taken within the evaluation length, L.	SEMI M59
RO storage	generally refers to a storage tank that contains RO water.	SEMI F61
roadmap	a sequence for the incremental introduction or improvement of technology over time with milestones and supporting information.	SEMI S23, S29
robot	an automatically controlled, reprogrammable manipulator including the moving parts, their actuators, drivers and controller, that has an end effector which is used to hold an item or tool and maneuvers the item or tool through three or more axes of motion.	SEMI S28
robot maximum space	the three dimensional space encompassing the movement of all parts of the robot as defined by the manufacturer plus the space which can be swept by the end effector and workpiece.	SEMI S28
robot space	the three dimensional space encompassing the physically possible movements of all parts of the robot as defined by the manufacturer through their axes.	SEMI S28
robot vehicle	a piece of equipment having a cassette transfer robot on the vehicle, that moves to another piece of equipment and transfers cassettes.	SEMI E23
robotic handling flange	horizontal projection on the top of the frame cassette for lifting and rotating the frame cassette.	SEMI G77
robotic handling flanges	projections on the cassette for handling of the cassette.	SEMI D17, D18
robotic handling flanges	four horizontal projections on top of the box for lifting and rotating the cassette.	SEMI E1.9
robotic handling flanges	horizontal projections on the top of the box for lifting and rotating the box.	SEMI E100, E111, E112
robotic handling flanges	horizontal projections on the top of the FOUP for lifting and rotating the FOUP.	SEMI E47.1
rocking curve	scan of diffracted intensity measured as the angle between the incident beam and the sample diffracting planes is changed, going through a diffraction peak. The peak may be only a few arc seconds wide in a HRXRD measurement.	SEMI M63
rod CVD process (Siemens process)	decomposing distilled silane or a halosilane compound in a rod deposition reactor (Siemens reactor) by thermolysis to create fine grained polycrystalline Si (poly-Si) in the form of rods.	SEMI PV17
rod, polysilicon	cylindrical or partially cylindrical piece of polysilicon, with a weight typically >5 kg.	SEMI PV17
roof deck	a fixed platform under waterproof and thermal insulation structures in a roof system.	SEMI PV100
root	non-standard term for root surface.	SEMI F78
rootCA	the CA that is at the top of a certification hierarchy.	SEMI T21

Term	*Definition*	*Standard(s)*
root sum of squares (RSS) difference	square root of the difference of the squares of two numbers.	SEMI E89
root sum of squares (RSS) sum	square root of the sums of the squares of two or more numbers.	SEMI E89
root surface	the exposed surface of a weld opposite the side from which the welding was done.	SEMI F78, F81
rotary actuator	a device that generates torque using magnetic, piezoelectric, thermal, memory-shape alloy, or similar principles.	SEMI MS3
rotated astigmatism	at each image site, the *z*-axis difference for the line focus of two evaluative line sets, oriented at right angles to each other and at some specified angle to the coordinate system, where the specified angle is selected so that the *z*-axis focus difference is a maximum at the given image site. The specified angle may vary from image site to image site.	SEMI P25
rotating cone	a part which gives certain shear force to material on plate.	SEMI G103
rotation delay	time delay between when the arc is initiated and the rotor begins to turn.	SEMI F78
roughing vacuum pump (RVP)	a vacuum pump device for reducing pressure from atmospheric to a specific value at which another pumping system can begin to operate.	SEMI E54.18
roughing vacuum pump plus booster (RVPB)	a vacuum pump device for reducing pressure from atmospheric to a value at which another pumping system can begin to operate. In this configuration a, booster pump is attached to the inlet of the main pump to further reduce the pressure at the inlet of the vacuum pump device.	SEMI E54.18
roughness	the finer irregularities of the surface texture, usually including those irregularities which result from the manufacturing process. These are considered to include traverse feed marks and other irregularities within the limits of the roughness sampling length.	SEMI F19
roughness	the more narrowly spaced components of surface texture. Compare *waviness*.	SEMI M59
roundness	ratio of the length of the minor diameter to the length of the major diameter in the same plane.	SEMI 3D1
roundness	roundness is parameter indicating how far a shape deviates from a perfect circle, which has a roundness of zero.	SEMI 3D22
roundness	the difference between the maximum diameter and the minimum diameter of the ingot, when both are measured at the same distance from an end face of the ingot cylindrical surface.	SEMI HB11
roundness at 90% depth	roundness at the an intermediate depth of 90% of the depth of the TSV.	SEMI 3D1
Route	a logical path of Panels that have the commonality in production condition such as the same width of conveyor or the use of same assembly parts, etc. Multiple Routes may be set on the same Track.	SEMI A2, A5
row	a series of bits in a memory/memory bank that can be enabled for access using a row address.	SEMI G91
RTY	the retry limit or the number of times the block transfer protocol will attempt to retry sending a block before declaring a failed send.	SEMI E4
rules	a set of instructions or behavior that results from an operation, request, or command.	SEMI E151
rung	a horizontal crosspiece of a ladder, intended by the supplier to be used both to support feet and to be gripped by hands.	SEMI S2
run	set of data with a common provenance.	SEMI E183
run, n.	the material processed during the EXECUTING state.	SEMI E30.1
run, v.	the actions of a process between the READY state and the STOPPING state.	SEMI E30.1
run time attribute	the actual data transmitted during run time that is described by the interface data node.	SEMI PV55
rundown	the vertical extension of metallization or glass from the ceramic.	SEMI G1, G26, G33, G34
rundown	the linear distance down a vertical surface from the top to the point of maximum metallization overhang.	SEMI G22, G39, G50

Term	*Definition*	*Standard(s)*
rundown, on a semiconductor package	the linear distance from the upper surface of a ceramic cavity layer to the bottom point of the overhang into the cavity, of a sealing glass or metallization layer that has been screened onto that surface.	SEMI G58, G61
run-to-run control	techniques for varying settings in one run based on analysis of either incoming product (feed-forward) or product from an earlier run.	SEMI E98, E126
run-to-run (R2R) control	the technique of modifying recipe parameters or the selection of control parameters between runs to improve processing performance. A 'run' can be a batch, lot, or an individual wafer.	SEMI E133, E174
RWr	a remote register (input) as viewed from the master station. Word data that are periodically updated by cyclic transmission and held by nodes. In a slave station other than the local station, the data are word data sent to the master station. In the local station, RWr as viewed from the master station is RWw of the local station.	SEMI E54.23
RWw	a remote register (output) as viewed from the master station. Word data that are periodically updated by cyclic transmission and held by nodes. In a slave station other than the local station, the data are word data received from the master station. In the local station, RWw as viewed from the master station is RWr of the local station.	SEMI E54.23
RX	a remote input as viewed from the master station. Bit data that are periodically updated by cyclic transmission and held by nodes. In a slave station other than the local station, the data are bit data sent to the master station. In the local station, RX as viewed from the master station is RY of the local station.	SEMI E54.23
R(x)	etching rate of species x.	SEMI F79
RY	a remote output as viewed from the master station. Bit data that are periodically updated by cyclic transmission and held by nodes. In a slave station other than the local station, the data are bit data received from the master station. In the local station, RY as viewed from the master station is RX of the local station.	SEMI E54.23
S-parameters	the scattering matrix used to describe a network. The reflection coefficient is the S11 parameter and the transmission coefficient is the S21 parameter.	SEMI E114, E115
S type	the type has a rotated alphabetic 'S' shape, which mixes the convex shape and the concave shape. This substrate is named 'S' type. S type combines sag and lift. Also S type requires an asymmetrical shape, which consists of sag and lift at both edge regions, even if the substrate has a continuous wave or corrugation in its shape.	SEMI D40
sacrificial layer	to allow freestanding microstructures, a single thickness of material that is intentionally deposited (or added) then removed (in whole or in part) during the micromachining process.	SEMI MS2, MS3, MS4
safe	free of conditions that can cause occupational illness, injury, or death to personnel or damage to or loss of equipment or property or the environment.	SEMI E34
safe condition	a condition in which the equipment does not present an unacceptable risk to personnel, itself or the facility. A safe condition is determined by the designer of the equipment and is based on the risks in the design.	SEMI S6
safe shutdown condition	a condition in which all hazardous energy sources are removed or suitably contained and hazardous production materials are removed or contained, unless this results in additional hazardous conditions.	SEMI S2
safe shutdown condition	a condition in which all hazardous energy sources and hazardous production materials are removed or suitably contained, unless this results in additional hazardous conditions.	SEMI S22
safe state	a state in which the equipment presents no danger to the product or user. This implies that safety interlocks are in place such that the equipment can be serviced without harm to the operator and that the material being processed has been removed from the processing station into an accessible location.	SEMI E30.1, E30.5, E123
safe state	a condition in which the equipment does not present any unacceptable risk to itself or to personnel. It does not allow hazardous production materials to flow. An acceptable safe state is determined by the designer of the equipment and is based on the risks in the design.	SEMI S18, S30

Term	*Definition*	*Standard(s)*
safety	the ability of the equipment to protect human health and personal and property from injury or loss during operation.	SEMI PV96
safety alert symbol	a specific symbol that indicates a potential personal injury hazard.	SEMI S1
safety circuit	a circuit whose intended function is to make the equipment safer. Interlocks, EMO circuits, and other protective circuits are safety circuits.	SEMI S22, S28
safety critical part	discrete device or component, such as used in a power or safety circuit, whose proper operation is necessary to the safe performance of the system or circuit.	SEMI S2
safety critical part	discrete device or component, the failure of which is, or could result in, unacceptable risk. This includes some devices or components that convey or contain hazardous energy or hazardous materials or are parts of safety interlocks.	SEMI S30
safety data sheet (SDS)	document that describes a chemical's properties and hazards and provides appropriate safety precautions and protective measures for handling, storing, and transporting it.	SEMI S5
safety data sheet (SDS)	document that describes a material's properties and hazards and provides appropriate safety precautions and protective measures for handling, storing, and transporting it.	SEMI S30
safety label	a sign, label, or decal that provides safety information.	SEMI S1
sag	sag is defined as the generated distance between the bottom surface of the substrate and the support plain caused by gravity.	SEMI D40
sagittal focal surface	the focal surface determined by examining only sagittal lines.	SEMI P25
sagittal lines	an evaluative line pattern where the lines lie along a radius to the optical axis.	SEMI P25
salience	a Salience is a solid (or textured), colored border shown around a Display Object to indicate an alarm, warning, or other status, or to draw the user's attention to the Display Object. A Salience shall not hide the Display Object it surrounds. Saliences shall not be used to indicate the state (open, closed, on, off, etc.) of Display Objects.	SEMI E95
salvage pressure receptacle	a pressure receptacle with a water capacity not exceeding 1000 liters into which are placed damaged, defective, leaking, or non-conforming pressure receptacle(s) for the purpose of transport, for example, for recovery or disposal.	SEMI S30
sample	production or monitor unit(s) selected for measurement, inspection, or testing that are representative of the process step.	SEMI E35
sample	wafer or wafer chips used for the headspace sampling of organic contaminants.	SEMI E108
sample	sample taken from a system into a sampling container and measured off-line.	SEMI F41
sample	representative part taken from a quantity of material.	SEMI PV97
sample cell	a real cell that undergoes the pre-test and post-test examinations for the evaluation of damages induced by vibration.	SEMI PV38
sample coordinate system	a coordinate system fixed to the sample and used to specify position on the sample surface for the measurement.	SEMI ME1392
sample coordinate system	a coordinate system fixed to the sample and used to indicate the position on the sample surface for the measurement which is application and sample specific.	SEMI PV15
sample flow	the volumetric flow drawn by the counter for particle detection.	SEMI E66
sample flow	the volumetric flow through the particle counter.	SEMI F70, F70.1
sample flow rate	the volumetric flow rate drawn by the particle counter for particle detection.	SEMI F28
sample flow rate	the volumetric flow rate drawn by the counter for particle detection. The counter may draw higher flow for other purposes (e.g., sheath gas).	SEMI F43
sample flow rate	that portion of the OPM flow rate that is examined by the OPM sensor.	SEMI F104
sample interval, D, [μm]	distance between adjacent measurements of the surface height along the *x* axis. Also known as *sampling interval.*	SEMI MF1811
sample irradiance, E_e	the radiant flux incident on the sample surface per unit area.	SEMI ME1392
sample radiance, L_e	a differential quantity that is the reflected radiant flux per unit projected receiver solid angle per unit sample area.	SEMI ME1392

Term	*Definition*	*Standard(s)*
sample spectrum	in infrared spectroscopy, the absorption spectrum of the test specimen, taken over a defined wavelength interval.	SEMI M59
sample standard deviation (s)	square root of the sample variance.	SEMI E89
sample under test (SUT)	the slurry or chemical component to be tested. This incoming liquid generally arrives with a separate CoA from the vendor.	SEMI C96, C99, C101
sample variance (s^2)	measure of dispersion given by the average squared deviation from the mean for a set of numbers.	SEMI E89
sampled profile, Z(xn), [nm]	surface height, Z(xn), measured at N equally-spaced points along the x axis.	SEMI MF1811
sampled slope, $m(x_n)$	surface slope, $m(x_n)$, measured at N equally-spaced points along the x axis using the same indexing convention as for the sampled profile.	SEMI MF1811
sampler	a system used to perform partial sampling of the gas stream exiting the test system, that consists of a diffuser equipped with a pressure reducing device in which gradual expansion to atmospheric pressure occurs and a sample probe.	SEMI F70.1
sampling interval (SI)	the center to center distance between two sampling ranges. It is possible to use different sampling intervals for all-point and fixed-points thickness metrics.	SEMI PV71
sampling length, Ls	the length of the profile for calculations of waviness parameters in an evaluation length (L_e).	SEMI D15
sampling port	the port on the integrating sphere which light exits from and hits on the DUT, it confines the sampling area of the DUT.	SEMI D56
sampling range (SR)	the distance where laser triangulation sensor data recorded within this range will be used to calculate a thickness point. Two sampling ranges are used for different thickness metric.	SEMI PV71
sampling rate (SR)	the percentage of samples relative to the total number of units passing through the process step.	SEMI E35
sampling rate	defines the number of samples per second (or per other time unit) taken from a continuous signal to make a discrete signal.	SEMI E151
sampling rate	the number of positions read by the laser triangulation sensor per second. Sampling rate is usually expressed in hertz (Hz).	SEMI PV70, PV71
sampling resolution	the distance between each position reading by the laser triangulation sensor. It is equal to the belt speed divided by the sampling rate.	SEMI PV70, PV71
sampling time	the time increment over which counts are recorded.	SEMI F28, E66, F43
sampling time	the time span over which particle counts are recorded.	SEMI F70, F70.1
sampling volume	the volume from which photoelectrons are detected. The x-ray spot size and/or the lens and aperture system of the electron analyzer determine lateral dimensions. A length of three times the photoelectron mean free path is considered the maximum depth sensitivity. Sampling volume is dependent on the sample material and TOA. The acceptance angle of the analyzer will also influence the distribution of the depth information.	SEMI F60
sampling volume	the volume in the sample from which Auger electrons are detected. The electron beam spot size or the scan area, and the acceptance angle of the electron analyzer determine the lateral dimensions. A length of three times the Auger electron mean free path is considered the maximum depth sensitivity. Sampling volume is dependent on the sample material and TOA.	SEMI F72
sampling wafer	a cleaned wafer which will be or was exposed to the minienvironment for a certain time.	SEMI E45
sampling window (SW)	the distance where position data within this range will be used to calculate a saw mark.	SEMI PV70

Term	*Definition*	*Standard(s)*
sandwich component	a gas distribution system component having inlets and outlets located on the top and bottom of the component with the attachment mechanism passing through the component.	SEMI C88, F117
sapphire	single crystal aluminum oxide (Al_2O_3) having a definite orientation.	SEMI HB1
sapphire	single crystal aluminum oxide (Al_2O_3) having a definite orientation that allows epitaxial compound semiconductor deposition.	SEMI HB8
saturated calomel electrode	a standard reference electrode based on the reaction between elemental mercury and mercury chloride.	SEMI F120
saucer pit	a shallow etch pit in a crystal surface with no clearly recognizable bottom point, indicating other types of crystal lattice defects instead of dislocations.	SEMI M83
saw blade defects	a depression in the wafer surface made by the blade, which may not be visible before polishing.	SEMI M10
saw exit chip	a particular kind of edge chip, found at the point where the saw blade completed its cut of the wafer. It is typically flat or arc shaped instead of irregular in shape, and can sometimes be confused with the orientation flats.	SEMI M10
saw exit mark	a ragged edge at the periphery of the wafer consisting of numerous small adjoining edge chips resulting from saw blade exit.	SEMI M59
saw mark	surface texture or irregularity resulting from the blade or wires used for slicing. When circular saw blades are used for slicing, the saw marks are in the form of a series of alternating ridges and depressions in arcs whose radii are the same as those of the saw blade. When wire saws are used for slicing, the saw marks have different characteristics depending on the nature of the slicing process.	SEMI M59
saw mark	a topographicstep or groove along the sawing wire direction on the surface of a wafer, generated by the wire of the multiple wire saw.	SEMI PV40, PV43
scale effect	changes in physical effects, behavior, or properties of materials due to reduction of dimensions.	SEMI MS3
scale inhibitor	a chemical used to minimize or eliminate the precipitation of slightly-soluble salts, like calcium carbonate (limestone) or calcium sulfate (gypsum), within water treatment equipment.	SEMI F61
scallop	a periodic sidewall feature created by certain etch processes.	SEMI 3D1
scallop	a repeated sidewall feature resulting from the gas switching in the deep reactive ion etching (DRIE) process.	SEMI MS13
scallop size	the peak to valley distance perpendicular to the TSV sidewall at a particular scallop.	SEMI 3D1
scallop size	consists of two dimensions: the lateral dimension (from the peak to the trough of the scallop) and the vertical dimension (from one peak of the scallop to the next).	SEMI MS13
scan direction	the direction of successive subsites in a scanner site flatness calculation.	SEMI M59
scan line	an imaginary line parallel to a wafer edge and parallel to the wafer transport direction along which measurements are performed.	SEMI PV40, PV42
scan line (SL)	an imaginary line parallel to a wafer edge and parallel to the wafer transport direction along which measurements are performed. Several scan lines per wafer may be used.	SEMI PV41
scan rate	user selectable parameter, which determines how many scan lines in the fast scan direction are completed by the scanner per second.	SEMI C78
scanner	piezoelectric ceramic device that either drives the movement where the sample stage moves and the tip is stationary or the converse.	SEMI C78
scanner site flatness	the maximum subsite TIR or the maximum subsite FPD, of a site.	SEMI M59
scanner XY uncertainty, of an SSIS	square root of the sum of the squares of the one-sigma standard deviations in the reported *X* and *Y* locations of the SSIS under test, as determined under repeatability conditions.	SEMI M59
scanning surface inspection system (SSIS)	an instrument for rapid examination of the entire quality area on a wafer to detect the presence of localized light scatterers or haze or both, also called particle counter and laser surface scanner.	SEMI E146, M59

Term	*Definition*	*Standard(s)*
scanning solution	scanning solution implies a solution for the collection of trace metals from a wafer surface after the decomposition of silicon oxide by the VPD method. On the other hand, it also implies the solution for the decomposition of silicon oxide and the collection of trace metals from a wafer surface by the DADD method.	SEMI M85
scatter	the radiant flux that has been redirected over a range of angles by interaction with the sample.	SEMI ME1392, PV15
scatter azimuth angle, ϕ_s,	angle from the X_B axis to the projection of the scatter direction onto the X_B-Y_B plane.	SEMI ME1392, PV15
scatter direction	the central ray of the collection solid angle of the scattered flux specified by θ_s and ϕ_s in the beam coordinate system.	SEMI ME1392
scatter direction, P_S	the central ray of the collection solid angle of the scattered flux specified by θ_s and ϕ_s in the beam coordinate system.	SEMI PV15
scatter plane	the plane containing the central rays of the incident flux and the scatter direction.	SEMI ME1392
scattering plane	the plane containing the incident and diffracted X-ray beams.	SEMI M63
scatter polar angle, θ_s,	polar angle between the central ray of the scattered flux and the Z_B axis.	SEMI ME1392, PV15
scattering hemisphere	a virtual hemispherical surface about which detectors are located. It is defined by the plane of the sample surface and the illumination spot on the sample surface.	SEMI PV15
scheduled downtime	during an observation period, the accumulated time when the equipment system is in the scheduled downtime state (SDT).	SEMI E10, E79
scheduled downtime state (SDT)	the equipment state when the equipment system is not in a condition to perform its intended function due to scheduled activities or conditions. SDT includes any activities required to restore the equipment system to a condition where it can perform its intended function.	SEMI E10, E79
scheduling	generation of a forecast of future time sequenced activities involving factory resources or material. The schedule is based on the current state of the factory, the priorities and requirements for the activities, the relationship of the activities to one another and knowledge of factory level goals and capacity. Scheduling covers activities projected to occur over a longer future time interval than dispatching.	SEMI E105
schematic diagram	a graphic representation showing the interrelationship of each component part or assembly in the subsystem/equipment. The essential characteristic of these diagrams is that every maintenance-significant functional component part and assembly is separately represented. Also, where appropriate, voltage readings are shown.	SEMI E149
scenario	a group of SECS-II messages arranged in a sequence to perform a capability. Other information may also be included for clarity.	SEMI E30
scenario	a causal chain involving the hazard and ending in one or more instances of harm to personnel, damage to equipment or facility, or in release of material from primary containment.	SEMI S10
scope	the specification of one or more objects that starts with a specific owner object and proceeds downward through a hierarchical sequence of ‘owns’ relationships.	SEMI E39
scoring	marks, grooves, scratches, or notches with definite length, width, and depth physical characteristics.	SEMI G49
scrap judgment	failed to meet performance indexes or continued use requirements after evaluation.	SEMI PV101
scrape	the irregular removal of a deposited layer from a base material by a shearing action from another surface such that the base material is exposed over an extended area. It can also apply to the removal of surface layers from a material. The material removed from the scraped area may build up at the edges of the scrape. The deposited layer may be a metal or glass.	SEMI G61
scrapped units out	the number of units of production (including broken units, external rework, etc.) that exit the factory without finishing production during the period being measured.	SEMI E124
scratch	an elongated mark or groove cut in the surface by mechanical means, not associated with the predominant surface texture pattern.	SEMI F19, HB9

Term	*Definition*	*Standard(s)*
scratch	an abrasion in the surface of a metallization layer which exposes the base material.	SEMI G8, G53
scratch	a shallow groove or cut below the established plane of the surface of a semiconductor wafer, with a length to width ratio greater than 5:1.	SEMI M59, M92
scratch	a surface fissure generally caused during handling.	SEMI D9
scratch	an elongated mark or groove cut in the surface by mechanical means, not associated with the predominant surface texture pattern.	SEMI F73
scratch	long, narrow, shallow groove or cut below the established plane of the surface.	SEMI P5
scratch	(macroscratch, microscratch): long, narrow, shallow groove or cut below the established plane of the surface, seen either before or after etching. The ratio of the length of the figure to the width of the figure must be greater than 5:1 in order to be defined as a scratch.	SEMI M10
scratch (on plating)	a surface deformation which exposes underlying metallization.	SEMI G62
screw dislocation (SD)	a line defect in the crystalline lattice in which the Burgers vector is parallel to the dislocation line, specifically l = [0001] and b = [0001]. Therefore for (0001)-oriented GaN, screw dislocations propagate approximately perpendicular to the surface normal.	SEMI M86
seal	a device (i.e., gasket, O-ring, etc.) that joins two elements or systems so as to prevent leakage.	SEMI F74
seal area, on a semiconductor package	the area designated for sealing a cover or lid to a cofired ceramic package, or a cap to a cer-DIP or cer-pack base.	SEMI G1, G3, G5, G22, G26, G33, G34, G39, G50, G61
seal cap	an end closure or plug to block the open end of a tube or fitting to allow the specimen to be pressurized with nitrogen gas.	SEMI F12
seal chemical compatibility	the ability of the molecules of a seal to coexist with process chemistries without the degradation of either	SEMI F51
seal integrity	evaluation of the seal material for any paths that could allow environmental conditions to ingress the cavity or egress from the cavity and the bond quality between the package and seal material or the seal material and the lid. The width or thickness of the seal material may also be important to the integrity, based on the permeability of the material and/or structural strength required for the application.	SEMI MS3, MS8
seal integrity	a measure of the quality of the package seal. Evaluation of the seal material for any paths that could allow environmental conditions to ingress the cavity or egress from the cavity and the bond quality between the package and seal material or the seal material and the lid is necessary to determine the seal integrity. The width or thickness of the seal material may also be important to the integrity, based on the permeability of the material and/or the structural strength required for the application.	SEMI MS10
seal ring	area designated for attaching the lid to the package by welding or soldering techniques.	SEMI G53
seal type converter	a sandwich component that converts from one surface mount seal type to another.	SEMI C88, F117
seal zone	a surface on the tool at the BOLTS plane for sealing to the box opener/loader.	SEMI E63
seal zone	a surface on the equipment at the BOLTS/Light plane for sealing to the box opener/loader.	SEMI E92
sealing	the creation of a hermetic closure.	SEMI MS3
sealing system	a system that consists of two mating surfaces (e.g., component/ substrate), seal(s), fasteners (screws), and any necessary hardware (e.g., seal retainer).	SEMI F74
seam tape	adhesive-coated tape employed to seal the seam between the cover and the base of a wafer shipping box.	SEMI M26

Term	*Definition*	*Standard(s)*
seating plane	in plug-in packages such as dual-in-line (side-brazed or cer-DIP) or pin grid arrays, the plane defined by the three lowest stand-off features on the lead or pins as measured from the bottom of the package, or in the absence of these features, by the package base or mounting plane. The features, such as shoulders or projections, hold the package off the circuit board to which it is mounted. This gap allows solder flux and residues to be cleaned after soldering the device and, in some cases, to allow for sufficient cooling air flow around the device. A prescribed force is used to hold the device in the mounting holes when the seating plane is to be measured.	SEMI G22, G33, G61
secondary alignment	a procedure which improves the accuracy of the coordinate system mapping on a substrate in a limited area of the substrate.	SEMI E30.5
secondary container	the outermost box of the smallest transport unit. Typically cardboard boxes or similar boxes are used.	SEMI M26, M45
secondary containment	tubing or piping which contains the primary piping or tubing. The purpose of this configuration is to control leaks and to protect against spills. Secondary containment of liquid chemical systems often consist of compatible materials.	SEMI F31
secondary containment	level of containment that is external to and separate from primary containment. Secondary containment is a method of safeguarding used to prevent unauthorized releases of toxic or hazardous gases into uncontrolled work areas. Secondary containment means those methods or facilities in addition to the primary containment system.	SEMI F6
secondary containment	pipe or tubing that contains the process plumbing intended to provide a second level of containment in the event of failure of the primary process plumbing. Clear PVC pipe is typically, but not exclusively, used for the secondary containment.	SEMI F46
secondary containment	the second level of containment, the purpose of which is to contain substances of concern should they be released from their primary containment due to failure or to maintenance or service operations. This pertains to both liquids and gases.	SEMI S6
secondary containment	the second level of containment, the purpose of which is to contain material should it be released from its primary containment due to failure or to maintenance, or service operations. This pertains to both liquids and gases.	SEMI S10
secondary exhaust ventilation (SEV)	airflow that, in normal operation of the equipment, does not extract substances of concern, but operates continuously to extract substances of concern should they be released from their primary containment due to failure or to maintenance or service operations.	SEMI S6, S18, S30
secondary flat	a flat of length shorter than the primary orientation flat, whose position with respect to the primary orientation flat identifies the type and orientation of the wafer.	SEMI M59
secondry frame	a communication frame or interval frame generated after corresponding primary frame.	SEMI E54.21
secondary ions	ions that leave the specimen surface as a result of the primary ion beam sputter ionizing the specimen surface atoms.	SEMI M59
secondary ion mass spectrometry	a method for analysis of impurities by separating and counting secondary ions from the specimen (silicon wafer) surface by their mass-to-charge ratio. Also known as *secondary ion mass spectroscopy*, but it should be noted that the word *spectroscopy* does not imply quantitation.	SEMI M59
secondary message	a message with an even numbered message ID. Also the second message of a transaction.	SEMI E4
secondary message	an even-numbered message. Also the second message of a transaction.	SEMI E5
secondary packaging	a protective portable container for carriers that is used to ship wafers in a carrier.	SEMI E159, M80
secret key cryptography (SKC)	also known as Symmetric Key Cryptography, a cryptographic algorithm that employs one single key for both encryption and decryption. SKC is widely used for bulk encryption of data due to its speed over PKC.	SEMI E132
SECS Equipment Data Dictionary (SEDD)	an XML-formatted data file that contains definitions of key elements of a production equipment's SECS-II interface. This may include such elements as collection events, variables, and alarms.	SEMI E172

Term	*Definition*	*Standard(s)*
SECS-I compliant	this term is used to identify a system that complies completely with SEMI E4.	SEMI D27
SECS-II compliant	this term is used to identify a system that complies completely with SEMI E5.	SEMI D27
SECS-II Message Notation (SMN)	XML notation that complies with the requirements in this Specification including the requirements in the Complementary File.	SEMI E173
section linewidth	width of the planar rectangle defining the intersection of a linewidth bounding box and a plane parallel to and a specified distance from the reference plane.	SEMI P35
section, of a brick (SC)	a section of a brick along its height perpendicular to the brick axis.	SEMI PV32
sector, of the FQA	a portion of the outer annulus of the FQA with a defined radial length and an angular extent in degrees equal to 360/*N*, where *N* is the number of sectors in the annulus.	SEMI M59
security profile	the security profile defines the access privileges of a participating system. Security profile implementation is specified by the participating systems.	SEMI E36
Segment	a part of a production line that has a Flow Connection and controlled by one host.	SEMI A2, A5
segment, of an edge profile	a defined region of an edge profile on a silicon wafer.	SEMI M59
segregation	a practice in design and operation to prevent non-compatible gases from co-mingling.	SEMI F22
seismic bracing	structural reinforcement to minimize damage due to earthquakes.	SEMI E70, E76, F107
select	the act of preparing a recipe for execution.	SEMI E42
selectivity to mask	the mask thickness before and after etching is measured. The amount removed is then compared to the depth of the etch and the resulting ratio is known as the selectivity and is typically denoted by X:1.	SEMI MS13
selectivity to oxide	compares the average silicon etch rate to the calculated respective etch rate for the amount of oxide removed at the end of the etch to give a selectivity.	SEMI MS13
self authentication service body (SASB)	is an agent which has the function to associate the authentication codes with the products to which the authentication codes are allocated and the scheme of quality traceability.	SEMI T22
self calibration (coordinate)	set of operations that establish, under specified conditions, the relationship between relative values of quantities indicated by a measuring instrument or measuring system, using self-consistency techniques as a function of the geometry's group of motions, or one-to-one mappings of a feature onto itself, that preserve the geometrical properties of features in that geometry.	SEMI P35
self-paced learning	any delivery system in which the learner determines the pace and timing of a lesson's delivery.	SEMI E150
semi-auto operation	the operating method controlled by a computer and an operator. The operator confirms the results of each command in a recipe using an automatic operation. Uses a recipe with an operator.	SEMI P30
semi-batch blending	the process of chemical blending in which the chemical constituents are combined in line, and then held in a tank or vessel for dispense at a later time. This method allows for blended batch composition qualification prior to the release of the batch for consumption or use.	SEMI F39
semiconductor manufacturing equipment (SME)	equipment used to manufacture, measure, assemble, or test semiconductor products. It includes the equipment that processes substrates (e.g., silicon wafers, reticles), its component parts, and its auxiliary, support or peripheral equipment (e.g., chemical controllers, chemical delivery systems, vacuum pumps). SME also includes other items (e.g., structures, piping, ductwork, effluent treatment systems, valve manifold boxes, filtration, and heaters) specific to and provided with the aforementioned equipment, but does not include such an item if the item is part of a facility and can support more than one piece of SME.	SEMI S3, S6, S23, S28
semiconductor manufacturing equipment	equipment used in the design, development, manufacture, assembly, measurement and test of semiconductors, and associated semiconductor support processes.	SEMI S8

Term	*Definition*	*Standard(s)*
semiconductor manufacturing process	those manufacturing steps which are part of the creation of active or passive electrical devices on a semiconducting wafer, including the deposition of passivation layers after final metallization, but excluding testing and dicing.	SEMI S14
semiconductor memory	a device that can store data.	SEMI G91
semicontinuous flat mounting surface	a support structure that is horizontal and has very low flatness and coplanarity of the contact surface, with minimized contact area distributed uniformly across the back surface of the wafer under test.	SEMI 3D12
send and request data with reply	a service request that sends data followed by a reply by the receiving device.	SEMI E54.8
send data with no acknowledge	a service request that sends data with no reply.	SEMI E54.8
Send Port	a Port that has a function of sending out a Material.	SEMI A1, A2, A5
sender	equipment or device that is basically on the sending side of single substrates in the single substrate transfer process.	SEMI D51
sender	the end of the SECS-I link sending message.	SEMI E4
sending port	for a specific transfer, the port from which a transfer object is to be removed.	SEMI E32
sensing half-cell	the feature of a pH probe electrode responsible for providing the measurement.	SEMI C101
sensitivity	in particle measurement: the smallest standard particle size specified by the manufacturer that an instrument, method, or system is capable of measuring under specified conditions (with a counting efficiency of 50%). Also called minimum detectable particle size.	SEMI E104
sensitivity	(1) the ratio of the response or change induced in the output to a stimulus or change in the input [McGraw-Hill]. (2) the change in the response of a measuring device divided by the corresponding change in the stimulus. [NIST]	SEMI E151
sensitivity (minimum detectable leak rate)	the smallest standard leak rate that an instrument, method or system is capable of measuring under specified conditions. For the purposes of this document, the Measured Leak Rate shall be corrected to Standard Leak Rate by multiplying by the ratio of 101.32 kPa to the absolute value of the pressurizing helium unless otherwise called for by the MFC specifications.	SEMI E16
sensor	a component that responds to changes in the physical environment and provides an analog or digital input value.	SEMI E98
sensor	a device that responds a change in its physical environment and produces a proportional response, typically electrical.	SEMI MS3
sensor hole	an indentation on the bottom of the cassette for inserting optical sensors.	SEMI E1.9
sensor/actuator device	a device consisting of one or more sensors and/or actuators on the physical tool.	SEMI E98
separable unit	the filter cartridge and housing can be disassembled.	SEMI F59
separation	the condition of having the risks of mixing of chemicals and of exposure of cylinders to chemicals other than those they contain managed by the cylinders being in different gas cabinets.	SEMI S4
sequence of operations	a document defining the function of a system throughout its various operating modes.	SEMI F39
server class	subset of devices that offer similar functions and provide fixed defined functionality in a uniform way.	SEMI E54.15
service	the set of messages and definition of the behavior of a service-provider that enables remote access to a particular functionality.	SEMI E40
service	a function offered or supported by an object. A service consists of a sequence of service primitives each described by a list of parameters. A service excludes definition of message structure and protocol.	SEMI E54.1, E54.10

Term	*Definition*	*Standard(s)*
service	operation or function that an object and/or object class performs upon request from another object and/or object class.	SEMI E54.14
service	represents a function offered to a user by a provider. A service consists of a sequence of service primitives, each described by a list of parameters.	SEMI E90
service	a function provided by a service provider that is performed through an operation specified by the provider.	SEMI E96
service	unplanned activities intended to return equipment that has failed to good working order. See also the definition for maintenance.	SEMI S2, S6, S12, S19, S28, S30
service	unplanned activities intended to return equipment, which has failed, to good working order.	SEMI S8
service	unplanned activities intended to return equipment that has failed to good working order. Refer also to the definition for *maintenance*.	SEMI S10
service	unplanned activities intended to return equipment that has failed to good working order. See also *maintenance*.	SEMI S22
service (or message service)	usually means repair. Represents a function offered to a user by a provider. A service consists of a sequence of service primitives, each described by a list of parameters. A service excludes definition of message structure and protocol.	SEMI E41, E54
service (or message service)	represents a function offered to a user by a provider. A service consists of a sequence of service primitives, each described by a list of parameters. A service excludes definition of message structure and protocol.	SEMI E39
service access element	an addressable location in a device for the directing of service requests.	SEMI E54.17
service access point	an addressable location in a device for the directing of service requests.	SEMI E54.8
service access point	an addressable location in a device for the directing of service requests.	SEMI E54.14
service contract	an agreement for the supplier to provide equipment service or maintenance under specified terms and conditions beyond that which is supplied with the equipment.	SEMI E35, E140
service provider	the software control entity that is the provider of a particular functionality which may be accessible remotely.	SEMI E40, E41, E42
service provider	a service provider is an application responsible for providing services to service users.	SEMI E53
service provider	a legal entity that provides a web service.	SEMI E142.3
service provider, server	an object providing services to other objects as specified by its published operations.	SEMI E96
service resource	a logical group of one or more services within a specific area of functionality.	SEMI E39
service user	a service user is any application that uses the services.	SEMI E53
service user	the software control entity that is the user of any of the related services.	SEMI E40
service user (service consumer)	the software control entity that is the user of any of the related services.	SEMI E41, E42
services	a set of closely related messages.	SEMI E53
server	(a) role of an AREP in which it returns a confirmed service response APDU to the client that initiated the request. (b) object which provides services to another (client) object.	SEMI E54.14
session	a relationship established between two entities for the purpose of exchanging HSMS messages.	SEMI E37
session	in this document, the term ‘session’ refers to an *Authenticated Session* unless specified otherwise. It has no relation to the sessions that may be defined elsewhere.	SEMI E132
session entity	an individually selectable entity participating within an HSMS-GS system.	SEMI E37
session ID	a 16-bit unsigned integer which identifies a particular session between particular session entities.	SEMI E37

Term	*Definition*	*Standard(s)*
set of bottleneck equipment *(F_e*)*	the collection of production equipment of the same type that has the highest average *operational efficiency* in the factory during the period being measured. Elements of this set are indicated by '*f*', and the equipment type is indicated by '*e**'.	SEMI E124
set of equipment of type e (F_e)	the collection of production equipment of type $e \in E$ in the factory. Elements of this set are indicated by '*f*'.	SEMI E124
set of equipment types I	the collection of the different types of production equipment in the factory, including metrology equipment and material handling vehicles and conveyors. Elements of this set (which are the different types of equipment) are indicated by '*e*'.	SEMI E124
set of process steps of product type p on equipment type e (S_{pe})	the collection of the different process steps (including metrology inspection and material handling transport) planned for a unit of production of product type *p* on equipment of type *e* in the factory. Elements of this set are indicated by 's'.	SEMI E124
set of product types (P)	the collection of the different types of products manufactured in the factory. Elements of this set are indicated by '*p*'.	SEMI E124
set pressure	desired pressure level as set by user for a given flow.	SEMI F101
set pressure sensitivity	the minimum pressure increment that can be repeatedly set on a regulator.	SEMI F101
set pressure stability	the variation in the outlet pressure that occurs under steady state conditions, within the control range of a regulator.	SEMI F101
set point	the input signal provided to achieve a desired flow, reported as sccm, slm, or percent-full scale.	SEMI E17, E56, E69, E77, E80
set point limit, lower	the lowest set point at which the instrument is specified to operate.	SEMI E56, E69
set point limit, upper	the highest set point at which the instrument is specified to operate, usually full scale.	SEMI E56, E69
set point tolerance	the range (±) of static pressure within which an exhaust enclosure will perform efficiently and effectively.	SEMI S6
setting	a static value accessible to the user, through one or more methods, that is used by equipment to control its process. Settings include, but are not limited to, setpoint values. Settings typically may be specified within a recipe.	SEMI E42
setting hole	a hole formed in a retainer for attaching the retainer. This makes a pair with a retainer hook.	SEMI M29
settling time	the time between the set point step change and when the actual flow remains within the specified band.	SEMI E17, E56
settling time	the time elapsed from the application of an input to the time at which the output has reached and remained within a specified tolerance of its final, targeted, or otherwise specified value.	SEMI E151
setup	(1) (verb) the performance of one or more steps that puts the equipment into a known state in which it is ready to perform a specific process. (2) (noun) the state of the equipment once it has been setup.	SEMI E98
set-up	a description of the current process capability of an equipment.	SEMI E94
severity	the extent of potential credible harm.	SEMI S2, S10, S30
severity	the extent of the worst credible loss from a mishap caused by a specific hazard.	SEMI S14
severity	the extent of the worst credible loss (damage, injury, or release) from a mishap caused by a specific hazard.	SEMI S22
SHA-256	member of the SHA-2 family of hash functions that generates a 256-bit hash value.	SEMI E125.2, E132.2

Term	*Definition*	*Standard(s)*
shadow footprint	the area of the floor space directly under every part of the piece of equipment during its operation. This area includes any temporary projections from the piece of equipment during loading or processing (e.g., carriers that stick out from the piece of equipment or equipment load ports that protrude only when the piece of equipment is being loaded).	SEMI E72
shall	a term indicating that a provision is a requirement of this specification, meaning understood to be mandatory.	SEMI F1
shallow etch pits	etch pits that are small and shallow in depth under high magnification, >200×. Also known as *saucer pits*.	SEMI M59
shape	for wafer surfaces, the deviation of a specified wafer surface relative to a specified reference plane when the wafer is in an unclamped condition, expressed as the range or total indicator reading (TIR) or as the maximum reference plane deviation (maximum RPD) within the specified fixed quality area; compare flatness, which applies to the front surface geometry when the wafer is in the clamped condition.	SEMI M59
shape memory	a property of a material that, having been deformed, can recover its previous form after certain stimuli (e.g., heat).	SEMI MS3
shear	have forced completely in *X*-*Y* direction.	SEMI G63
shear modulus	a type of elasticity ratio which shows divergence elasticity. When divergent deformation stress τ and the strain Φ resulting from the stress are proportionate, the proportionate constant $G = \tau/\Phi$ is called Shear Modulus, a material characteristic.	SEMI D9
sheet resistance, R_s [Ω or Ω per square]	of a semiconductor or thin metal film, the ratio of the potential gradient (electric field) parallel with the current to the product of the current density and thickness. This quantity is equal to the bulk resistivity divided by the thickness of the material, taken in the limit as the thickness approaches zero.	SEMI M59, PV81
shelf	a structure that holds tape frames.	SEMI E185
shelf life	the period of time for which the specification of a gas is guaranteed by the supplier, starting from the time of analysis. It defines the period for which the supplier guarantees the actual level of impurities, as analyzed, to remain at or below the specification limit for a particular gas grade.	SEMI C52
shell	a part of FOUP collaborating with a door on the front side to isolate, hold, and protect works inside.	SEMI E185
shield gas	inert gas, or gas mixture, that protects the electrode and molten puddle from atmosphere and provides the required arc characteristics.	SEMI F78, F81
shifter film	an optical film to control phase angle and light transmittance. Also referred to as ‘attenuated shifter film’.	SEMI D84
shifter side reflectivity	a ratio of the intensity of reflected light to the intensity of incident light onto the surface of a shifter film. The reflected light is the sum of the reflected light from the shifter surface and reflected light from the boundary between shifter and glass, and the boundary between glass and air.	SEMI D84, P29
shifter transmittance at quartz reference	a ratio of the intensity of light transmitted through a shifter area to the intensity of light transmitted through an opening area or quartz substrate. Also referred to as ‘relative transmittance’.	SEMI D84
shifts	duration of a routine work day, typically 8, 10 or 12 hours as required to accrue a minimum of 40 equivalent hours within a 7-day (one week) period.	SEMI E70
ship to control (STC)	the use of statistically derived control limits for the purpose of shipping decisions.	SEMI C64
shipment	a large amount of goods sent together to a place or the act of sending them.	SEMI PV56
shipping box	a whole container containing a shipping cassette. This is composed of a shipping cassette, an outer box, retainers, gasket, and clamps.	SEMI M29
shipping box	a protective portable container for a carrier and/or wafer(s) that is used to ship wafers from the wafer suppliers to their customers.	SEMI 3D3, E119, M26, M31

Term	*Definition*	*Standard(s)*
shipping box	a protective portable carrier that is used to ship wafers from the wafer suppliers to their customers.	SEMI M80
shipping-box front-opening mechanical interface (SFMI)	optional automated-shippable door style for a FOSB that is compatible with SEMI E62, and must be considered characteristics with exceptions.	SEMI M31
shipping cassette	a cassette additionally defined herein for shipping among cassettes.	SEMI M29
shipping container	a carton used to transport wafer boxes; it is typically constructed of corrugated cardboard.	SEMI 3D3, M26
shipping document	documents required when shipping.	SEMI M45
shipping pack	a package or shipping container/final container that is of sufficient strength to be used in commerce for packing, storing, and transporting products.	SEMI 3D3, G71
shipping pack	package or shipping container/final container that is strong enough for industrial use for product packaging, storage, and shipping.	SEMI G83, T20.1
short circuit current rating	the maximum available current to which an equipment supply circuit is intended, by the equipment manufacturer, to be connected.	SEMI S2
short circuit current rating	the maximum prospective available current to which an equipment supply circuit is intended, by the equipment manufacturer, to be connected.	SEMI S22
short diagonal length, of a nominally square Si wafer	the shortest distance along a diagonal line between an intersections of a chamfer line and a diagonal line.	SEMI PV46
short edge length, of a nominally square or pseudo-square Si wafer	the shortest distance between adjacent chamfer corner points along one wafer edge.	SEMI PV46
short integer (SINT)	an integer, one byte long, in the range −128 to 127.	SEMI E54.1, E54.10, E54.22
short wavelength cut-off	wavelength that the attenuation ratio of its amplitude becomes 75% when the traced profile is passed through the low-pass wavelength filter which eliminates noise element.	SEMI D7
short reference edge	a short edge of a substrate and their extension on the orientation corner side.	SEMI 3D23
short reference edge (SRE)	two short edges of a substrate and their extension lines. SRE1 — extension line of SRE on the orientation corner side. SRE2 — extension line of SRE on the opposite side of the orientation corner.	SEMI D44, D48, D49, D52
short time irradiation	irradiation for a time ≤ maximum irradiation time allowed for PE foil.	SEMI PV10
short term exposure limit (STEL)	an occupational exposure limit (OEL) for an exposure period much less than a work shift, typically fifteen minutes. The time period is specified as part of the STEL.	SEMI S6
short wavelength cut-off, λc	wavelength that the attenuation ratio of its amplitude becomes a standard value when the traced profile is passed through the low-pass wavelength filter which eliminates roughness element.	SEMI D15
shot	an area exposed by a lithography system on a wafer with a single flash or scan.	SEMI P42
shot area	an area divided with masking blades on reticle. It is exposed as a single shot.	SEMI P42
shot area ID	identifier for identifying shot areas.	SEMI P42
shot area information	information related to the rectangular area used for exposure at a time.	SEMI P42
shot area position shift	shifting measure of the reference position of a shot area with the reference position of a shot on a wafer.	SEMI P42
shot area shift	s coordinate of a reference position of the shot area, relative to a reference position of a frame.	SEMI P42
shot area size	size of an area of a rectangle used as a shot area. It is expressed with size of X and Y directions.	SEMI P42

Term	*Definition*	*Standard(s)*
shot ID	identifier for each shot.	SEMI P42
shot information	information related to shots.	SEMI P42
shot location	the coordinate of the shot expressed based on the matrix arrangement for a shot on a wafer.	SEMI P42
shot map	information related to shots exposed on a wafer.	SEMI P42
shot map array	maximum number of shots for the matrix arrangement. It will be expressed as the number of shots in the X and Y directions.	SEMI P42
shot map information	information related to shot arrays on a wafer.	SEMI P42
shot map offset	translational offset for a shot arrangement on wafer relative to a reference position on the wafer.	SEMI P42
shot position	the coordinate of a reference position of the shot relative to a reference position of the wafer.	SEMI P42
should	a term indicating that a provision is recommended as good practice but is not a requirement of this specification.	SEMI F1
shoulder bend location	measured from the outermost point of the inner shoulder bend radius.	SEMI G14, G16, G36, G37
shoulder width intrusions/ protrusions	any variations in straightness along the defined shoulder width caused by dambar removal.	SEMI G14
shrinkage tube	the part consisting of insulation material, which contacts and insulates a part by shrinking.	SEMI D36
shutdown	the time required to put the equipment in a safe condition when entering a nonscheduled state (NST). It includes time for any necessary activities to reach a safe condition. Shutdown occurs only in NST.	SEMI E10
shutoff valve	a valve that is designed for, and capable of, positive closure to prevent flow within a system. Typical shutoff valves include: manually actuated, power-actuated, or spring-actuated, fail-safe shutoff valves. Generally excluded are self-actuated valves such as check valves, pressure regulators, flow controllers, and other devices that are not intended to provide positive shutoff for safety isolation.	SEMI F1
Si(111)	111 crystallographic plane of silicon.	SEMI F79
Si feedstock	the designation given to a silicon solid material by a manufacturer or purchaser whereby the characteristics of that material are sufficient to produce silicon solar cells.	SEMI PV1
side grip	handling of a reticle by contact only with its sides.	SEMI E152
side grip pits	two rectangular indentations on each side of the cassette for lifting and rotating the cassette.	SEMI E1.9
side handling flanges	horizontal projections on the sides of the pod (sides parallel to the bilateral reference plane) for lifting, transportation or positioning of the pod.	SEMI E100, E111, E112
side interface feature	an interface means to perform a seal between the mini-environment of the equipment and box opener/loader.	SEMI E92
side load	a result of bending a tube in a specified arc, consequently subjecting the tube fitting connection to a radial stress.	SEMI F9
side porosity	voids or holes with visible shape, size, and depth that are detected around a molding preform.	SEMI G49
side port adapter	a sandwich component that provides an a tube stub protruding from the side.	SEMI C88, F117
side-to-side misalignment	the offset of the center lines of corresponding leads or pins from one side of the package to another side.	SEMI G61
side-view SMD LED	a SMD LED whose (optical radiation) emitting surface is normal to the PCB surface.	SEMI D62
sidewall angle	angle in degrees between a line through the edge of the TSV and the horizontal plane.	SEMI 3D1

Term	*Definition*	*Standard(s)*
sidewall roughness	the non-repeating irregularities of the sidewall surface texture.	SEMI MS13
sidewall surface texture	the local character of the surface formed by the sidewall of a TSV opening.	SEMI 3D1
sidewall topography (ST)	the quantitative measure of the sidewall surface texture. Topography is concerned with surface shape and features, local detail, and the three-dimensional quality of the surface.	SEMI 3D1
sievert (Sv)	unit of dose equivalent. Most instruments used to measure ionizing radiation read in dose equivalent (rems or Sievert). 1 Sv = 100 rems.	SEMI S2
signal-to-noise ratio (SNR)	ratio of the variation in the manufactured product to the precision of the measurement system.	SEMI E89
signal word	the word that calls attention to the safety label and designates a degree or level of hazard seriousness.	SEMI S1
signature	a signature is the name, parameters, return values, and exceptions for a specific operation.	SEMI E96
signed integer (INT)	an integer, two bytes long, in the range −32768 to 32767.	SEMI E54.1, E54.10, E54.22
silicon carbide (SiC)	semiconductor crystal composed of silicon and carbon, which will exhibit a large number of polytypes such as 3C, 4H, 6H, and 15R.	SEMI M92
silicone adhesive for PV modules	silicone adhesive used to adhere glass and supporting materials, etc., in the installation of photovoltaic modules on the ground, is called the silicone adhesive used for photovoltaic modules.	SEMI PV98
SIMOX wafer	SOI wafer made by implanting oxygen into a base silicon substrate.	SEMI M59
simulation	any representation or imitation of reality used as an instructional strategy to teach problem solving, procedures, or operations by immersing learner in situations resembling reality. The learner's actions can be analyzed, feedback about specific errors provided, and performance can be scored.	SEMI E149, E150, E165
simulator	any device that can provide a simulation.	SEMI E165
simultaneous handoff	concurrent handoff operations of two carriers. Simultaneous handoff is in parallel, meaning two carriers are transferred at the same time.	SEMI E84
single arm/double hand AMHS equipment	AMHS equipment which hands off two carriers using a single arm mechanism with two hands (dual end effectors).	SEMI E84
single arm/single hand AMHS equipment	AMHS equipment which hands off a carrier using a single arm mechanism with a single hand (single end effector).	SEMI E84
single beam spectrum I	intensity of IR radiation impinging on the detector as a function of the wavenumber.	SEMI M82
single communication connection	exactly one physical connection using exactly one logical session and a standard set of messages.	SEMI E87, E109, E171
single handoff	the transfer of a single carrier in a handoff operation.	SEMI E84
single layer alumina metallization (SLAM)	which denotes a package design without a physical die attach cavity.	SEMI G33
single-layer phase shift mask	an attenuated phase shift mask having a thin film of the same material composition, to give a certain phase angle and transmittance. It is also referred to as 'Only PSM'.	SEMI D84
single line drop	a hookup strategy where a piece of processing equipment has only one point of connection per facility service. All manifolding for an individual service is handled with in the equipment.	SEMI E76, F107
single path cluster tool (SPCT)	a cluster tool in which all units follow only one process path.	SEMI E10

Term	*Definition*	*Standard(s)*
single-point failure	a failure resulting from the malfunction of one individual device or component or from one improper human action.	SEMI S28
single substrate	a glass substrate that is transferred by single units in the fab.	SEMI D51
single substrate transfer	transfer to handover single substrates between single substrate transfer system and process equipment.	SEMI D51
single substrate transfer handshake	an exchange of signals between process equipment and single substrate transfer system to transfer single substrates.	SEMI D51
single substrate transfer system	equipment or control mechanism having substrate transfer capabilities for transferring single substrates from one piece of process equipment to another piece of process equipment.	SEMI D51
single-block message	a message sent in one block by the message transfer protocol.	SEMI E5
single-layer attenuated phase shift mask	an attenuated phase shift mask having a thin film of the same material composition, to give a certain phase angle and transmittance. An attenuated shifter film whose components gradually change is classified as a single layer.	SEMI P29
single-path cluster tool (SPCT)	a cluster tool in which all units follow only one process path.	SEMI E79
sintering	the compression of metal particles while heated below the melting temperature to form a dense compact that can be formed or machined.	SEMI MS3
site	a single *x,y* coordinate where an action can be performed (e.g., *alignment* or *review*). The area associated with a site is determined by the equipment accuracy (e.g., optics, stage algorithms).	SEMI E30.1
site	a single point on a substrate used for alignment, or the center of an area of the substrate within which measurements are made.	SEMI E30.5
site	a rectangular area, on the front surface of a wafer, whose sides are parallel and perpendicular to the primary orientation flat or to the notch bisector, and whose center falls within the FQA.	SEMI M59
site array	a set of contiguous sites.	SEMI M59
site, defective	a site not conforming with the specification.	SEMI E177
site flatness	the TIR or the maximum FPD of the portion of a site that falls within the FQA.	SEMI M59
site, of the grid LC	an opening of the grid covered by a film where lamellas are placed.	SEMI E177
site, on CSW	rectangular area on a CSW, the corners of which are defined by measurement points and the center of which is within the FQA.	SEMI HB6
size	designation of a flow limiting device, stated as the nominal internal diameter of an equivalent orifice.	SEMI S5
size of exposed portion	the length of the glass substrate exposed from the packing box (full box type) when the lid of the packing box is open.	SEMI D25
size of mounting holes	the length, width, and radius of the arc.	SEMI PV86
skewness	a signed statistical measure of asymmetry in a data distribution.	SEMI C64
skid	a stylus probe support which acts as both a filter and a datum for probe movements.	SEMI F37
skidless	a type of instrument that does not use an external skid attached to the probe to act as a datum. Instead, it references a datum plane internal to the measurement equipment.	SEMI F37
skill	skill is an attribute of factory personnel denoting that they are qualified to assist a process resource or job in the performance of a process capability or some other factory operation.	SEMI E86
skill check	a kinder and gentler term for performance test. See performance-based test.	SEMI E150
skill qualification	a skill qualification indicates that factory personnel meet a requirement (or all requirements) necessary to perform some factory operation.	SEMI E86

Term	*Definition*	*Standard(s)*
skill requirement	a skill requirement is the training or medical examination(s) required to achieve a specific skill.	SEMI E86
skirt	the base for holding the container with non-flat bottom.	SEMI F103
slag	a non-metallic product resulting from the mutual dissolution of non-metallic impurities in some welding processes.	SEMI F78, F81
slave	the block transfer designation for the host.	SEMI E4
slave	a device that is configured and managed by Master; a Slave initiates no unsolicited communications.	SEMI E54.20
slave diagnostics	a method of retrieving a specifically formatted Data Structure that represents the diagnostic status of a DP-Slave.	SEMI E54.8
slave information interface	object which contains device description data values in non-volatile attributes.	SEMI E54.20
slave station	generic name of station other than master station.	SEMI E54.12
slave station	a general term for a node other than the master station.	SEMI E54.23
sleek	a very shallow scratch on the polished surface that is sometimes invisible when the viewing angle is changed.	SEMI D9
sleep level	one or more of functional configurations of SME in sleep mode. Different sleep levels will provide different equivalent energy consumption rates.	SEMI S23
sleep mode	the condition where the equipment is energized but it is using less energy than in idle mode.	SEMI E167, E167.1
sleep mode	the mode, entered by the SME in response to an external command, in which there will be a delay to return to idle but it is otherwise ready for processing. Average equivalent energy use rate in this mode is less than in idle mode.	SEMI S23
slice ID	a part of the wafer ID containing information about individual wafers.	SEMI PV32
slip	a process of plastic deformation in which one part of a crystal undergoes a shear displacement relative to another in a fashion that preserves the crystallinity of the material.	SEMI M59
slip	process of plastic deformation in which one part of a crystal undergoes a shear displacement relative to another in a fashion which preserves the crystallinity of the material.	SEMI M10
slope of a pH probe	the correlation between the pH probe output in millivolts to the pH of a series of known buffer standards.	SEMI C101
slope power spectrum, $S'(f_x$ [µm]	statistical function that shows how the mean-square slope is distributed over surface spatial frequencies.	SEMI MF1811
slot	a two-sided support, for example, as defined for a standard wafer carrier in SEMI E1, when the carrier is oriented with its axis in a vertical attitude.	SEMI E22
slot	a physical location within a carrier capable of containing a substrate. Also referred to as a carrier location.	SEMI E30.1
slot	a physical location within a cassette capable of containing a substrate. Also referred to as a carrier location.	SEMI E91, E146
slot	a position in a carrier where a leadframe, tray, tube, or other media element may reside.	SEMI E123
slot	address of a structural unit within an IO device.	SEMI E54.14
Slot Integrity Mode	term for an equipment mode of operation in which all substrates are returned to the same source carrier and source slot after processing.	SEMI E94
slot map	the information that relates which slots in a carrier hold substrates, both correctly and incorrectly.	SEMI E87, E171, E174
slot map	the information that relates which slots in a reticle pod hold reticles, both correctly and incorrectly.	SEMI E109

Term	*Definition*	*Standard(s)*
slot map read	the process of the equipment reading the slot map for substrate position and placement within the carrier.	SEMI E87
slot map read	the process of the equipment reading the slot map for substrate position and placement within the pod.	SEMI E109
slot related diagnosis	information dedicated to modules for maintenance purpose.	SEMI E54.14
slow scan direction	direction of the scanner motion perpendicular (ortho scanning) or nearly perpendicular (raster scanning) to the fast scan direction.	SEMI C78
slug marks	random dents in the leadframe caused by foreign material in the stamping die.	SEMI G2, G9, G27, G28, G41
slurry ring	a ring-shaped area, higher than the surrounding wafer surface caused by incomplete cleaning of slurry residue.	SEMI M52
slurry system	a distribution system to convey abrasive slurries for use in chemical mechanical polishing (CMP) systems.	SEMI E70
smart pill	a device that performs measurement or drug delivery inside the body.	SEMI MS3
SMIF pod	a pod for controlling the transport environment of wafer cassettes for sizes up to 200 mm as specified by SEMI E19.	SEMI S28
SOAP	the formal set of conventions governing the format and processing rules of a SOAP message. These conventions include the interactions among SOAP nodes generating and accepting SOAP messages for the purpose of exchanging information along a SOAP message path.	SEMI E142.3
softening point	temperature of the glass when its viscosity is approximately $10^{7.6}$ dPa·s.	SEMI D9
soft-bin	soft-bins represent the most detailed view of the test results. Within a process program, each soft-bin is associated with a single hard-bin. Generally, multiple soft-bins are associated with a particular hard-bin.	SEMI E122
soft failure	failure that occurs when an MFC is temporarily incapable of meeting manufacturer's specification for the parameter under test.	SEMI E67
soft failure	failure of an MOS capacitor sensed by its passage of an electrical current equal to or greater than a predetermined value.	SEMI M59
SOI etch pit	defect in an SOI layer decorated by immersing the wafer in an appropriate etch solution.	SEMI M59
SOI layer	the single crystalline (monocrystalline) silicon film that is separated by an insulating layer, typically but not necessarily silicon dioxide (SiO_2), from a base silicon substrate. Note that polycrystalline or amorphous silicon films on oxidized silicon wafers are not considered to be SOI layers.	SEMI M59, MS13
SOI wafer	a multilayer structure of oxide and silicon with a thin film of silicon separated from a base silicon substrate by a buried oxide layer (BOX).	SEMI M59, MS13
solder	an alloy with a melting point equal to or less than 427°C.	SEMI G33
solder	Tin Lead (Pb) as 63/37 or 60/40, unless otherwise specified and agreed upon between user and supplier and stated on procurement drawings.	SEMI G44
solder sphere (solder ball)	solder is a metal alloy used to fuse together two or more objects with terminations having a metallic surface. A solder sphere is used to create an interconnection between a package and a printed circuit board. These solder spheres may include leaded (Pb) or lead-free (Pb-free) alloys and metal alloy coated resin solder balls.	SEMI G93
solder sphere diameter	the diameter of a circle is the length of the horizontal line formed between the directly opposite outer circumference and passing through the center. The sphere diameter in this Standard is defined as the distance determined by either of the two following measurement equipment.	SEMI G93
solderability	an index of the wettability and coverage with solder of lead surface.	SEMI G64
solids percentage	weight of sample after firing divided by weight of sample.	SEMI PV54, PV58

Term	*Definition*	*Standard(s)*
sori	the algebraic difference between the most positive and most negative deviations of the front surface of a wafer that is not chucked from a reference plane that is a least squares fit to the front surface within the fixed quality area.	SEMI 3D4
sori, of a semiconductor wafer	the algebraic difference between the most positive and most negative deviations of the front surface of a wafer that is not chucked from a reference plane that is a least squares fit to the front surface within the fixed quality area.	SEMI M59
sori, of a wafer	the algebraic difference between the most positive and most negative deviations of the front surface of a wafer that is not chucked from a reference plane that is a least squares fit to the front surface within the fixed quality area.	SEMI HB1
sort category	handler specific sorting category related to a physical buffer within a handler where parts are stored after processing based on processing results. Typically there is some software mapping between process results (e.g., Test Result Bins) and a Sort Category.	SEMI E123
sorting	real and virtual separation of test specimens in different categories specified by one or multiple parameters.	SEMI M59
solubility	the relative capability of a fluid being dissolved into a material.	SEMI MS10
solubility coefficients, S	ratio of saturated moisture concentration in molding compounds to partial pressure of moisture in environment.	SEMI G66
sorting	real and virtual separation of test specimens in different categories specified by one or multiple parameters.	SEMI
source gas residue F-GHG	unreacted F-GHG after processing such as chamber cleaning or dry etching of substrates.	SEMI S29
source id	a name or other token that uniquely identifies a specific origin or producer of information from among possible sources.	SEMI F96
source inspection	inspection at the equipment manufacturer's factory to confirm configuration details, review modifications, and confirm hookup designs prior to shipment of equipment.	SEMI E70
source pressure	pressure of the source gas applied to the cylinder connection at the panel inlet.	SEMI F28
space	an unmarked cell or area of a Data Matrix Symbol.	SEMI T10
space	in analogy to line, but a clear feature in a dark field.	SEMI P43
space-traveling vehicle	a vehicle that automatically travels through space, such as in the region just below a factory ceiling, to a specified station where a load/unload operation is performed automatically or manually. Space-traveling vehicles include interbay overhead transport vehicles and intrabay overhead hoist transport vehicles (OHT).	SEMI S17
spacing	the minimum spacing between centroids.	SEMI E15
spacing	the distance from the bilateral plane of one load port to the bilateral plane of an adjacent load port on a semiconductor manufacturing equipment.	SEMI E182, E184
span	the algebraic difference between the upper and lower range values.	SEMI E27, F113
span	the full-scale range of the DUT.	SEMI E56, E69, E77, E80
span shift	the change in span due to a change in ambient temperature from one normal operating temperature to a second normal operating temperature. All other conditions must be held within the limits of reference operating conditions.	SEMI E18
spare part	prepurchased inventory of a nonconsumable or consumable part maintained to service the equipment.	SEMI E35, E140
spatial bandwidth, of an SSIS	the range of wavelengths within which a given instrument operates.	SEMI M59
spatial contrast ratio	the contrast ratio using APL considered test pattern which includes a maximum luminance area and a minimum luminance area displayed on a screen simultaneously.	SEMI D64
spatial frequency	spatial frequency ($F_{spatial}$) is the inverse of spatial wavelength ($\lambda_{spatial}$).	SEMI M59
spatial frequency, f_x,[1/μm]	frequency parameter in the Fourier transform of the surface profile *Z(x)*.	SEMI MF1811

Term	*Definition*	*Standard(s)*
spatial wavelength	spacing between adjacent peaks of a surface profile that is purely sinusoidal.	SEMI M59
spatial wavelength, d_x, [μm]	reciprocal of the spatial frequency, f_x.	SEMI MF1811
SPC scheme	an alternate quality verification scheme that would involve random sampling and analysis of product chemical. This scheme relies on Statistical Process Control to monitor and ensure product chemical quality.	SEMI F46
specialty gas	non-bulk process gases typically stored in cylinders and used to supply one or more process equipment through specialized manifolds.	SEMI E70, E76
species	a particular kind of atom, ion, or molecule or a mixture that, in accordance with this Safety Guideline, is to be considered as if it were a particular kind of atom, ion, or molecule.	SEMI S10
specific device model (SDM)	a model used to specify each type of device, such as a mass flow controller or thermocouple.	SEMI E54.2
specific gravity	the ratio of the mass of a gas to the mass of an equal volume of air at a specified temperature. For liquids, it is the ratio of the mass of the liquid to the mass of an equal volume of water.	SEMI C3
specific gravity of a liquid	the relative density of a solid or liquid, usually when measured at a temperature of 20°C, compared with the maximum density of water (at 4°C).	SEMI C96
specification (equipment operation)	the documented set of intended functions including operating conditions as agreed upon between user and supplier.	SEMI E10
specification and specification limits	the specification limit should fall above or in the range of the result and its uncertainty.	SEMI C3
specified band	the region between ±2% of the final steady state value or ±0.5% of full scale, whichever is greater.	SEMI E17
specimen	a suitably sized piece cut from a reference or test sample, prepared for installation in the HR-GDMS ion source, and analyzed.	SEMI PV1, PV43, PV49
specimen preparation	operations needed to prepare a wafer for examination by use of a metrology tool, or to extract a portion of a wafer and prepare it for examination.	SEMI 3D5
spec.ritdb	a RITdb file containing specification definitions.	SEMI E183
spectral bandwidth	the range of wavelengths in a monochromatic light source, determined as the difference between its half-maximum-intensity wavelengths.	SEMI PV69
spectral model	analytic expression for the power spectral density which contains a number of adjustable parameters called finish parameters.	SEMI MF1811
spectroradiometer	the equipment that measures the spectral energy radiated by a source. The spectral data can be used to calculate photometric and colorimetric parameters.	SEMI D36
specular direction	the central ray of the reflected flux that lies in the PLIN with $\theta_s = \theta_i$ and $\phi_s = 0$.	SEMI ME1392, PV15
specular port	the port on the integrating sphere which is in the opposite side and symmetrical to the measurement port.	SEMI D56
speed of light I	the speed of light in free space is assumed to be 2.9979×10^8 meters/second.	SEMI E114
speed of testing	the relative rate of motion of test fixtures during the test, expressed in mm/min.	SEMI PV98
speed of testing	rate of loading edge movement. It is expressed in millimeters per minute (mm/min).	SEMI G86
speed of testing	rate of loading tool movement.	SEMI G96
sphericity	sphericity is a measurement of sphere's total roundness, given as the ratio of the surface area of an ideal sphere (with the same volume as the given solder sphere) to the surface area of the solder sphere.	SEMI G93
spike	in an epitaxial wafer, a tall thin dendrite of crystalline filament that often occurs at the center of a recess.	SEMI M52
spiral flow	a characteristic value (length) of a method for measuring flowability when pressure is applied during heating and melting of a mold resin.	SEMI G99

Term	*Definition*	*Standard(s)*
spontaneous combustion	the ignition of material brought about by a heat producing (exothermic) chemical reaction within the material itself without exposure to an external source of ignition.	SEMI S25
spool flow through component	a null component consisting of an electropolished flow passage and appropriate fittings used in place of the test component.	SEMI F59
spool piece	a null component consisting of a straight piece of electropolished tubing and appropriate fittings used in place of the test component to establish the background.	SEMI E66
spool piece	a null component consisting of a straight piece of electropolished tubing and appropriate fittings used in place of the test component to establish the baseline.	SEMI F28
spool piece	a straight connection piece with similar end connections and orifice size to the component to be tested.	SEMI F38
spool piece	a null component consisting of a straight piece of electropolished tubing and appropriate fittings used in place of the DUT to establish the baseline.	SEMI F43
spool piece	a null component consisting of a straight piece of electropolished tubing or like object and appropriate fittings used in place of the test system to establish the background.	SEMI F70, F70.1
spool piece	a straight connecting piece with similar end connections and orifice size to the component to be tested. This is used in place of the component to establish the test system background level prior to installing the component under test.	SEMI F104
spool piece installation cleanup curve	a plot of particle concentration versus volume passed through the spool piece, immediately after removing the spool piece, draining it, and immediately reinstalling it in the system.	SEMI F104
spot plating misalignment	the variation between the defined and actual center lines of the plated area.	SEMI G62
spreading resistance, $R_s(\Omega)$	of a semiconductor, the ratio of (1) the potential drop between a small-area conductive metal probe and a reference point on the semiconductor, to (2) the current through the probe. This ratio measures metal-to-semiconductor contact resistance as well as classical spreading resistance for a homogenous specimen without electrical boundaries in the vicinity of the probes. For a specimen having resistivity gradients or electrical boundaries, this ratio also includes an effect due to these gradients or boundaries.	SEMI M59
spring back	difference between designed angle of forming tool and actual lead form angle.	SEMI G65
sputtering	removal of successive atomic layers from the surface by bombardment with ions.	SEMI F60
spyware	software that enables a user to obtain covert information about another computer's activities by transmitting data covertly from their hard drive/memory.	SEMI E169
squareness	the total variation of the position of the short sides of a substrate relative to straight lines drawn between the ends of, and perpendicular to, the long reference edge of the substrate.	SEMI 3D23, D24
squareness	deviation of the outline of the substrate from a true square or rectangle. It is defined as PS or PL, but must be recorded with a or b dimensions. Dimensions a and b can be decided voluntarily, but generally, most applications use a = S and b = L.	SEMI D9
SSL	the protocol which enciphers information and communicates on the Internet; Or send/receive exclusively encrypted information.	SEMI T21
stability	the ability of a condition to exhibit only natural, random variation in the absence of unnatural, assignable-cause variation.	SEMI E56, E69, F64
stability	a condition that exhibits only natural, random variations in the absence of unnatural, assignable-cause variations. For the several purposes of this test, stability is defined as ±10% of the accuracy of the DUT at full scale.	SEMI E68
stability	absence of additional variability due to taking measurements over time (typically several days or longer).	SEMI E89
stability	the ability to maintain a value, remain unchanged, or stay within a set of limits or parameters.	SEMI E151
stability, long term	reading ±2% for over one hour.	SEMI F62
stability, short term	reading ±2% within five minutes.	SEMI F62

Term	*Definition*	*Standard(s)*
stabilizers	chemicals used to help maintain physical and chemical properties of a material during processing and service life.	SEMI S25
stable	the state a signal level obtains when its magnitude varies by less than or equal to ±2.0% of full scale over a one minute period.	SEMI F53, F56
stable discharge voltage	effective voltage at lamp ends (between two electrodes) when a main discharge starts (Es[Vrms]).	SEMI D35
stable particle level	particle level that has been consistent for at least eight consecutive readings.	SEMI E66
stackable wafer shipping container	a wafer shipping box or tray that holds a single wafer on a dicing frame and is designed such that multiple shipping containers may be stacked in small volume.	SEMI 3D3
stacking fault	line defect that results from a deviation from the normal stacking sequence of atoms in a crystal. Stacking faults are typically linked together into squares in the case of {100} oriented wafers, and triangles in the case of {111} oriented wafers.	SEMI M59
stacking rib	a rib formed on a top surface of a box top and on a bottom surface of a box bottom so as not to collapse when shipping boxes are stacked. A rib positioned on the top is called a top rib, and a rib on the bottom a bottom rib.	SEMI M29
stage	a general term for a substrate location that serves a specific function such as pre-align or chuck.	SEMI E130
stage positioning error	variations when moving stage to a selected location repeatedly without correction. This is the positioning error of stage, which occurs when traveling to the same site repeatedly without electron beam deflection.	SEMI P30
stage positioning range	range on a wafer that can be measured by moving the wafer. This is the measurable range of a measured wafer placed on a specimen stage with stage moving.	SEMI P30
stagnation	a status of a carrier flow, which shows that the equipment is ready to perform a substrate process, but is forced to stop due to nonreadiness of a carrier which loads or unloads substrates.	SEMI E171
stain	organic or inorganic material on the surface.	SEMI D9
stain	a small-area spot, with no appreciable thickness, on the surface of some color filter material. It may be caused by introduction of foreign substances during processing.	SEMI D13
stain	a two-dimensional substance on a surface of the lid or preform.	SEMI G53
stain	area contamination that is chemical in nature and cannot be removed except through further lapping or polishing such as ‘white’ stains that are seen after chemical etching as white or brown streaks. Not included in this category are non-removable artifacts not caused by contaminants; such artifacts are frequently localized differences in surface texture.	SEMI M59
stair ladder	fixed or portable means of access with a pitch more than 45° but not more than 75°, whose horizontal elements are steps or rungs.	SEMI S2
stairs	fixed or portable means of access with a pitch not more than 45°, whose horizontal elements are steps.	SEMI S2
stand-alone memory	a memory integrated circuit that contains only memory blocks.	SEMI G91
stand-alone type	equipment that carries out an independent process and is not related to the previous and following processes, such as inspection equipment and repair equipment.	SEMI D49
stand off	a certain distance on a mask or reticle to a membrane.	SEMI D37, D53
standard communication interface	any SEMI standard communication port in the equipment used for the purpose of controlling, collection and reporting data. Examples of these interfaces are SECS-II, EDA, and Sensor Bus.	SEMI E151
standard configuration property types	these data types, also known as SCPTs, provide a data type definition and a semantic behavior for the configuration properties of functional blocks.	SEMI E54.16

Term	*Definition*	*Standard(s)*
standard coordinates	a system of Cartesian coordinates with the z-axis along the optical axis of the system and with the x and y axes in the flat plane perpendicular to the optical axis. The system user or vendor will specify the x and y directions in this plane for any particular equipment studies.	SEMI P25
standard deviation	a measure of the variation among the members of a statistical sample.	SEMI F8, F10
standard deviation (SM, SB, SC)	a statistical measure of the spread of the concentration of the counts or particles.	SEMI F23, F24, F25, F26
standard deviation, σ	the positive square root of the variance.	SEMI E35
standard leak rate	the rate at which helium flows at 25°C and 101.3 kPa (760 Torr) through a leak when the high pressure side is at 101.32 kPa and the low pressure side is below 100 Pa (approximately 1 Torr).	SEMI E16
standard leak rate	the flow of helium at 21.1°C (70°F) and 101.3 kPa (1 atm) through a leak when the partial pressure of helium on the high side is 101.3 kPa and the partial pressure on the low side is below 133 Pa (1 torr).	SEMI F1
standard liters per minute (slpm)	the gas volumetric flow rate measured in liters per minute at 0°C and 1 atm.	SEMI C91, F118
standard liters per minute (slm)	the gas volumetric flow measured in liters per minute at 0°C and 101.3 kPa (1 atm).	SEMI F70, F70.1
standard mechanical interface (SMIF)	the interface plane between a pod and another minienvironment.	SEMI E19, E45, E46, E47, E48, T4
standard message set	messages conforming to standard message specifications.	SEMI E87, E109, E171
standard network variable types	these data types, also known as SNVTs, facilitate interoperability by providing a well-defined interface for communication between devices made by different manufacturers.	SEMI E54.16
standard pressure	the pressure in pascals specified as a reference for measurement and comparison. It is defined for use in the semiconductor industry as 101.32 kilo pascals (760 torr).	SEMI E12, E28, E29
standard purity quality	quality of HPW required for lower sensitivity PV processes.	SEMI PV3
standard reporting conditions (SRC)	for test sample; defined by temperature, spectral irradiance, and total irradiance. The term reporting, rather than reference or test, is used because a measurement can be performed at conditions other than SRC and then carefully corrected to be equivalent to be being measured at SRC. As a matter of shorthand, the global and direct terrestrial reference spectra are often referred to as AM 1.5G and AM 1.5D, respectively.	SEMI PV69, PV76, PV80, PV89
standard samples	samples prepared to known ceoncentrations of the analytes, typically 0.1 ppma, 0.2 ppma, 0.5 ppma and 1 ppma to provide a chlorine standard for the ion chromatography (IC) instrument.	SEMI PV74
standard solution	a solution containing a known concentration of the ion to be measured and used to calibrate the chromatograph.	SEMI G52, G59
standard temperature	the temperature to which a volumetric flow rate (measured at the Gas Temperature) is referenced through the ideal gas law (PV = nRT). SEMI E12 defines Standard Temperature as 0.0°C.	SEMI E18
standard temperature	the temperature, in degrees Celsius, specified as a reference for measurement and comparison. It is defined for use in semiconductor industry as 0.0°C.	SEMI E29
standard temperature and pressure	for ventilation measurements, either dry air at 21°C (70°F) and 760 mm (29.92 inches) Hg, or air at 50% relative humidity, 20°C (68°F), and 760 mm (29.92 inches) Hg.	SEMI S2
standard test condition (STC)	standard test conditions for test sample. Sample temperature: 25°C, Spectral irradiance: AM1.5G, Irradiance: 1000 $W \cdot m^{-2}$.	SEMI PV80
standard test condition (STC)	temperature of 25°C ± 2°C, irradiation of 1000 W/m^2 with standard spectral irradiance distribution.	SEMI PV82

Term	*Definition*	*Standard(s)*
standard volumetric flow	for mass flow controllers and mass flow meters, the calculated volumetric flow, at standard temperature and pressure, of gas in a closed fluid channel. Volume at standard temperature and pressure assumes the ideal gas law, PV = nRT. Units of standard volumetric flow are commonly used to express mass flow in mass flow controllers and mass flow meters.	SEMI E29
standards (of an objective)	describes the basis for determining whether a task has been performed competently or, if necessary, fluently. Also called, criteria, measures.	SEMI E150
standardized object	an object formally defined in SEMI Standards and in compliance with the fundamental requirements of SEMI E39.	SEMI E39
standardized object	an object that is formally defined and compliant to SEMI E39, Object Services Standard.	SEMI E98
standby condition	any condition during manufacturing time when the equipment's production criteria are not satisfied, and it is fault free and otherwise able to perform its intended function.	SEMI E58
standby state (SBY)	the equipment state, other than the nonscheduled state (NST), when the equipment system is in a condition to perform its intended function and consumable materials and facilities are available, but the equipment system is not operated.	SEMI E10, E79
standby time	during an observation period, the accumulated time when the equipment system is in the standby state (SBY).	SEMI E10, E79
standoff	the designed separation between the base plane and the seating plane created by a physical feature that is usually formed into the pins or leads. Standoff use, configuration and placement is optional.	SEMI G22, G33, G61
standoff	residual air gap after inserting the leads into a ground steel plate with a specific size hole and applying a specified downward pressure.	SEMI G3
Start of Load Request (SoLR)	a timing when Load Request state starts.	SEMI E171
Start of Unload Request (SoUR)	a timing when Unload Request state starts.	SEMI E171
start-up	the time required for equipment to achieve a condition where it can perform its intended function, when leaving a nonscheduled state (NST). It includes time for any necessary activities (e.g., pump down, warm-up, cool-down, stabilization periods, initialization routines, software load, restoring dynamic values [e.g., parameters, recipes], control system reboot). Start-up only occurs in NST.	SEMI E10
start-up	the initial energization of semiconductor or FPD manufacturing equipment from each source of energy that may introduce a hazard to the semiconductor or FPD manufacturing equipment itself, the persons performing the installation, or the facility.	SEMI S24
state	a static set of conditions and associated behavior. While all of its conditions are met, the state is current (active). Behavior within a given state includes the response to various stimuli.	SEMI E10, E58, E79
state	(1) a static set of conditions. If the conditions are met, the state is current. (2) a state reacts predictably to specific stimuli.	SEMI E91, E130
state diagram	a means of representing state transitions where the boxes represent states and the arrows represent transitions between states.	SEMI E54, E54.1, E.54.10
state diagram	in a LonWorks device, state is represented by the collection of values of local and network variables of the application program. Transitions between states are the result of external events (such as the receipt of a network variable update, or otherI/O event), or internal events (such as the expiration of a timer).	SEMI E54.16
state model	a collection of states and state transitions that combine to describe the behavior of a system. This model includes definition of the conditions that delineate a state, the actions/reactions possible within a state, the events that trigger transitions to other states, and the process of transitioning between states.	SEMI E30, E58
state transition	a change from one state to another state.	SEMI E58

Term	*Definition*	*Standard(s)*
static CBU	a static image shown on a color sequential display is interfered with a fast moving object in front of screen or blinking human eyes, the human vision system will perceive the color separation, this phenomenon is called the static CBU. This effect is much easier to see than dynamic CBU. A wheel chopper is a simple method to detect static CBU.	SEMI D58
static measuring force	this is the normal force applied to the stylus tip.	SEMI C87
static port (opposite of dynamic port)	a port with no associated mechanisms capable of assisting or interfering with the transfer of an object. A transfer partner utilizing a static port for the transfer shall always be passive.	SEMI E32
static posture	a fixed position, with minimal movement of the particular body parts.	SEMI S8
static precision	repeatability.	SEMI P35
static pressure (SP)	the measure of differential pressure across a duct or enclosure wall. That is, the difference between the ambient (pressure of the room in which the duct is located) and the pressure inside the duct. This is usually expressed in pascals (Pa) or inches of water.	SEMI S6
static pressure sensor	a device which measures static pressure.	SEMI S6
static repeatability	variations in average measurement values acquired in a sequence for a pattern. This is the closeness of agreement between the measured values obtained by measuring a pattern with wafer loading, wafer alignment, stage traveling to a measurement site, positioning of a measured pattern, measuring, and wafer unloading.	SEMI P30
static seals	seals that operate with non-moving surfaces.	SEMI MS3, MS6
static state	a condition where the moving parts within the component's wetted flow path are not intentionally cycled.	SEMI F104
static storage conditions	conditions excluding any active movement of test specimens.	SEMI E108
static test	a test performed to determine particle contribution from a minienvironment as a result of no specific minienvironment movement to simulate storage or environmental conditions.	SEMI E146
static test	a test performed to determine particle contribution under steady flow condition through the DUT.	SEMI F43
static test	a test performed on an as-received process panel with all valves in the fully-open position.	SEMI F28
static test	a test performed to determine particle contribution with all components in the gas delivery line or system in open position.	SEMI F70, F70.1
station	equipment which can be connected with CC-Link and is assigned a station number of 0–64.	SEMI E54.12
station	a node.	SEMI E54.23
station	the destination point where an unmanned transport vehicle is programmed to stop for load/unload operation (also known as a control point).	SEMI S17
station controller (SC)	the station controller consists of software that coordinates the actions of the test system and the unit handling equipment (wafer prober, package handler, etc.). It may reside on the test system computer or some other computer. One station controller may be in charge of one or more virtual testers.	SEMI E122
station number	an identifier for uniquely identifying a node within the network.	SEMI E54.23
statistical analysis	basic statistical analysis and presentation of data for testing and verification of performance parameters.	SEMI F39
statistical model	mathematical function relating one or more variables to known and measurable inputs plus one or more unknown stochastic (error) terms.	SEMI E89
statistical process control	a method used by this standard for analyzing experimental data that follows a normal statistical distribution to determine if the test is stable.	SEMI E66

Term	*Definition*	*Standard(s)*
statistical process control (SPC)	the technique of using statistical methods to analyze process or product metrics to take appropriate actions to achieve and maintain a state of statistical control and continuously improve the process capability.	SEMI E133
status data	data that reflects the status of a tool, which can be accessed from the opposite communication end point.	SEMI PV55
steady state	state at which the indicated flow is stable for a 15-minute time period.	SEMI E68
steady state control mode test	a test performed to determine particle contribution during steady state test flow within the normal operating range of the MFC.	SEMI E66
steel or iron reference material	steel or iron sample known carbon content (%, m/m) with certification.	SEMI PV59
steel wool	a special alloy steel which is processed into a thin and long fibrous form. Its cross section surface is polyhedral with edges; it is generally used as an abrasive.	SEMI D60
stream (TCP/IP)	a sequence of bytes presented at one end of a TCP/IP connection for delivery to the other end. TCP/IP guarantees that the delivered sequence of bytes matches the presented stream. HSMS subdivides a stream into blocks of contiguous bytes messages.	SEMI E37
steam atmosphere	atmosphere in a closed vessel containing water, with venting sufficient to maintain temperature at one (1) standard atmosphere and 100° + 0, −5°C.	SEMI G35
step	a horizontal surface, other than a rung, landing, or platform, intended by the supplier to support ascent or descent of people.	SEMI S2
step change	an exponential step in pressure with a time constant of one second or less.	SEMI F64
step function transient response	outlet pressure vs. time when rapidly switching between two different flow rates.	SEMI F101
step height	the distance in the *z*-direction that an initial, flat, processed surface (or platform) is to a final, flat, processed surface (or platform).	SEMI MS2, MS3
step height test structure	a test structure from which step height measurements are obtained.	SEMI MS2, MS3
step measurement, using profilometry	a method to measure depths of etching by comparing the differences in heights between etched and non-etched parts of a specimen measured by profilometry or an equivalent method.	SEMI D10
step pitch	a pitch of matrix arrangement for a shot. The pitch for the X and Y directions can be different.	SEMI P42
step plating	plateau-like plating having more than one level.	SEMI G62
step response time	the time between the set point step change and when the actual flow enters the specified band for the first time.	SEMI E17
stepped grain boundary	a form of preferential etching in which the grains are attacked at different rates, resulting in one grain to appear raised with respect to an adjacent grain, forming a ‘step’ at the grain boundary.	SEMI F19
stereo lithography	a process of forming three-dimensional shapes by laminating two-dimensional shapes made by curing a liquid photopolymerizing resin with a laser beam.	SEMI MS3
stereoscopic 3D display	a kind of 3D display that uses a pair of 2D images as their image sources for the viewer’s eyes. Optical means or electronic means on the display are used to separate the images. The viewer wearing specific 3D glasses is able to watch stereoscopic images with depth perception.	SEMI D59
stereoscopic display with active glasses	a kind of 3D display for which the viewer should wear a pair of active glasses when watching. Active glasses include liquid crystal (LC) shutter glasses. The shutter glasses can alternately open and close their left/right LC lens synchronized with the display to show the corresponding images received by the viewer’s eyes, as shown in Figure 3 (of SEMI D59).	SEMI D59
stereoscopic display with passive glasses	a kind of 3D display for which the viewer should wear a pair of passive glasses when watching. The passive glasses include linear polarization glasses, circular polarization glasses and color filter glasses, etc.	SEMI D59
stiction	unintended adhesion of a moving part to another part.	SEMI MS3

Term	*Definition*	*Standard(s)*
stocker	an AMHS storage device.	SEMI E85, E156
stocker controller	stocker Equipment Controller that communicates with the host and represents the system as the equipment.	SEMI E88
stocker crane	stocker transfer agent specialized for the movement of carriers between shelves and input and output port locations.	SEMI E88
stocker crane	stocker transfer agent that moves carriers between stocker storage location and internal load port location.	SEMI E156
stocker equipment	an individual stocker viewed as a single piece of equipment, with distributed components and distributed control.	SEMI E88
stocker port robot	robot for transport of the carrier to/from vehicle or conveyor and from/to internal load port location in a stocker.	SEMI E156
stocker shelf	locations within the stocker equipment to store carriers. These locations exclude load ports.	SEMI E88
stocker unit	a physical component of the stocker system, such as a stocker crane, ID reader, wafer sensor, shuttle port, etc.	SEMI E88
stop line	it shall be the line orthogonal to the vertical plane along X1 and X2, and passing the datum point 2A on the substrate center line, of which substrate is halted at the substrate stop position.	SEMI D44
stooping	bending the head and shoulders, or the general body, forward and downward from an erect position.	SEMI S8
storage area	an area where objects and data are stored.	SEMI E42
storage buffer	a set of one or more locations for storing carriers in the transport system.	SEMI E82, E168.2, E168.3
storage device	a device that contains data and information that a computing device can access.	SEMI E188
storage equipment (stocker)	equipment whose intended function is primarily to provide storage, either short-term or long-term, for carriers.	SEMI E98, E168
storage location	a specific type of *carrier location* that is used for carrier storage.	SEMI E153, E168.2, E168.3
storage modulus, G'	a parameter that measures pad hardness in dynamic oscillation mode of applied stress, or applied strain, indicates elastic component of viscoelastic deformation.	SEMI C100
storage temperature limits	the temperature limits to which the mass flow controller may be subjected in an unpowered condition. No permanent impairment shall take place, however minor adjustments may be needed to restore performance to normal.	SEMI E18
strain gradient, s_g $[L^{-1}]$	the positive difference of strain at two points in a material divided by the distance between them.	SEMI MS3
strain point	temperature of the glass when its viscosity is approximately $10^{14..5}$ dPa·s.	SEMI D9
stratum	a number assigned to a clock in a network that indicates the clock's quality and position in the time synchronization hierarchy. Lower stratum levels are assigned to time servers. The highest quality time servers assigned to stratum 1 are referenced to a high quality atomic clock source such as a GPS, radio or an atomic oscillator.	SEMI E148
stray light	any other light source except electroluminescence that can influence the imaging results.	SEMI PV94
streak	a defect whose appearance is a transparent line on the glass substrate surface. It can either be caused by a micro surface discontinuity or a cord due to the heterogeneity of glass composition.	SEMI D15
streak	a defect with a very small undulation on the glass substrate surface.	SEMI D9
stream	a category of messages.	SEMI E5
stress gradient (residual)	a through-thickness variation (of the residual stress) in the structural layer of interest before it is released.	SEMI MS3
stress marks	radial, colored, thin lines starting in the center of the plate and extending out.	SEMI P3

Term	*Definition*	*Standard(s)*
striations	striations appear in Czochralski grown crystals regardless of their resistivity.	SEMI M10
stringer	a microstructural configuration of alloy constituents or foreign nonmetallic material, or trace thereof, oriented in the direction of mechanical working.	SEMI F19, F73
strip	a leadframe, board, panel or other container which hold locations for semiconductor devices to be manufactured upon.	SEMI E142, G84
strip	rectangular shaped substrate or flexible tape to mount semiconductor devices. The purpose of use is not only for products but also for carrier or some other purpose used during production of electronics products.	SEMI T13
strip map	a record of data in a file that contains quality and historical information about each individual strip in a manufacturers lot.	SEMI G84
strobe compare	monitor DUT output at a single time point.	SEMI G79
structural element node	a XML node describing the hierarchical structure of data elements on the interface.	SEMI PV55
structural layer	a single thickness of material that is present in the final MEMS device.	SEMI MS3
structural rules	the structural rules for a document class is the SGML DTD that defines the rules of encoding for a document.	SEMI E36
structure	a specific set of items, of possibly mixed data types, in a specified arrangement.	SEMI E99, E118
structure	a complex structure consisting of a specific set of items, of possibly mixed data types, in a specified arrangement.	SEMI E39, E40, E41, E53, E58
structure	a complex set of information consisting of specific sets of items of possibly mixed data types, in a specified arrangement.	SEMI E90
structure	a group of patterns placed on masks, a cell in OASIS.MASK.	SEMI P45
structure group	a group of structures with identical drawing condition.	SEMI P45
student manuals	an organized collection of documents used during training. Also called, participant guides, training manuals.	SEMI E150
stylus	a device making touch actions to the DUT.	SEMI D73
stylus	the object which mechanically probes the surface.	SEMI F37
stylus method measuring instrument	instrument that traces on a section of a surface by a stylus, records irregularity on the surface in an enlarged form, and indicates its amplitude as parameters.	SEMI D15
stylus method surface roughness measuring instrument	instrument that traces on a section of a surface by a stylus, records irregularity on the surface in a enlarged form, and indicates its amplitude as roughness parameters.	SEMI D7
subassembly	two or more component parts joined together to perform a specific function and capable of being disassembled.	SEMI E10
subassembly	an assembled unit designed to be incorporated with other units in a finished product.	SEMI E49
subassembly	a component of equipment that provides some limited functionality.	SEMI E98, E148
subassembly	two or more component parts joined together to perform a specific function and capable of disassembly.	SEMI E149, E165
subcomponent	a component that is fully contained within a larger component. The interfaces of the subcomponent may be exposed or hidden by the encapsulating component.	SEMI E81
subfab	the area within the cleanroom boundaries directly below the production level.	SEMI E70
subfab	the area below or outside of the cleanroom production area that can be a single or multiple levels and may or may not be clean.	SEMI E76, F107
subject	to expose to.	SEMI C83

Term	*Definition*	*Standard(s)*
submersion tank	a transparent tank filled with room temperature isopropyl alcohol used for observing leakage of nitrogen from the tube fitting connection. A cover or lid that does not create an air-tight seal is recommended while the specimen is being subjected to pressure.	SEMI F8, F9, F12
submittal	a written presentation for signed acceptance of a proposal in response to a request for services.	SEMI E70
submodule	hardware or logical component of a module.	SEMI E54.14
submodule	a logical or physical component to compose a device.	SEMI E54.21
subordinate agent	an agent that is a component of, or managed by, another agent.	SEMI E42
subordinate recipe	a subsidiary component of a multipart recipe. A subordinate recipe is typically executed based upon a command or setting in another equipment recipe.	SEMI E172
subpad	a polymer-based 'pad' used as a cushion for the main pad; subpad is not used for polishing.	SEMI C100, C102
subpattern	any piece of the test pattern for a specific device function.	SEMI MS13
subpattern	part of a larger pattern of grooves on a side of a brick that mark a brick or a wafer.	SEMI PV32
subresolution type opaque frame	an opaque frame composed of small rectangles or line/space patterns in a shifter.	SEMI P29
subscription	a topic which is listened on.	SEMI E183
subset	a device or composing a device represented by a systematized hardware entity.	SEMI E54.21
subsite, of a site	a rectangular area, $L_{ss} \times W_{ss}$, on the front surface of a wafer, associated with a particular site. The center of the subsite must be within the site. Some part of the subsite must be within or on the FQA boundary. A subsite corresponds to the instantaneous area exposed by a scanning stepper.	SEMI M59
subslot	address of a structural unit within a slot.	SEMI E54.14
substance of concern (SOC), n.	a substance for which the equipment relies on exhaust ventilation to protect personnel from exposure above the limits established in SEMI S2 or to prevent formation of a mixture with air at above 25% of the LFL of the substance during normal operation, during maintenance, or in the case of failure. This includes substances meeting the criteria in the definition that are to be used in processes, those that are products or byproducts of intended or foreseeable reactions, those that are not intended to be directly involved in the processes (e.g., coolants) and those that are used only in maintenance or service (e.g., solutions used to clean process chambers).	SEMI S6
substance-of-concern, adj. or adv.	pertaining to a substance of concern.	SEMI S6
substate	a refinement of a state.	SEMI E58
substitutability	the ability to replace a given component from one supplier with a functionally equivalent component from another supplier without impacting the other components or its clients in the system.	SEMI E81, E96
substitution	replacement of the source of a hazard with one resulting in lower risk.	SEMI S10
substrate	a surface upon which something is deposited, etched, attached, or otherwise prepared or fabricated. It can also provide physical support and insulation. The terms 'substrate' and 'base material' are often used interchangeably.	SEMI 3D16
substrate	the base material onto which black matrix and color filter layer are deposited. Glass is generally used for substrate.	SEMI D13
substrate	the basic unit of material, processed by semiconductor equipment, such as wafers, CDs, flat panels, or masks.	SEMI E30.1, E159, M80
substrate	material held within a carrier. This can be product, or durables such as reticles.	SEMI E87, E146, E170, E171, E174
substrate	the basic unit of material on which work is performed to create a product. Examples include wafers, die, plates used for masks, flat panels, circuit boards, and leadframes.	SEMI E90, E116

Term	*Definition*	*Standard(s)*
substrate	the basic unit of material, processed by PSEM equipment such as wafers.	SEMI E91, E130
substrate	basic unit of material on which work is performed to create a product. Examples include wafers, lead frames, CD's, die, flat panel displays, circuit boards, and disks.	SEMI E94
substrate	basic unit of material on which work is performed to create a product. Examples include wafers, die, plates used for masks, flat panels, circuit boards, and leadframes.	SEMI E98
substrate	any carrier of a two-dimensional array of devices including, but not limited to: wafers, trays, strips, tape, panels, or boards.	SEMI E142, G81
substrate	the basic unit of material on which work is performed to create a product. Examples include wafers, lead frames, CD's, die, glass panels, circuit boards, and disks.	SEMI E157
substrate	the block consisting of machined passage(s) which define the flow path of a gas. Gas control components are attached to certain areas on the substrate block with gas seals at the interface.	SEMI F74
substrate	a board or panel containing locations for semiconductor devices to be manufactured upon. Also referred to as strip, board or PCB.	SEMI G84
substrate	a wafer that is the basis for subsequent processing operations in the fabrication of devices.	SEMI HB1
substrate	a wafer that is the basis for subsequent processing operations in the fabrication of semiconductor devices or circuits that may be fabricated directly in the substrate or in a film of the same or another material grown or deposited on the substrate.	SEMI M59, M92
substrate	in a fabrication process, the thick, starting material (often single crystal silicon or glass) that can be used to build MEMS devices.	SEMI MS2, MS3, MS4
substrate	a flat base material foundation for further processes.	SEMI MS3
substrate	base on which electronics elements, especially semiconductor devices, are fabricated or on which electronics parts are mounted. Examples are silicon wafers, flat panel display glass substrates, lead frames, print circuit boards and so on.	SEMI T13
substrate	base layer material or board to mount semiconductor devices, or to fabricate semiconductor devices on it as defined in SEMI T13.	SEMI T17
substrate (materials)	in semiconductor technology, a wafer that is the basis for subsequent processing operations in the fabrication of semiconductor devices or circuits. [ASTM F1241-89]	SEMI P28
substrate carrier	a carrier to hold substrates to be transferred to/from the equipment. A substrate carrier has one or more position to hold substrates (carrier substrate location).	SEMI E90
substrate center line	the bisection line of LRE1 and LRE2.	SEMI D49
substrate clearance	the difference between the substrate width and the mizo size.	SEMI D11
substrate context information	information concerning the substrate that may be useful to for analysis, such as process flow step, substrate orientation, the identifier of the process equipment/chamber most likely to have affected results, the recipe run on that equipment/chamber, etc.	SEMI E127
substrate extraction volume	the open space for extracting a substrate from the cassette.	SEMI D17, D18
substrate handler	a physical subsystem which transfers substrates between the carriers and the process part of the equipment.	SEMI E118
substrate handler	physical handling entity of substrate (e.g., end-effectors, robot arms, transfer modules and hand-off slots/tables). It may or may not be identified as substrate traceability location.	SEMI T17
substrate history	ordered set of information about the locations visited by the substrate.	SEMI E90
substrate holder	physical entity to hold substrate a while (e.g., slots of substrate carrier, susceptors, chucking tables and process modules). While it is usually identified as a substrate transfer location, substrate handler may or may not be identified as a substrate holder in this sense.	SEMI T17
substrate ID	identifier of a substrate.	SEMI E90
substrate layouts	a tree of layouts that share a common 'root' or 'top level' layout.	SEMI E142

Term	*Definition*	*Standard(s)*
substrate load depth	the shortest distance between the front surface of the cassette and the front surface of the substrate stops.	SEMI D11
substrate location	a material location which is capable of holding a substrate. For example, but not limited to, process modules, transfer subsystems, wafer chucks, robot end effecter, and carrier slots.	SEMI E90
substrate orientation	four entry patterns of single substrate to the equipment concerning the orientation are shown with the pattern face up.	SEMI D49
substrate orientation	the angle of rotation from normal. For wafers, this is the angle of rotation from the primary fiducial.	SEMI E127
substrate pick/place clearance	the total usable clearance for substrate load and unload.	SEMI D17
substrate pick-up volume	the space that contains entire bottom of a substrate if the wafer is pushed to the rear of the cassette.	SEMI D18
substrate pick-up zone	the space that includes the volume in which the substrate bottom may be found.	SEMI D17
substrate pitch	the distance between adjacent nominal substrate seating planes.	SEMI D17, D18
substrate port	the carrier location from which substrates are accessed by the equipment.	SEMI E87, E94
substrate prescription	prescription for substrate to be processed (e.g., process recipe and bin code map). It is usually instruction in specific language, parameter table, data array including image data or their combination. Sometimes it may be whole recipe of substrate for a piece of equipment or a part of it specific for a process module.	SEMI T17
substrate processor	a kind of substrate holder which provides process on substrate there.	SEMI T17
substrate processor component	subcomponent, jig or part of substrate processor, when it is chosen for processing and/or its preparation occasionally or intentionally.	SEMI T17
substrate processing material	besides the substrate itself, any identifiable material used for processing of the substrate.	SEMI T17
substrate processing parameter	adjusted, modified or substituted parameter in originally planned substrate prescription.	SEMI T17
substrate set-down volume	the open space for inserting and setting down a substrate in the cassette.	SEMI D18
substrate stop	a portion of the cassette, located at the cassette rear, that provides a mechanical stop for substrates during their insertion.	SEMI D11
substrate stop position in an manufacturing equipment	substrate location in the equipment where it halts when loaded to or unloaded from the equipment.	SEMI D44, D48
substrate traceability location	location which substrate has stayed in die trace machine or its managing area.	SEMI T17
substrate traceability location ID	identification of substrate traceability location to distinguish in specific range. Usually it is a combination of substrate traceability location names and die tracers.	SEMI T17
substrate traceability location name	name of substrate traceability location to identify physical location of a substrate uniquely.	SEMI T17
substrate type	represents the type of the substrate, such as wafers, CDs, flat panels, or masks.	SEMI E90
subsystem	an integrated structure of component parts, subassemblies, and assemblies capable of performing, in aggregate, one or more specific functions within an equipment.	SEMI E10, E149, E165
subsystem	a subsystem is an intelligent aggregate that behaves as a unit. A subsystem is made up of sensors and/or actuators and may contain mechanical assemblies. Subsystems may be shared by multiple modules.	SEMI E98

Term	*Definition*	*Standard(s)*
subsystem	a subsystem is an intelligent aggregate of an equipment that behaves as a unit. A subsystem is made up of sensors and/or actuators and may contain mechanical assemblies.	SEMI E148
subsystem	an assembly of two or more components that is manufactured as a single entity. A subsystem must be combined with one or more additional components or subsystems to form a complete system.	SEMI F1, F107, S27
subsystem	a functionally related aggregate of components that is a part of a piece of SME, that operates as a unit and is capable of performing one or more specific functions. A subsystem may be a constituent of another subsystem.	SEMI S23
subtype	an object type that is based on (derived from) another type and adds some specialization or overrides some properties or services. The type from which the subtype is derived is the supertype.	SEMI E98
sun side down	install the module on the roller, hang a load at the edge of the module where junction box located, the module with back side outward shall be rolled from one edge without junction box to the other edge, then unfold the module.	SEMI PV78
sun side up	install the module on the roller, hang a load at the edge of the module where junction box is located, the module with front side outward shall be rolled from one edge without junction box to the other edge, then unfold the module.	SEMI PV78
supercritical drying	cleaning of a product using gas liquefied by a pressure above the triple point.	SEMI MS3
superstate	the parent state of two or more states.	SEMI E58
supertype	an object type which is used as a basis from which specializations are derived. The derived types are called subtypes.	SEMI E98
supervisor	an entity or entities having supervisory control responsibilities for one or more processing resource. It is the service-user of the processing management services.	SEMI E40
supervisory agent	an agent with supervisory responsibilities for one or more subordinate agents.	SEMI E42
supervisory alarm	as applied to fire detection or suppression systems; an alarm indicating a supervisory condition.	SEMI S2
supervisory condition	as applied to fire detection or suppression systems; condition in which action or maintenance is needed to restore or continue proper function.	SEMI S2
supplemental exhaust	local exhaust ventilation that is used intermittently for a specific task of finite duration.	SEMI S2
supplementary insulation	applied to basic insulation in order to ensure protection against electric shock in the event of the failure of basic insulation.	SEMI S22
supplementary report	report that is created when changes are made to equipment and an evaluator's opinion is requested that does not require a full update of a final report. Many elements of a supplementary report may be included in one or more separate, referenced evaluation reports.	SEMI S27
supplier	provider of equipment and related services to the user (e.g., unit manufacturer). Also called equipment vendor or original equipment manufacturer (OEM).	SEMI E10, E33, E35, E79, E140
supplier	provider of equipment or services to the user. Also called equipment vendor or equipment manufacturer.	SEMI F107
supplier	party that provides equipment to, and directly communicates with, the user. A supplier may be a manufacturer, an equipment distributor, or an equipment representative. See also the definition for user.	SEMI E176, E180, S2, S12, S21
supplier	the party providing the equipment to, and communicating directly with, the user. It may be the manufacturer or an equipment representative or distributor. The supplier has the responsibilities of obtaining the required information from the manufacturer or other sources and of providing it to the evaluator.	SEMI S7
supplier	an equipment supplier or facility supplier.	SEMI S24
supplier	an equipment supplier or an energetic process chemical supplier.	SEMI S30
supplier	a supplier of inspected/tested substrates (strips) and strip maps to the assembly site.	SEMI G84

Term	*Definition*	*Standard(s)*
supply	the UPW sent to end users.	SEMI F61
supply chain	entities that distribute or resell a product.	SEMI T20
supply pressure	pressure immediately upstream of filter F1.	SEMI E66
supply pressure effect (SPE)	the effect of an inlet pressure change on the outlet pressure of a regulator.	SEMI F101
supply temperature (of cooling water)	the temperature at which cooling water enters the cooled equipment.	SEMI S23
supply ventilation	the delivery of air to SME or a workplace.	SEMI S6
support area of filter	for a spatial-domain filter, the area of the height map, centered on a surface height sample, which affects the filtered output at that height sample.	SEMI M78
support equipment	ancillary equipment not part of the main chassis.	SEMI E70, E76.
support equipment	ancillary equipment not part of the process equipment main chassis.	SEMI F49, F107
support member	support member is a support device such as a support pin to support FPD substrates.	SEMI D40
support plain	a support plain is defined as a horizontally ideal flat plain which is enhanced from a horizontally straight line defined from the top position of the support members.	SEMI D40
support region	the area that marks the end of the suspended structure in a bulk-micromachining process.	SEMI MS3, MS4
support span	support span is defined as at least the distance between two support members.	SEMI D40
support tray	a tray is utilized to keep balls at a fixed location during the measurement. This tray is to be placed on the measurement instrument stage board.	SEMI G93
support tool	a tool that, although not part of the equipment, is required by and becomes integral with it during the course of normal operation (e.g., cassette, wafer carrier, probe card, computerized controller/monitor).	SEMI E10
supporting device	a device which is prepared to assist in the use of equipment.	SEMI S13
supporting rib	a rib inside an outer box for supporting a cassette.	SEMI M29
supports	two supports to support the test specimen during flexural test.	SEMI G86
supports	to support the test specimen during flexural test.	SEMI G96
surface characteristics	properties of the wafer indicating limits of permissible deviations from the ideally flat surface.	SEMI M75
surface defect	an irregularity, such as a crack, hillock or pit, at a wafer surface that could adversely affect device performance.	SEMI HB9
surface height sample	the measured or derived out-of-plane height value of the wafer surface at a known spatial coordinate.	SEMI M78
surface killer defect	surface killer defects of 4H-SiC epitaxial wafers caused by epitaxial growth are including downfall, triangular defect and carrot defect.	SEMI M92
surface line	a line in the cross-sectional view of the edge of the wafer representative of the front or back wafer surface beyond a specified point on the edge profile.	SEMI M59
surface micromachining	a MEMS fabrication process where components are formed on a substrate by the deposition (or addition) and removal (in whole or in part) of structural and sacrificial layers.	SEMI MS2, MS3, MS4
surface micromachining	a MEMS fabrication process in which thin sacrificial layers are removed to create structures partially or completely detached from the underlying area.	SEMI MS3
surface mode	a method of detecting saw mark by using position data from individual laser triangulation sensor.	SEMI PV70
surface mount gas delivery system	a gas delivery system utilizing components (filters, valves, regulators, pressure transducers, MFCs etc.) that are mounted onto a flat substrate which defines the flow path of the gas and with sealing systems located within the interface plane between components and substrate.	SEMI E186

Term	*Definition*	*Standard(s)*
surface-mounted Gas Systems	term used to denote the gas distribution technology where *surface- mounted* gas components (e.g., filters, regulators, MFC's, and valves) are mounted onto a flat substrate which defines the flow path of the gas. The sealing system will commonly be located at various locations within the interface plane between component and substrate.	SEMI F74
surface-mount technology (SMT)	electronic production technique in which the electrical connections of the components to the substrate are also their physical attachment.	SEMI MS3
surface normal	in the three-dimensional case a surface normal, or simply normal, to a surface at a point P is a vector that is perpendicular to the tangent plane to that surface at P.	SEMI HB8
surface particle	the impurities or stains, etc., on the surface of the dry etching patterned sapphire substrate.	SEMI HB12
surface photovoltage (SPV)	the change of the electrostatic potential of the silicon surface caused by illumination.	SEMI M59
surface protrusions or intrusions	plastic excesses (bumps or blisters) or recesses (pits or voids) on any surface of the package.	SEMI G54
surface orientation	for example, (100), (111), etc. with a specified tilt angle and direction, for example, 2^0 towards a specific plane family, for example, <111>. Tolerance of the tilt, for example, $\pm 0.5^0$, should also be specified.	SEMI M79
surface orientation	the tilt angle between the crystallographic c-axis and the wafer surface normal.	SEMI M86
surface recombination velocity	measure of the recombination of excess minority-carriers at the surface of a semiconductor crystal or wafer given by the ratio of the surface-directed hole or electron current to the product of the hole or electron charge and hole or electron density at the surface.	SEMI M59
surface roughness	the finer irregularities of the surface texture, usually including those irregularities that result from the inherent action of the production process, for example traverse feed marks from cutting tools. [ASME B46.1-1995]	SEMI F37
surface roughness	the criterion for the smoothness of the sheet surface. Usually the randomly selected areas on the sheet surface are measured by a surface analyzer.	SEMI D9
surface temperature	the surface temperature of the lamp and BLU. Unit: °C	SEMI D36
surface texture	the repetitive or random deviations from the nominal surface which form the three dimensional topography of the surface. Surface texture includes roughness, waviness, lay, and flaws.	SEMI F19, F37
surface texture	the topographic deviations of a real surface from a reference surface, including roughness, waviness, and lay.	SEMI M59
surface voltage, (V_{surf})	the potential measured by the Kelvin or Monroe probe that results from the potential difference between two metals or between a semiconductor and a metal, due to their difference in work function. Also called contact potential difference (V_{cpd}).	SEMI M59
surface water	water located on the surface of the earth, such as river water, lake water, and seawater.	SEMI F61
surge suppression	use of a device or in-line chamber that minimizes the flow pulsations caused by a pump. This device may also be referred to as pulsation dampener.	SEMI F31
surrogate gas	for mass flow controllers and mass flow meters, a gas intended to simulate the calibration characteristics of another gas.	SEMI E29
surrogate gas	the gas substituted for the nameplate gas during the calibration process.	SEMI E77
surround shape	a geometric configuration that is placed around a symbol and which conveys additional safety information.	SEMI S1
susceptor	a supporting structure for the purpose of carrying wafers during the HB-LED production process. In some cases, a wafer carrier or process tray is used instead of a susceptor.	SEMI HB13
swapping port	a load port on the stocker capable of handling single load and unload of carriers or simultaneous replace of carriers.	SEMI E88
sweep direction	defined in direction either from I_{sc} to V_{oc} (forward) or V_{oc} to I_{sc} (backward).	SEMI PV57

Term	*Definition*	*Standard(s)*
swirl	helical or concentric features that are visible to the unaided eye after preferential etch, and appear to be discontinuous under 100× magnification.	SEMI M59
switch placement volume	a volume in which load port operation switch is placed.	SEMI E110
symbol	a machine-readable pattern comprised of a quiet zone, finder pattern, symbology characters (which include special functions and error detection and/ or correction characters) required by a particular symbology.	SEMI T10
symbol	a graphical representation, either abstract or representational, of a hazard, a consequence of engaging a hazard, or a method to avoid a hazard, or some combination of these ideas.	SEMI S1
symbol contrast	the difference in grayscale values between the marked and unmarked areas of a Data Matrix symbol.	SEMI T10
symptom	a user-detected event (e.g., smoke observed).	SEMI E58
syntax	the manner in which data are put together to form messages. Syntax also includes rules governing the use of appropriate identifiers, delimiters, separator character(s), and other non-data characters within the message. Syntax is the equivalent to grammar in spoken language.	SEMI T20.1
system	either manufacturing equipment or factory host.	SEMI D27
system	an integrated structure of components and subsystems capable of performing, in aggregate, one or more specific functions. For the purpose of this Specification, a system includes the gas source control subsystem, its connection to the gas source, the distribution piping, and the gas control subsystem within the process equipment.	SEMI F1
system	the combination of an equipment and its associated operating environment (e.g., operator, host controller, automation interface) required to perform an operation or activity (e.g., processing, transporting, storing).	SEMI E149
system	an integrated structure of components and subsystems capable of performing, in aggregate, one or more specific functions.	SEMI S27
system black crosstalk (SBC)	system crosstalk while the tested channel patterns is full-screen white and the untested channel patterns is full-screen black.	SEMI D69
system white crosstalk (SWC)	system crosstalk while the tested channel patterns is full-screen black and the untested channel patterns is full-screen white.	SEMI D69
system bytes	a 4-byte field in the header used for message identification.	SEMI E4
system calibration	test system process required to bring the test system into compliance with the test system manufacturer’s system specifications.	SEMI E122
system crosstalk	an optical performance of a 3D display (e.g., the light leakage caused by the optical component or electronic device, etc.). System crosstalk can be measured by light measurement devices (LMD). System crosstalk is unit-less.	SEMI D59
system default	refers to state(s) in the equipment behavioral model that are expected to be active at the end of system initialization. It also refers to the value(s) that specified equipment variables are expected to contain at the end of system initialization.	SEMI E30
system initialization	the process that an equipment performs at power-up, system activation, and/or system reset. This process is expected to prepare the equipment to operate properly and according to the equipment behavioral models.	SEMI E30
system integrator	party that integrates manufacturing equipment and an abatement system. A system integrator can be a user of manufacturing equipment and an abatement system, or a supplier who is named to be a system integrator by contract.	SEMI S29
T-max	the maximum set temperature of the temperature cycle test.	SEMI F71
T-min	the minimum set temperature of the temperature cycle test.	SEMI F71
tabbing ribbon	tabbing ribbon is used to connect mono and poly crystalline solar cells to strings and to carry the current.	SEMI PV19
tack-free time	adhesive exposed to atmospheric environment, the time when the surface of the adhesive loses its adhesion during curing process.	SEMI PV98

Term	*Definition*	*Standard(s)*
tack weld	small spot welds, generally located in the corners which are used to attach the preform to the lid.	SEMI G53
tack weld	a weld made to hold the parts of a weldment in proper alignment until the final welds are made.	SEMI F78, F81
tactile sensor	a device that responds to imminent or actual contact.	SEMI MS3
tag	a tag is a string of characters delimited by rules set out in the SGML standard (and used in XML and HTML). Tags are placed in the datastream to indicate where an element begins and ends. In Semiconductor Equipment Manufacturing Information Tagging, tags match as closely as possible the names of the elements in English.	SEMI E36
tag	is a unique identifier within a FMCS to access information in a FPU. Assigned to each unique Tag is the data necessary to select the access to a particular FPU on the Network and to access the particular information within that FPU.	SEMI F97
tag	an RFID-based device containing an information storage mechanism that reacts to a specific reader-produced field. Also called *transponder.*	SEMI E144
tag identification device	device for transferring information from/to a pod identification tag.	SEMI T4
tag fault	any condition that causes errors when reading or writing to the tag, including power faults and tag damage.	SEMI E99
tail-out	non-standard term for *automatic arc welding downslope.*	SEMI F78
take-off angle (TOA)	the angle that the collection lens forms with the sample plane.	SEMI F72
take-off angle (TOA)	the angle that the Auger electron collection lens forms with the sample plane.	SEMI F60, F72
tampering	an intentional event resulting in the modification of a system, its intended behavior, or its data.	SEMI E169, E188
tan delta	determined as ratio of G”/G’, and measured in dynamic oscillation mode of applied stress, or applied strain.	SEMI C100
tangential focal surface	the focal surface determined by examining only the tangential lines.	SEMI P25
tangential lines	an evaluative line pattern where the lines lie perpendicular to a radius to the optical axis.	SEMI P25
tap point	for some systems, partial tuning of the matching network is achieved by switching in a combination of fixed tuning elements, such as different values of capacitors. The tap point is defined as the position of the switch(es) that connect or disconnect tuning elements in the matching network circuit.	SEMI E113
tape and reel (TnR)	a tape wound on a reel that contains one or more rows of pockets where packages may be placed or picked. The reel is marked with an identifier. The pocket column is marked with a sequential number.	SEMI E142
tape frame	the frame that the wafer tape is attached to. The frame supports the tape, which retains the wafer. It is used between the dicing process and the die-bonding process and also used for shipping, handling, and storage of wafers.	SEMI 3D3
tape frame	the frame which applies the wafer tape to the wafer and retains the wafer.	SEMI E185, G74, G77
tape frame	the frame that the wafer tape is attached to. The frame supports the tape, which retains the wafer. It is used between the dicing process and the die-bonding process and also used for shipping, handling, and storage.	SEMI G88
tape frame	the frame which uses the wafer tape and retains the wafer. It is used in dicing and die-bonding processes, as well as shipping and handling during these processes.	SEMI G92, G95
tape frame cassette (TFC)	a carrier that holds one or more tape frames.	SEMI G92, G95
tape frame extraction volume	the open space for extracting a tape frame from the Tape Frame FOUP.	SEMI E185

Term	*Definition*	*Standard(s)*
tape frame pick-up volume	the space that contains entire bottom of a tape frame if the tape framer has been pushed to the rear of the Tape Frame FOUP.	SEMI E185
tape frame release bar (TFRB)	a bar to release tape frames. It unlocks automatically when the 450 TFC is placed on the loading port of the equipment.	SEMI G92, G95
tape frame set-down volume	the open space for inserting and setting down a tape frame in the Tape Frame FOUP.	SEMI E185
tape test	a metallization layer adhesion test technique using adhesive tape to apply a peel force to the layer. This test may be applied on plated material or after the application of heat.	SEMI G62
target audience	the audience to be advised of the hazard.	SEMI S1
target performer analysis	a procedure used during 'Analyze' of the performance improvement process in which, among other factors, the existing skills, task competencies, interests, motivation, culture, language, and job requirements of the expected learners is examined for their impact on the included tasks for learning, the learning hierarchy, and course design considerations. Also called, target audience analysis.	SEMI E150
target profile	a model edge profile constructed by using specified or otherwise pre-selected edge profile parameters.	SEMI M59, MS13
target wavelength	a wavelength at which the phase angle is 180° or the phase angle defined in the specification. Since the phase angle is a wavelength-dependent value, an arbitrary wavelength is used as the target wavelength of the phase shifter film, in the case of exposure process using broadband light source with several peak wavelength.	SEMI D84
task	a planned and repeatable activity with an expected duration and a definite beginning and end (e.g., Move wafer from cassette to stage, Pre-align wafer, Align reticle, Preheat chamber, Increase vacuum).	SEMI E116
task	a series of procedural action steps (e.g., Replace the pump, Clean the lens, Dignose the fault) with a definite beginning and end taken to accomplish a part of a procedure typically used to break a complex procedure down into parts.	SEMI E149, E150
task	a piece of work to be done (i.e., a human activity) with a definite beginning and end, that typically consists of steps of a procedure (e.g., Replace the pump, Clean the lens) or steps of a process (e.g., Diagnose the fault, Debug the program).	SEMI E165
task	a group of related job elements directed toward a specific objective.	SEMI S2
task	a group of related job elements performed within the work cycle and directed toward a specific objective.	SEMI S8
task analysis	procedures used during 'Analyze' of the performance improvement process to determine the essential activities required of a performer to perform a task.	SEMI E150
task analysis	determining the specific actions required of the user when operating, maintaining, or servicing equipment. Within each task, steps are described in terms of the perception, decision-making, memory, posture, and biomechanical requirements as well as the expected errors.	SEMI S2
task analysis	an analytical process employed to determine the specific actions required of the user when operating, maintaining, or servicing equipment, or doing work on single or multiple tools. Within each task, steps are described in terms of the perception, decision-making, memory storage, posture, and biomechanical requirements, as well as the expected errors.	SEMI S8
tax lifetime	the number of years as defined in compliance with local tax or accounting depreciation practices.	SEMI E35, E140
teach pendant	(also called teaching pendant) a wired or wireless hand-held device used to input a robot's operating parameters.	SEMI S28
teach mode	a mode of robot operation for setting the trajectories and end-points of robot motion.	SEMI S28
teaching (robots)	the act of entering trajectory, orientation, velocity, or endpoint data into the memory of a robot.	SEMI S28
tee weld fittings	machined fittings shaped like the letter 'T,' for welding tubes in a T-shape.	SEMI F44
temperature	temperature values shall be expressed in degrees Celsius.	SEMI C3

Term	*Definition*	*Standard(s)*
temperature deviation	deviation between the indicated temperature of the UV test chamber and the measured temperature at the geometric center inside the UV test chamber.	SEMI PV77
temperature ramp	the rate (°C/min) at which the test temperature is increased during the test.	SEMI F77
temperature-sensitive parameter (TSP)	the temperature-dependent electrical characteristic of the junction under test which can be calibrated with respect to temperature and subsequently used to detect the junction temperature of interest.	SEMI G30, G38, G42, G43
template	provides a dimensional outline of the equipment footprint including overall dimensions, equipment datum point, utility connection/penetration locations, equipment interconnect/penetration locations, maintenance and access spaces, and wafer load/unload stations. It can be made from any cleanroom compatible material.	SEMI E76
template	a dimensional outline of the equipment footprint including overall dimensions, equipment datum point, utility connector/penetration locations, equipment interconnection/penetration locations, maintenance and access spaces, and wafer load/unload stations. It can be made from any cleanroom compatible material.	SEMI F107
tensile	longitudinal, so as to lengthen the test object.	SEMI C83, F7, F8
tensile stress	the amount of stress (force per unit area) that causes material to elongate, expressed in MPa.	SEMI PV92
terminal	metallization at the point of electrical contact to package interior circuitry; also the brazing surface for a lead.	SEMI G22, G39, G50
terminal	case outline at point of entry or exit of an electrical contact.	SEMI G5, G26, G33
terminal-based linearity	maximum deviation of the calibration curve from a straight line which intercepts the calibration curve at upper and lower input range values.	SEMI E27
terraced oxide wafer	oxidized wafers that have been etched using an automated spin etcher so that a range of varying oxide thicknesses is created.	SEMI M66
terracing	a network of contours that are associated with pyramid-like defects on epitaxially deposited surfaces and are related to the orientation of the surface.	SEMI M59
terrestrial dual-glass module with crystalline silicon solar cell	heat strengthened glasses or tempered glasses are used on both the top and rear, and crystalline silicon solar cells connected in series or parallels are placed between the glasses. After thermocompression and encapsulation with an adhesive film, such as EVA or PVB etc., the unit that can absorb light and transform it into electricity is referred as a terrestrial dual-glass module with crystalline silicon.	SEMI PV82
tertiary exhaust ventilation (TEV)	airflow, outside enclosures that have secondary exhaust ventilation, that operates continuously to extract substances of concern should they be released from their secondary containment due to failure or to maintenance or service operations.	SEMI S30
test	to verify the serviceability of an item (e.g., component part, subassembly, assembly, equipment) by comparing its physical, mechanical, and/or electrical performance characteristics with prescribed standards or specifications through measurement or examination.	SEMI E149
test	a method for evaluating what a trainee has learned through demonstration by performance.	SEMI E150
test-board	the electromechanical interface necessary to enable temporary electrical contact between the unit to be tested and the tester resource. The test-board may consist of multiple components.	SEMI E122
test block	a block of sample cells to check vibration response with vibration test, and electric performance with both pre-test and post-test examinations.	SEMI PV38
test block locations	the location of the test block inside the test specimen to be placed during the vibration test.	SEMI PV38
test carton	stacked blocks in one carton for testing.	SEMI PV56

Term	*Definition*	*Standard(s)*
test component	an individual piece or a complete assembly of individual pieces being tested, including industrial products that are manufactured as independent units, capable of being joined with other pieces or components.	SEMI F114, F115
test cycle	inverse of test pattern execution frequency.	SEMI G79
test data	data whose distribution is compared to the distribution of the Reference Data in the Annual Review Process.	SEMI C64
test duration	total time required to complete the test procedure.	SEMI F28, F43, F67, F68
test environment	environment where all storage, transport, or environmental conditions for minienvironments are simulated.	SEMI E146
test equipment	equipment which tests the electrical characteristics and functions of semiconductor devices.	SEMI E107
test equipment	an instrument which simulates storage, transport or environmental conditions for minienvironments.	SEMI E146
test fixturing errors	error influenced by mismatched signal path lengths, impedance discontinuities, lumped capacitance/inductance elements, and high frequency loss due to skin effect or interconnects.	SEMI G79, G80
test flow	mass flow through the device under test.	SEMI E66
test flow	the volumetric flow through the test system at test pressure and temperature.	SEMI F70, F70.1
test flow rate	mass flow through device under test.	SEMI F43
test flow rate	volumetric flow rate of the test gas at standard conditions.	SEMI F28
test flow rate	flow rate through DUT (slpm).	SEMI F67, F68
test-head	a resource of the tester. The test-head is the electromechanical interface between the unit and the tester.	SEMI E122
test method	a definitive procedure for the identification, measurement, and evaluation of one or more qualities, characteristics, or properties of a material, product, system, or service that produces a test result.	SEMI P9
test module	a module that undergoes the pre-test and post-test examinations for the evaluation of damages caused by vibration.	SEMI PV23
test module locations	the locations in the stacked modules where test modules are to be placed during the vibration test.	SEMI PV23
test pallet	a complete, filled unit-loads during the test.	SEMI PV56
test pattern	the entire design within the exposure area that may be repeated across the wafer.	SEMI MS13
test plane	between the camera’s test lens and the object under test, the light is transmitted through the surface, it means the glass pane on the front face of the module.	SEMI PV94
test portion	a portion of the test sample to be tested for carbon content by this method.	SEMI PV59, PV88
test pressure	pressure immediately downstream of the test component.	SEMI F43
test pressure	pressure immediately downstream of the test panel.	SEMI F28
test pressure	pressure immediately upstream of the DUT.	SEMI F67, F68
test pressure	the pressure immediately downstream of the system under test.	SEMI F70, F70.1
test pressure	the pressure at which a sealing system is hydrostatically tested. The test pressure is commonly defined as 1.5 times the maximum design pressure.	SEMI F74
test pressure	pressure downstream of the components under test after the split to the OPM	SEMI F104
test program name	name of program used on test equipment when testing a die electrically.	SEMI E107
test resistivity	the resistivity of the UPW as measured on the facilities supply loop.	SEMI F104

Term	*Definition*	*Standard(s)*
test sample	material (silicon) to be analyzed for trace impurities by this HR-GDMS method. Generally the test sample is extracted from a larger batch (lot, casting) of product and is intended to be representative of the batch.	SEMI PV1
test sample	material (silicon) to be analyzed for oxygen content by this method. Generally the test sample is selected from a larger batch (lot, casting) of product and is intended to be representative of the batch.	SEMI PV43
test sample	material (silicon) to be analyzed for trace impurities by this ICP-MS method. Generally the test sample is selected from a larger batch (lot, casting) of product and is intended to be representative of the batch.	SEMI PV49
test sample	material (silicon) to be analyzed for carbon content by this method. Generally the test sample is selected from a large batch of silicon raw materials and is intended to be representative of the batch.	SEMI PV59, PV88
test sample	test device of OPV/DSSC/PSC.	SEMI PV57, PV69, PV76, PV80
test sample	sample which is used in the test.	SEMI PV97
test sieve	sieve which conforms to a test sieve standard specification for use in particle size analysis by sieving.	SEMI PV97
test-site	a location on a test-board where one unit at a time is positioned for testing.	SEMI E122
test skid	the system providing filter-evaluation test analysis. The test skid includes piping, filter housing, filter elements, flow meters, pressure gauges, valves, regulators, sample ports, etc.	SEMI C79
test specimen	a complete, filled transport package or unit load that is effectively identical to that during the actual transportation or shipping.	SEMI PV23, PV38
test structure	a fabricated component (such as, a fixed-fixed beam or cantilever) that is used to extract information (such as, the residual strain or the strain gradient of a layer) about the fabrication process.	SEMI MS2, MS3, MS4, MS5
test system	the gas delivery system under test.	SEMI F58, F112
test temperature	ambient temperature at which the experiment is being conducted.	SEMI F43
test temperature	operating temperature of DUT.	SEMI F67, F68
test temperature	the temperature of the UPW as measured on the facilities supply loop.	SEMI F104
test yield	the fraction of units leaving the factory that have finished processing and have passed final testing (measures relative losses due to parametric or functional failure).	SEMI E124
tester control system (TCS)	Tester Event Messaging for Semiconductors (TEMS) software running on a tester.	SEMI A4, A4.1
tester executive	the tester software which controls test program execution.	SEMI E122
testing	the term ‘testing’ is used to describe measurements or observations used to validate and document conformance to designated criteria.	SEMI S2
testing	measurements or observations used to validate and document conformance to designated criteria.	SEMI S22, S30
testing equipment	an equipment class generally consisting of integrated mechanisms and controls for performing electrical tests of packaged devices and or wafer die during the manufacturing process.	SEMI E91, E122
text	a text string. Messaging protocol may impose restrictions, such as length or ASCII representation.	SEMI E39, E40, E41, E53
text	a character string. Messaging protocol may impose restrictions, such as length or ASCII representation.	SEMI E58, E99, E118
text	a text string. The message protocol restricts its length or ASCII representation. Messaging protocol may impose restrictions, such as length or ASCII representation.	SEMI E90
text element	an annotation element consisting of an (x,y) coordinate point and an associated string.	SEMI P39

Term	*Definition*	*Standard(s)*
text string	a string of one byte characters.	SEMI E54.1, E54.10, E54.22
theoretical cycle time	the minimum time required to process a unit of production through the factory (including material handling transport time) if the unit never has to wait for equipment or a vehicle to become available and if sequence-dependent set-ups never have to be performed. This metric is also known as the raw process time. If a process change for a product causes this metric to change, the product before and after the process change should be considered different products for the purposes of performing these computations. If more than one product (or process flow) is represented in the output, an average is taken over each of the products' theoretical cycle time weighted by the fraction of that product found in finished units out.	SEMI E124
theoretical production time	the production time during a period that is theoretically required to complete the unit quantities of the production recipes undertaken during the period. Theoretical production time is computed as the aggregation over all recipes of the theoretical production time per unit for the recipe applied to the unit quantity of that recipe. For multipath cluster tools (MPCTs), theoretical production time is the sum of the theoretical production times for all processing equipment modules.	SEMI E79
theoretical production time per unit (THT)	the minimum time per unit to complete processing, given the specified recipe, equipment system design, continuous operation, and no efficiency losses.	SEMI E79
theoretical production time per unit (THT) (time per unit)	the minimum rate of time per unit to complete processing, given the following: - The specified recipe - The equipment design - Continuous operation - No efficiency losses	SEMI E124
theoretical throughput rate	the smaller of the bottleneck throughput rate and the quotient of the WIP capacity divided by the theoretical cycle time (gives an unreachable upper bound on the factory throughput rate).	SEMI E124
theoretical unit throughput by recipe (THTP)	for a given production recipe, the number of units per period of time that theoretically could be processed by the equipment system. For each recipe, theoretical unit throughput is equal to the reciprocal of theoretical production time per unit.	SEMI E79
theoretical unit throughput by recipe (THTP)	for a given production recipe, the number of units per period of time that theoretically could be processed by the equipment. For each recipe, theoretical unit throughput is equal to the reciprocal of theoretical production time per unit.	SEMI E124
thermal debond	debond under an elevated temperature process.	SEMI 3D8
thermal desorption tube	analytical equipment capable of collecting organic compounds of interest (i.e., adsorbent filled glass tube).	SEMI E108
thermal emf	the net emf set up in a thermocouple under conditions of zero current. Also known as *Seebeck emf*.	SEMI M59
thermal gravimetric analysis (TGA)	thermal gravimetric analysis is a method where a sample is placed in a certain environment where the temperature is changed and the resulting change in weight is measured. Weight change is also observed when decomposition, combination, desorption, absorption, dehydration or sublimation occur.	SEMI PV45
thermal resistance	junction to specified reference point, $R_{\theta JR}$ degrees Celsius/watt. The thermal resistance of the microcircuit is the temperature difference from the junction to some reference point in the ambient divided by the power dissipation P_H.	SEMI G38
thermal resistance, junction to specified reference point, $R_{\theta JR}$	in degrees Celsius/watt. The thermal resistance of the microcircuit is the temperature difference from the junction to some reference point in the ambient divided by the power dissipation P_H.	SEMI G30, G43
thermal resistance measured in air environment, junction to package surface, ψ_{jt}	in °Celsius/watt. The temperature difference from the junction to the center point on the package divided by the power dissipation P_H.	SEMI G68

Term	*Definition*	*Standard(s)*
thermal shrinkage	when the substrate is heat-treated along a specific thermal profile, the relaxation of thermal stress, and the structure change occur in material and create the shrinkage of the substrate. Usually it is described with $\Delta L/L_0$, where ΔL is the amount of change and shown as $\Delta L = L_0 - L$. L_0 is the length of material before heat treatment and L is after heat treatment.	SEMI D9
thermal transition	a change from a specific elevated fluid temperature down to room temperature and then to an elevated temperature higher than previously tested, with the entire process repeated for multiple temperature conditions.	SEMI F11
thick film metallization	the process by which a thin layer of metal (usually in the 0.3–1.0 mm range) is applied to a suitable substrate by methods including sputtering, vacuum evaporation and chemical vapor deposition.	SEMI G33
thickness	the distance between the front surface and the back surface of a glass substrate at same single point.	SEMI D9
thickness	the height in the *z*-direction of one or more designated thin film layers.	SEMI MS2, MS3, MS4
thickness, 5-point (L3T5)	the average over the thickness measured at five points on the wafer by a three line scan. Four points are located after or before the trigger points, respectively, on the outer scan lines by the offset distance *OD*. The fifth point is the center point on the center scan line.	SEMI PV41
thickness, 9-point (L3T9)	the average over the thickness measured at nine points on the wafer by a three line scan. Three points each are from the center scan line and the two outer scan lines. Along each scan line the three points are located at the trigger points plus-minus the offset distances and at the midpoint. An example is *L3T9*.	SEMI PV41
thickness, average (L3TA)	an arithmetic average over all thickness values measured by the three probe pairs by a three line scan of a wafer between the trigger points plus-minus the offset distances.	SEMI PV41
thickness, center point (L3TC)	the thickness at the midpoint of the center scan line.	SEMI PV41, PV71
thickness mode	a method of detecting saw mark by using position data from a laser triangulation sensor pair along the same scan line.	SEMI PV70
thickness, of a wafer	the distance through the wafer between corresponding points on the front and back surfaces.	SEMI HB1
thickness, of a semiconductor wafer	the distance through the wafer between corresponding points on the front and back surfaces.	SEMI M59
thickness, of an epitaxial layer	the distance from the surface of a wafer to the layer-substrate interface.	SEMI M59
thickness, of top silicon film	the distance between the surface of the top silicon film and the top silicon film-buried oxide interface.	SEMI M59
thickenss point (TP)	an arithmetic average over thickness values measured by a sensor pair across a sampling range.	SEMI PV71
thickness variation	any differences between maximum and minimum values within the thickness of a glass substrate.	SEMI D9
thin chip	IC chips equal to or less than 0.1 mm thickness.	SEMI 3D19, G97
thin film transfer method	a film with photoresist coated on is thermally transferred onto the substrate, and is patterned through exposure and development using a laminating equipment.	SEMI D13
thin silicon wafer	any silicon wafer which has been fabricated, or mechanically and/or chemically processed, such that its thickness is less than the minimum thickness allowed in a wafer material standard.	SEMI 3D3
third layer	layer 3 of the OSI model. IP Security (IPsec) that is a suite of protocols securing internet protocol (IP) communications by authenticating and encrypting each IP packet in a data stream can be applied to this layer.	SEMI E169

Term	*Definition*	*Standard(s)*
threading dislocation (TD)	a class of crystalline line defects including edge, screw and mixed (both edge and screw) types. Threading dislocations are classified by their propagation direction with respect to the Burgers vector. Screw dislocations propagate parallel to the Burgers vector (typically l=b=[0001]), edge dislocations propagate perpendicular to the Burgers vector (typically l=[0001], b=1/3<2-1-10>), and mixed dislocations contain both an edge and screw component.	SEMI M86
threading screw dislocations (TSD)	dislocation with a Burgers vector parallel to the [0001] crystallographic direction and a dislocation propagation parallel to that.	SEMI M91
threat	anything that has the potential to cause harm to an information asset.	SEMI E169
threat	anything that has the potential to cause harm to data on the manufacturing equipment or its intended behavior.	SEMI E188
three line scan (L3)	the thickness data acquisition technique using three pairs of stationary capacitive probes and a wafer transport belt system. The three scan lines consist of the center scan line, and two outer scan lines on opposite sides of it and offset equidistantly towards the wafer edges.	SEMI PV41
three line scan (L3)	the data acquisition technique using three pairs of stationary laser triangulation sensors and a wafer transport belt system. The three scan lines consist of the center scan line, and two outer scan lines on opposite sides of it and offset equidistantly towards the wafer edges.	SEMI PV70, PV71
threshold energy (Eth)	the exposure energy where the remained thickness ratio becomes zero on the sensitivity curve.	SEMI P26
threshold limit value/time-weighted average (TLV/TWA)	as defined by the American Conference of Governmental Industrial Hygienists (ACGIH).	SEMI F6
threshold limit value (TLV®)	for a chemical substances in the work environment adopted by ACGIH® (TLV® is a registered trademark of the American Conference of Governmental Industrial Hygienists).	SEMI S18
through glass via opening (TGV)	a hole or recess in a glass substrate that begins at the top surface and extends fully through the substrate from one surface to the other. It may be empty, contain a conductor or contain additional layers such as an insulator between the conductor and the glass, a diffusion barrier on the glass surface within the hole, or others.	SEMI 3D11
through silicon via opening (TSV)	a hole or recess in a silicon wafer that begins at the wafer top surface and may or may not: a) extend fully through the wafer from one surface to the other; b) contain a conductor; c) contain additional layers such as an insulator between the conductor and the silicon, a diffusion barrier on the silicon surface within the hole, or others.	SEMI 3D1
throughput	the number of processed wafers (per unit time which is calculated from the time required for processing under pre-scheduled measurement sequence and conditions).	SEMI P30
throughput (TP)	the number of units (e.g., wafers, devices) per hour the equipment delivers to the factory, including all input, output, and internal overhead operation. TP includes all test or monitor units processed, since the cost of these nonproduct units is accounted for directly.	SEMI E35, E140
throughput rate	the number of units of production that pass through a process per period of time.	SEMI E124
throughput-rate and cycle-time efficiency	the best-case cycle time divided by the average cycle time (shows the relative performance of the factory with respect to throughput rate and cycle time).	SEMI E124
tichelman loop	a distribution circuit characterized by separate pressure control and separate return from each point of use. In many instances the point of use return lines, connect to the bulk return line downstream of the pressure control device.	SEMI F31
tilt	angle in degrees between the top surface normal of the wafer and the line connecting the center of the TSV at the top wafer surface with the deepest point of the TSV.	SEMI 3D1
tilt	a small angle of offset from the normal horizontal or vertical orientation of a cassette or wafer carrier designed to preferentially align or keep wafers in their intended place within the carrier/cassette.	SEMI E15

Term	*Definition*	*Standard(s)*
tilt	the deviation of the plane of the coined area from a condition parallel to the plane on datum M.	SEMI G2
tilt	the non-perpendicular angles of etch, or feature(s) that are intended to be etched straight down, perpendicular to the wafer surface.	SEMI MS13
time and materials (T&M)	a contracting method whereby cost is determined by the actual requirements of the project as opposed to an estimate and a fixed cost system.	SEMI E70
time element	a categorization of a time segment for a product unit. One or more time elements may be assigned to a product time segment to identify current activities affecting the product and/or activities for which the product unit is waiting.	SEMI E168
time segment	a subset of the factory cycle time of a product unit within a factory. The start and end of a time segment are delineated by detectable factory events.	SEMI E168
time server	a computer or device that is assigned a stratum level and is used as reference to time synchronize other computer or devices that require synchronized date and time.	SEMI E148
time synchronization	the process or methodology used to maintain the clock in a system such that it coincides with a date/time source within specified accuracy.	SEMI E148
time weighted average (TWA)	an occupational exposure limit (OEL) for an exposure period on one work shift, typically eight hours. The time period is specified as part of the TWA.	SEMI S6, S18
time zero	the beginning point of the operating life of a packaged devices, generally the time at which the hermetic seal is actually formed. (Note that when surface mount reflow follows formation of the hermetic seal, this definition holds only assuming that the high reflow temperatures do not irreversibly alter the hermetic seal. Otherwise, time zero would begin at completion of surface mount reflow.	SEMI MS3, MS8, MS10
time zero dielectric breakdown (TZDB)	this is one of the electrical characteristics of dielectric films. This characteristic is contrasted with time dependent dielectric breakdown.	SEMI M51
timestamp	the notation of the date and time of the occurrence of an event.	SEMI E42, E58, E187
timestamp	refers to a time mark of the instant an event (data generated, document signed, process fault, etc.) that has occurred based on a specified time scale.	SEMI E148
timestamp format	a text string of the form 'YYYYMMDDhhmmsscc,' where: YYYY = year (e.g., 1995) MM = month (01–12) DD = day (01–31) hh = hour (00–23) mm = minute (00–59) ss = second (00–59) cc = centisecond (00–99)	SEMI E58
tip pinch	grip in which the object is held between the tips of the thumb and index finger.	SEMI S8
TIR	total indicator reading, the difference between the maximum and minimum distances of a line from a reference line.	SEMI D32
title	character strings which identify masks such as the drawing date, the serial number, and the product name.	SEMI P45
TOC	total organic carbon, also total oxidizable carbon. Refers to organic compounds.	SEMI F61
toeboard	a vertical barrier erected along an edge of a walking or working surface to reduce falls of materials.	SEMI S2
tolerance	absolute magnitude of the full range of the product specification.	SEMI E89
tolerance	the allowable range of a specification parameter on either side of the nominal or target value.	SEMI M59
tone	the gradation of output brightness by a display input variation. This usually means the gradation of gray, but color tone also includes the gradation of color.	SEMI D71

Term	*Definition*	*Standard(s)*
tone defect	tone defects are evaluated by their tranmissivity in addition to the size. The wavelength used for measurement should be clearly specified. Defect dimensions should be consistent with other definitions.	SEMI P22
tool	any piece of semiconductor fabrication or inspection equipment designed to process wafers delivered in wafer carriers.	SEMI E15, E63
tool	often used synonymously with equipment or system in the silicon wafer processing industry.	SEMI E35, E70
tool	any piece of semiconductor fabrication or inspection equipment designed to process wafers. Often used synonymously with equipment in the silicon wafer processing industry.	SEMI E76
tool	an external device used to aid a person to perform a mechanical function.	SEMI S22
tool accommodation	a methodology by which semiconductor processing equipment is installed in a cost-effective and timely manner.	SEMI E70, E76.
tool latency	the interval of time required for a signal to travel inside the equipment from its source and be available to an external user for retrieval. It is influenced by sampling time, reaction time, retrieval time, time constants, indirect measurement factors, processing, encoding, decoding, and packaging.	SEMI E151
tooling	fixtures and adaptors required to modify the equipment to the requirements of a specific unit, test, or operation.	SEMI E35
tooth	the protrusion, on the inner surface of the mizo-pocket plate, that contains the mizo shape.	SEMI D11
top area	area of the TSV opening at the top surface of the wafer.	SEMI 3D1
top area	area of the TGV opening at the top surface of the substrate.	SEMI 3D11
top critical dimension	critical dimension (length of minor diameter) of the TSV opening at the top wafer surface.	SEMI 3D1
top critical dimension (CD)	measured below mask undercut where the anisotropic etch process began.	SEMI MS13
top face	the plane or surface of the carrier from which side wafers enter in to or out of the carrier.	SEMI E1
top face	the plane or surface of the cassette from which side wafers enter into or exit out of the cassette.	SEMI HB2
top feed	where utility supply lines enter the equipment from the topside.	SEMI E76
top level layout	the layout that defines the size of the substrate itself, e.g. the wafer diameter or the strip length and width.	SEMI E142
top major diameter	the major diameter of the TSV opening being characterized, measured at the top surface of the wafer.	SEMI 3D1
top minor diameter	the minor diameter of the TSV opening being characterized, measured at the top surface of the wafer.	SEMI 3D1
top, of brick	the end of the brick that was closer to the top of the parent's ingot (for multicrystalline ingots) or to the seed end (for single crystalline ingots), respectively.	SEMI PV32
top or bottom protrusions	those plastic excesses (includes ejector pin 'crowns') which remain as normal characteristics extending from the smooth surface of the molded package.	SEMI G14, G16, G36, G37
top-pad	the main pad that can be used individually or in combination with a sub-pad.	SEMI C100, C102
toprail	the linear element of a guardrail system that is farthest from the walking or working surface.	SEMI S2
top roundness	roundness at the top surface of the wafer.	SEMI 3D1
top side	the top side of the substrate as defined in the corresponding Appendix for that substrate.	SEMI E142
top side	the top of the strip as defined by the customer based on the customer master manufacturing drawing.	SEMI G84

Term	*Definition*	*Standard(s)*
top surface	the external surface, opposite to the bottom surface, of a wafer stack.	SEMI 3D8, 3D9, 3D10
top surface	the substrate surface where the TGV opening is initially created and where the excavation of the TGV begins. This surface is defined to be horizontal; its perpendicular is defined to be vertical.	SEMI 3D11
top to bottom cavity mismatch	characterized by the fact that the top and bottom cavities in the mold are not aligned properly, causing a mismatch condition. The measurement shall be stated as the difference in the package top cavity position relative to the bottom cavity position.	SEMI G14, G16, G36, G37
top-type (double-layer) phase shift mask	an attenuated phase shift mask including an opaque area inside the exposure area. A phase shifter film is stacked on top of an opaque film.	SEMI D84
top-view SMD LED	a SMD LED whose (optical radiation) emitting surface is parallel to the PCB surface.	SEMI D62
total Cr/Fe Ratio	the ratio calculated from the peak areas of all species, elemental and oxides, of each element from the high resolution data of the as-received surface.	SEMI F60
total fixed charge density, N_{tf}	sum of the non-mobile charge densities: oxide fixed charge density, oxide trapped charge density, and interface trapped charge density.	SEMI M59
total flow	the combined flow rate through the bypass flow meter and OPM flow meter.	SEMI F104
total indicated reading	the difference between the highest point above and the lowest point below the best fit plane. Also referred to as 'TIR' for short.	SEMI P1
total indicator reading (TIR)	the span of readings from minimum to maximum of a given dimension over the total surface to which it applies.	SEMI G39, G50, G61
total indicator reading (TIR)	on a wafer surface, the smallest perpendicular distance between two planes, both parallel with the reference plane, which enclose all points on the front surface of a wafer within the flatness quality area or the site, depending on which is specified.	SEMI M23
total indicator reading (TIR)	the smallest perpendicular distance between two planes, both parallel with the reference plane, which encloses all points on the front surface of a wafer within the FQA, the site, or the subsite, depending on which is specified.	SEMI M59, M79
total indicator reading (TIR)	the smallest perpendicular distance between two planes, both parallel with respect to the reference plane, which encloses all points on the front surface of a wafer within the FQA, the site, or the subsite, depending on which is specified. TIR is generally expressed in micrometers.	SEMI M86
total integrated scatter, TIS	the radiation scattered by an opaque reflecting surface into a 2π solid angle.	SEMI M59
total organic carbon (TOC)	also total oxidizable carbon. Refers to organic compounds.	SEMI PV3
total pore volume	volume occupied by all pores or voids within the pad.	SEMI C102
total shift	the change in output, including zero and span, due to a change in Ambient Temperature from one normal operating temperature to a second normal operating temperature. All other conditions must be held within the limits of reference operating conditions.	SEMI E18
total test volume for pulsed test	test flow multiplied by the duty cycle and the sampling time.	SEMI F70.1
total thickness variation TAGV	difference of the maximum and minimum thickness measured at the measurement points of *TAUG*.	SEMI HB6
total thickness variation (TTV)	the difference between the maximum and minimum thickness values of a slice or wafer encountered during a scan pattern or a series of point requirements. TTV is generally expressed in micrometers or mils (thousandths of an inch).	SEMI M9
total thickness variation (TTV)	of a semiconductor wafer, the difference between the maximum and minimum values of the thickness of the wafer.	SEMI M23
total thickness variation (TTV)	the difference between the maximum and minimum thickness values of a wafer encountered during a scan pattern or a series of point requirements. TTV is generally expressed in micrometers.	SEMI M79, M86

Term	*Definition*	*Standard(s)*
total thickness variation (TTV)	the difference between the maximum and minimum values of the thickness of a wafer within the fixed quality area.	SEMI HB1, M59
total thickness variation (L3VA)	the measurement range or difference between the maximum and minimum of all the thickness values used to calculate the average thickness *L3TA*.	SEMI PV41, PV71
total thickness variation, 5-point (L3V5)	the measurement range or difference between the maximum and minimum of the thickness values used to calculate the 5-point average thickness *L3T5*.	SEMI PV41
total thickness variation, 9-point (L3V9)	the measurement range or difference between the maximum and minimum of the thickness values used to calculate the 9-point average thickness *L3T9*.	SEMI PV41
total time	all time (at the rate of 24 hours/day, 7 days/week) during the observation period. In order to have a valid representation of total time, all six basic equipment states shall be accounted for and tracked accurately.	SEMI E10, E79, E124
total usable area	the proportion of the area of the wafer without surface killer defects to the area of the entire wafer.	SEMI M92
total utilization (TU)	the percent of productive time during total time.	SEMI E35
total utilization (TU)	the percent of productive time during total time. This calculation is intended to reflect bottom-line equipment utilization.	SEMI E140
total variance (σ^2_{Total})	sum of the product variance and the square of the reproducibility.	SEMI E89
tote	a container for storing chemicals, generally 417 liters (110 gallons), 833 liters (220 gallons), 1000 liters (264 gallons) or 1249 liters (330 gallons) in size and requiring an outer shell to provide structural support to the vessel.	SEMI F31
tower-cooled process cooling water (PCW-T)	process cooling water from which heat is removed through a heat exchanger to a cooling tower system.	SEMI S23
toxic	having a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 20 milligrams per liter but not more than 200 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.	SEMI S18
toxic chemical	a chemical is considered to be toxic if: (1) It that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each, or (2) It is designated as 'Toxic' according to European Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances including its amendments and adaptations to technical progress.	SEMI S4
toxic gas	a substance that is discharged into a piping system in gaseous form and that is defined as toxic or highly toxic in Title 29 of the Code of Federal Regulations, Section 1910.1200.	SEMI F1
trace length, L [μm]	total length of the surface sampled by a linear profile measurement. Also known as *profile length.*	SEMI MF1811
trace report	a class of objects which provides to a service user a means for collecting periodic readings of selected attributes of a system.	SEMI E53
traceability	property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.	SEMI P35

Term	*Definition*	*Standard(s)*
traceability	the ability to trace the history, application, or location of an item or activity, or similar items or activities, by means of recorded identification (ISO 8402) in a manner that relates measuring equipment (including both measuring instruments and measurement standards) to national or international standards, primary standards, or basic physical constants or properties.	SEMI M59
traceability number, of a wafer box label	a string of message characters comprising a lot number, vendor code (including manufacturing location, if desired), and date of labeling, together with the appropriate data identifier and concatenation characters.	SEMI T3
traced length	total traversing length of stylus or spotlight.	SEMI D15
Track	a physical transfer path of Material in a Line. One Track has one Port at each end.	SEMI A1, A2, A5
Track CB	a part of communication block which contains Track Information including MD for one Track. One Track shall have one Track CB. Each Track CB consists of Track SB and Track RB.	SEMI A1.1
track clearance	the unobstructed area between the two carrier sides on the bar end.	SEMI E1
track clearance	the unobstructed area between the two cassette sides on the bar end.	SEMI HB2
Track DB	a data block which contains Track Information signals including MD for one Track.	SEMI A1.1
Track RB	a part of Track CB which contains the data to be received as Track DB from other equipment.	SEMI A1.1
Track SB	a part of Track CB which contains the data to be sent as Track DB to other equipment.	SEMI A1.1
trader service	a collection of names with associated properties of features for each name and methods for manipulating and inspection that collection.	SEMI E96
trailing edge (TE)	the position where the last valid position data is found after acquisition is started.	SEMI PV70, PV71
trainer	an individual who manages and facilitates the progress of one or more individuals during a training activity by providing needed information, demonstrating proper use of job aids and the best known method of the task, coaching them during practice, and evaluating their competence or fluency by administering a performance-based test and/or examination.	SEMI E150
training	an activity in which a performer is guided by an instructor, trainer, or prepared materials to become competent or fluent in a task as described by a complete performance objective.	SEMI E150
training	an activity which assists an individual in fulfilling the learning objectives.	SEMI S19
training (off-line)	the time required for the instruction of personnel in the operation and/or maintenance of equipment done outside of operations time. Off-line training occurs only in the nonscheduled state (NST).	SEMI E10
training (on-the-job)	the instruction of personnel in the operation and/or maintenance of equipment performed during the course of normal work functions. On-the-job training typically does not interrupt operation or maintenance activities and can therefore occur in any equipment state (except standby [SBY] and nonscheduled [NST]) without special categorization.	SEMI E10
training certification	training documentation showing student's completion of all defined qualifications required to accomplish a specific job, operation, or process.	SEMI E149
training documentation	recorded documentation content intended to communicate equipment information to the user, regardless of format, typically used in conjunction with training classes provided by suppliers to enhance the skill and knowledge levels of the intended user.	SEMI E149

Term	*Definition*	*Standard(s)*
training structure	the way in which the conditions of a lesson or course are organized to maximize certain training goals (e.g., Performance-Based Equipment Training [PBET] characteristics). These conditions include, among others: the number of days, hours, instructors, classrooms, and lab rooms that will be made available; the actual scheduling of available hours and days; the number and functionality of equipment and related tools that will be made available; the degree of blended learning used to help maximize hands-on practice; the appropriate assignment of students into smaller groups or individual activities; and the learning hierarchy.	SEMI E150
training system	the combination of an equipment and its associated operation environment (e.g., operator, host controller, automation interface) required to train users to perform an operation or activity (e.g., processing, transporting, storing).	SEMI E165
training tier	a stratification of tasks, skills, and/or knowledge for developing training and evaluation materials. Training tiers are often used within a structured approach of education and evaluation to determine an individual's level of understanding, performance of the criteria of a specific tier, as well as readiness to move to the next available tier of training, if applicable.	SEMI E161
transaction	a Primary Message and its associated Reply message, if required. Also, an HSMS Control Message of the request (.req) type, and its response Control Message (.rsp), if required.	SEMI E4, E37
transaction	a primary message and its associated secondary message, if any.	SEMI E5
transaction timeout	an indication from the message transfer protocol that a transaction has not completed properly.	SEMI E5
transfer	to either load or unload.	SEMI E23, E64, E83, E101
transfer agent	an equipment specialized to the transport of material from one equipment (or storage area) to another.	SEMI E32
transfer agent	a component of equipment specialized to the movement of transfer objects from place to place within a factory. May be of different types with widely-differing characteristics. Examples are fixed-arm robots, robot arms on fixed tracks, overhead gantries or even systems containing a heterogeneous collection of other transfer agents. Humans may also act as transfer agents.	SEMI E88
transfer command	a message from the host to the TSC requesting movement of material to a specified location within the scope of the transport system. An accepted transfer command results in the creation of an operation or job (also referred to as a 'transfer') that can be monitored using a provided buffer.	SEMI E168.3
transfer completed port	the destination port specified in a transfer command.	SEMI E88
transfer device	AMHS for transferring substrates.	SEMI D54
transfer envelope	the three-dimensional space occupied during the transfer by the transfer object and all associated transfer mechanisms of both transfer partners. This defines the space in which transfer activity occurs and in which the potential for physical interference with the transfer exists.	SEMI E32
transfer function	function of spatial frequency having a magnitude between zero and one which describes the sensitivity of a linear measuring system to the amplitudes of different spatial-frequency components in the profile being measured. Also known as *measurement transfer function*.	SEMI MF1811
transfer job	the set of atomic transfers constructed by the host to accomplish a cohesive material movement objective.	SEMI E32
transfer location	carrier location where AMHS pickup or set down a carrier (or carriers).	SEMI E153
transfer object	a physical object that is transferred to and from equipment, such as a product material, an empty carrier, or a carrier containing material to be processed. Tools (e.g., stepper reticles) and expendable materials also may be transfer objects.	SEMI E32
transfer method	color filter layers formed on the makeshift substrate are transferred onto the substrate. Color filter layers are formed by the above method.	SEMI D13

Term	*Definition*	*Standard(s)*
transfer partners	in a given atomic transfer, the equipment sending a transfer object and the equipment receiving the transfer object are transfer partners.	SEMI E32
transfer point	substrate transfer position that exists on the equipment.	SEMI D54
transfer port	point on the transport system at which a change of equipment ownership of the carrier occurs.	SEMI E82, E168.2, E168.3
transfer sensor	an RF power sensor used to transfer calibration from the calorimeter to another RF power sensor. A transfer sensor is used when an input calibration is needed. A transfer sensor calibrated at its input may be calibrated using a transfer sensor calibrated by a calorimeter at its output.	SEMI E136
transfer specification	the list of data provided by the host to define an atomic transfer.	SEMI E32
transfer standard	for mass flow controllers and mass flow meters, a device typically calibrated against a primary standard which can guarantee sufficient accuracy to, in turn, calibrate another device.	SEMI E29
transfer system controller	entity that is responsible for management of multiple transfer agents. The transfer system controller presents a single communications interface to its host representing these multiple agents.	SEMI E32
transfer unit	the element of movement (assemblage of carriers) of the ITS that consists of a maximum number of carriers allowed in a specific transfer command: • AA is the maximum number of carriers allowed for acquire at the transfer source. • BB is the maximum number of carriers allowed for deposit at the transfer destination. • CC is the maximum number of carriers allowed for transfer in one transport vehicle. The maximum size of the transfer unit is the minimum of AA, BB, and CC.	SEMI E82, E88
transfer unit	maximum number of carriers allowed in a specific transfer service: • AA is the maximum number of carriers allowed for acquisition at the transfer source. • BB is the maximum number of carriers allowed for deposit at the transfer destination. • CC is the maximum number of carriers allowed for transfer in one transport vehicle. The transfer unit is the minimum of AA, BB, and CC.	SEMI E87
transfer unit	maximum number of pods allowed in a specific transfer service: • AA is the maximum number of pods allowed for acquisition at the transfer source. • BB is the maximum number of pods allowed for deposit at the transfer destination. • CC is the maximum number of carrier pods allowed for transfer in one transport vehicle. The transfer unit is the minimum of AA, BB, and CC.	SEMI E109
transfer unit	the element of movement (assemblage of carriers) of the TS system that consists of a maximum number of carriers allowed in a specific transfer command: • AA is the maximum number of carriers allowed for acquire at the transfer source. • BB is the maximum number of carriers allowed for deposit at the transfer destination. • CC is the maximum number of carriers allowed for transfer in one transport vehicle. The maximum size of the transfer unit is the minimum of AA, BB, and CC.	SEMI E153
transferee	the party who will receive physical custody of the ME.	SEMI S12
transferor	the party with physical custody of the ME.	SEMI S12
transfill	fill a container by transferring a material to it from another container.	SEMI S30
transient overshoot	the maximum deviation from the actual flow to the set point, expressed as a percentage of the set point.	SEMI E17
transient transmission	function to transmit the non-periodic data generated in master station, local station, and intelligent device station.	SEMI E54.12

Term	*Definition*	*Standard(s)*
transient transmission	transmission performed upon request.	SEMI E54.23
transient transmission client function	a function that issues a transient request to a node having a server function.	SEMI E54.23
transient transmission server function	a function that receives a transient request from a node having a client function, and issues a response to the request.	SEMI E54.23
transient undershoot	the maximum deviation from the actual flow to the set point in the opposite direction of overshoot, expressed as a percentage of the set point.	SEMI E17
transition width, of an epitaxial layer deposited on a more heavily doped substrate of the same conductivity type	the difference between the layer thickness as determined by infrared reflectance and the flat zone based on the same thickness measurement.	SEMI M59
transitional edge	the side of a MEMS structure that is characterized by a distinctive out-of-plane vertical displacement as seen in a 2D data trace.	SEMI MS2, MS3, MS4
transmission, t_1	the ratio of maximum transmitted light power for a polarizer rotated in a light beam of infinite contrast, to the total light beam power without the polarizer.	SEMI MF1763
transmission	optical transmission is a measure of what proportion of light is transmitted through a certain material or medium.	SEMI C104
transmission degradation	decrease in optical transmission due to exposure of the material to certain doses of light exposure, irradiation, atmospheric and other effects.	SEMI C104
transmission control manager	a node that performs token passing management. One exists per network. The master station.	SEMI E54.23
transmission cycle	time constants for MECHATROLINK cyclic communication.	SEMI E54.19
transmission cycle	a period of cyclic communication on MOTIONNET.	SEMI E54.21
transmission control protocol/Internet protocol (TCP/IP)	a method of communications which provides reliable, connection-oriented message exchange between computers within a network.	SEMI E37
transmittance	percentage of incident light which permeates the glass. It is defined as I/Io, where Io is the strength of the incident light, and I is strength of the permeated light. Transmittance is effected by material composition, temperature, thickness and light wavelength.	SEMI D9
transmittance	the ratio of the intensity of transmitted to incident light at a certain wavelength.	SEMI M64
transmittance at air reference	a ratio of the intensity of light transmitted through a shifter area to the intensity of vertical incident light measured with air reference. Also referred to as ‘shifter area transmittance.’	SEMI P29
transmittance at quartz reference	a ratio of the intensity of light transmitted through a shifter area to the intensity of light transmitted through an opening area. Also referred to as ‘relative transmittance.’	SEMI P29
transparent conducting oxide	a transparent conducting film, consisting of a metal-oxide compound such as indium-tin-oxide, used for electrically contacting the active semiconducting regions of a PV solar cell and for improving the spectral response of the cell.	SEMI PV28
transparent conductive film	a thin film of IndiumTin Oxide is generally used.	SEMI D13
transpassive potential	the potential above the passive potential range, in which the current density increases rapidly as the potential increases.	SEMI F77
transponders	a data carrying device that reacts to a specific, reader produced, inductively coupled or radiated electromagnetic field, by delivering a data modulated radio frequency response.	SEMI E144
transport	transferring wafer from a wafer carrier to a specimen stage, or the reverse process.	SEMI P30

Term	*Definition*	*Standard(s)*
transport and storage system (TS system)	a system consisted of whole AMHS devices under control of single TSSC that is used for material transport and/or storage purposes.	SEMI E153
transport and storage system controller	controller of a transport and storage system that communicates with the Factory host and represents the system as the equipment.	SEMI E153
transport equipment	a piece of equipment (or system) which transports or transfers cassettes. It mainly consists of a transport vehicle, a robot vehicle, and a cassette transfer robot.	SEMI E23
transport equipment	equipment whose intended function is primarily to move material from one location in the factory to another location.	SEMI E98
transport group	a set of substrates that are transported together between tools.	SEMI E1.9
transport level interface (TLI)	one particular API provided by certain implementations of TCP/IP which provides a transport protocol and operating system independent definition of the use of any Transport Level protocol.	SEMI E37
transport module	a module that accepts or presents a single wafer outside the module across the interface plane for intratool transport.	SEMI E21, E166
transport module end effector	that part of the transport module that supports the wafer and can extend beyond the interface plane.	SEMI E22
transport system	a transport system dedicated to one or more bays in the factory and responsible for transferring carriers to production equipment, from production equipment, from production equipment to production equipment or from stocker to stocker. TS consists of the physical units of the system (e.g., vehicles, nodes, docking stations), the low-level unit controllers, and a system-level controller. TS excludes factory floor storage systems (stockers), but includes any short-term storage integral to the system, such as storage locations within an overhead track system that are accessible only to units of the particular TS.	SEMI E82
transport system	the component of AMHS that moves material from one part of the factory to another.	SEMI E88, E156, E168.2, E168.3
transport system controller (TSC)	interbay or intrabay transport system controller that communicates with the Factory Host and represents the system as the equipment.	SEMI E82, E168.2, E168.3
transport system equipment	an individual transport system viewed as a single piece of equipment, with distributed components and distributed control. The TS controller communicates with the host using HSMS and GEM and represents the system as an equipment. The factory may require more than one type of transport system.	SEMI E82
transport unit	a physical component of a transport system, such as a vehicle, node, or docking unit.	SEMI E82, E88
transport vehicle	a vehicle which transports cassettes but which has no mechanism for cassette transfer.	SEMI E23
transport vehicle	a component of a transport system that transports material between factory locations.	SEMI E168.2, E168.3
transverse direction (TD)	of plastic films/sheets. Perpendicular to plastic films/sheets forming direction.	SEMI D74
tranverse direction (TD) curl	transverse bowing of the tape.	SEMI G76
travel	the automated motion of a vehicle along a rail or programmed path from one station to another station. Travel does not include load/unload operation.	SEMI S17
traverse measurements	multiple airflow measurements taken at points of equal separation, by area, in a matrix pattern, along the cross-section of a ventilation duct or face plane of an opening in a ventilated enclosure.	SEMI S6
tray	a flat rectangular form of media for holding singulated packaged units. Also referred to as waffle packs or matrix trays. A tray is generally molded plastic with a defined matrix of cells or pockets tailored for specific packages.	SEMI E123

Term	*Definition*	*Standard(s)*
tray	an array of devices held in fixed locations by a device carrier such as a waffle pack, gel pack, JEDEC tray, burn-in tray, etc. This array of devices may be considered a substrate for the purposes of substrate mapping.	SEMI E142
treated water	water that has passed through water treatment equipment and/or received chemical injections in order to modify the dissolved and/or suspended solids content of the water.	SEMI F61, PV3
trench aspect ratio	the depth of a trench divided by its width.	SEMI MS13
triangular defect	a triangle-shaped defect on the 4H-SiC epitaxial layer surface, which is a lamellar inclusion with a cubic (3C) stacking sequence, so-called '3C inclusion', extending toward the epitaxial layer surface.	SEMI M92
trickle flow	a small amount of gas flow used to set test regulator outlet pressure (approx. 200 sccm).	SEMI F101
trigger	an event that causes a change in the state of the equipment. Examples are changes in sensor readings, alarms, messages received from the host, and operator commands.	SEMI E58, E116
trigger point	the point along a scan line where the measurement is started or stopped, respectively. There are two trigger points per scan line, the start trigger point where the measurement is started and the stop trigger point where the measurement is stopped.	SEMI PV41
tri-tone phase shift mask	an attenuated phase shift mask including an opaque area inside the exposure area. An opaque area consists of opaque film stacked on top of a phase shifter film.	SEMI P29
trouble alarm	as applied to fire detection or suppression systems; an alarm indicating a trouble condition.	SEMI S2
trouble condition	as applied to fire detection or suppression systems; a condition in which there is a fault in a system, subsystem, or component that may interfere with proper function.	SEMI S2
troubleshooting	the act of determining the root cause of a fault, problem, malfunction, or failure.	SEMI E149
true count	laser-light scattering event that arises from the localized light scatterers being investigated.	SEMI M59
true position circle	that circle with its center positioned at the center of the coined lead defines the design position of the lead tip.	SEMI G27, G47, G51
true value	value consistent with the definition of a particular quantity.	SEMI P35
trusted, adj.	a type of brand owner that has established its identity and purpose to the satisfaction of an ASB.	SEMI T20
TS unit	a physical component of a *TS system*, such as a *vehicle*, node, docking unit, port or crane.	SEMI E153
tube	a hollow form of media for holding packaged units. Also referred to as rails or sticks. A tube is generally composed of extruded polymer with internal section dimensions and features tailored for a specific package.	SEMI E123
tube trailer	a bulk gas supply system which manifolds high pressure, DOT-specified, vessels (cylindrical tubes) on a portable trailer.	SEMI F22
Tukey's quick test	a nonparametric test methodology for determining if reference and test data sets differ in the Annual Review Process.	SEMI C64
tungsten	non-standard term for *tungsten electrode*.	SEMI F78, F81
tungsten electrode	a component of the electrical circuit that terminates at the arc, molten conductive slag, or base metal. A non-filler electrode made principally of tungsten and used in arc welding.	SEMI F78
tungsten electrode	a non-filler electrode used in arc welding, made principally of tungsten.	SEMI F81
tuning	specification of information which supplements the pre-defined recipe used to achieve the particular process goals.	SEMI E40
tuning element position	the position of the tuning element is defined as the output voltage or output encoder value that corresponds to the position of a variable tuning element in a Matching Network. For example, the voltage from a rotary potentiometer on the rotating shaft of a variable capacitor (the 'tuning element') would be referred to as the capacitor's 'position.' In this example, the position/voltage corresponds to a certain shaft location or position.	SEMI E113, E115

Term	*Definition*	*Standard(s)*
turbo molecular vacuum pump (TVP)	an axial flow turbine vacuum pump device for operation in the molecular flow range designed to impart momentum change to gas molecules in a preferential direction from pump inlet to outlet.	SEMI E54.18
turbomolecular pump (TMP)	equipment used used to create a high vacuu. Rapidly rotating blades force molecules to the bottom for removal by a mechanical pump.	SEMI E74
turn-on test	the test for checking turn-on and off of the BLU.	SEMI D36
turnkey	delivery of a fully-functional and test system upon acceptance.	SEMI E70
tutorial	typically a connected series of test cases that lead the user through the key features of the software, help, or documentation to help the user learn how to use the software, help, or documentation.	SEMI E149
tweezer mark	any mark on the wafer caused by handling with tweezers.	SEMI M10
twin	a body of crystal within the wafer in which the lattice is of two parts, related to each other in orientation as mirror images, across a coherent planar interface known as the twinning plane or twin boundary.	SEMI M10
twin boundary	a coherent planar interface that separates two parts of a crystal lattice that are related to each other in orientation as mirror images.	SEMI M59
twist	the angular rotation of one end of the leadframe or strip with reference to the other end.	SEMI G2
twist	angular rotation of one end of the tape with reference to the other end.	SEMI G76
two fastener configuration	the component has two fasteners per sealing point. The sealing point is located in the middle of the two fasteners.	SEMI C88, F82, F83, F84, F90, F91, F92, F117
type	a declaration that describes the common properties and behavior for a collection of objects. Types classify objects according to a common interface; classes classify objects according to a common implementation.	SEMI E81, E96
type A baseplate	a configuration of inner pod baseplate intended for uses with EUVL exposure tools.	SEMI E152
type B baseplate	a configuration of inner pod baseplate intended for uses other than with EUVL exposure tools.	SEMI E152
types of electrical work	defined by the electrical energy levels a person is exposed to when performing a task. All tasks that should be performed on a system fall into one of the four following type categories of electrical work: • type 1 — equipment is fully de-energized. • type 2 — equipment is energized. Energized circuits are covered or insulated with no exposed parts. • type 3 — equipment is energized. Energized circuits are exposed and inadvertent contact with un-insulated energized parts is possible. Potential exposures are not greater than 30 Volts rms, 42.4 Volts peak, 60 Volts DC, and 240 volt-amps in dry locations. • type 4 — equipment is energized. Energized circuits are exposed and inadvertent contact with un-insulated energized parts is possible. Potential exposures are greater than 30 Volts rms, 42.4 Volts peak, 60 Volts DC, 240 volt-amps in dry locations, or where induced or contact radio-frequency currents exceed the limits in SEMI S2.	SEMI S22
U type	the type is the concave shape of substrate. The substrate shape is named as ‘U type.’ U type mode consists of Sag at center location and two lifts which are consist of the Lift at left and at right edge locations.	SEMI D40
ultrafiltration	generally refers to filters designed to remove all submicron suspended solids.	SEMI F61
ultrafine particle	a particle with an equivalent diameter less than 0.1 μm [as defined in ISO 14644-1].	SEMI E104
ultrahigh purity (UHP)	for advanced or special systems consisting of higher grade materials and components, with advanced or integrated design and configuration, the latest assembly methods, and enhanced performance capabilities, especially related to purge or rinse time and contamination levels.	SEMI E49

Term	*Definition*	*Standard(s)*
ultra high purity (UHP) grade	for components intended for use in advanced chemical distribution systems of semiconductor manufacturing facilities in which optimum resistance to corrosion and contamination in critical process chemicals are required.	SEMI F20
ultra low irradiance condition (ULIC)	for OPV/DSSC/PSC. Cell temperature: 25°C, AM 1.5G, Irradiance: 1 $W.m^{-2}$.	SEMI PV57
ultra-low penetration air (ULPA) filter	filter with a minimum particle-collection efficiency of 99.9995% on the most penetrating particle size.	SEMI E104
ultrapure reclaim water (URW)	segregated drain for rinse water of sufficient purity for recycle without treatment.	SEMI F116
ultrapure water distribution system	the collection of components and subsystems used to deliver ultrapure water from a source location to a point of use.	SEMI F57
ultrapure water system (UPW)	consisting of multiple components including a Reverse Osmosis (RO) and a Deionization (DI) process. UPW is a higher purity of water that exceeds all the requirements of HPW and is produced by a semiconductor water treatment system, which is sent to the end users for use in manufacturing.	SEMI PV3
ultra-thin glass used for photovoltaic module	glass with thickness of 2 to 3 mm (containing 2 mm) used for photovoltaic module.	SEMI PV63
ultra-thin heat-treated glass	ultra-thin glass with the heat-treated technology, the mechanical strength and heat shock resistance of the glass can be improved.	SEMI PV63
ultra-thin front glass	front glass used for the photovoltaic module, which is ultra-white glass, including patterned and float glass, coated and uncoated glass.	SEMI PV63
ultra-thin rear glass	ultra-thin glass only used for the back of double-glass module, which is usually normal float and uncoated glass, and it can also be ultra-white glass.	SEMI PV63
ultratrace analytical instrumentation	instrumentation that has sufficient sensitivity to measure all impurities of interest at the specified level of the customer, the ppb or sub-ppb level.	SEMI F67, F68
ultraviolet (UV)	electromagnetic energy with around a 100–400 nm (nanometer) wavelength.	SEMI F61
ultraviolet (UV) light debond	debond using ultraviolet process.	SEMI 3D8
ultra pure water (UPW)	the highest purity water produced by a semiconductor water treatment system, which is sent to the end users for use in manufacturing.	SEMI F61
unified modeling language (UML)	a notation for representing object-oriented designs and views created by Booch, Rumbaugh, and Jacobson in order to merge their three popular notations plus aspects of other existing notations into a single object-oriented notation intended to be usable by all.	SEMI E120.1, E125.1, E132.1, E134.1, E139.1, E142.1
unacceptable risk	a risk of Medium, High, or Very High as defined by SEMI S10 or SEMI S14.	SEMI S18, S30
uncertainty	parameter, associated with a measurement, that characterizes the dispersion of values that can be reasonably attributed to the object being measured.	SEMI E89
$uncertainty_{RSS}$	a parameter that is associated with a measurement and characterizes the dispersion of values that can be reasonably attributed to the object being measured. In this case, it is a calculated value that includes repeatability, linearity, and hysteresis. It is traditionally quantified by the root sum square (RSS) of repeatability, linearity and hysteresis and expressed in percent of full scale.	SEMI F113
uncertainty, total	the range within which the true value of the measured quantity can be expected to fit; an indication of the variability associated with a measured value that takes into account the two major components of error, bias and the random error attributed to the imprecision of the measurement process.	SEMI E56, E69
unconfirmed service (HSMS)	an HSMS service requested by sending a message from the initiator to the responding entity which requires no indication of completion from the responding entity.	SEMI E37

Term	*Definition*	*Standard(s)*
unconstrained condition	the state of a wafer under test, when the wafer is in a stress-free condition with deformation due only to gravity.	SEMI HB1
uncontrolled work area	any area outside of a secondary containment system where people are likely to be present.	SEMI F6
undercut	beveled edge caused by the etchant attacking the metal laterally as well as vertically.	SEMI G19
undercut	a groove adjacent to the base metal at the edge of the weld left unfilled by weld metal.	SEMI F78, F81
undercut	the lateral etching of silicon under the oxide interface layer that excides the dimensions etched in the oxide layer, thereby undermining the oxide layer.	SEMI MS13
underfill	a groove weld condition in which the weld face or root surface is below the adjacent surface of the base metal.	SEMI F78
underlying layer	the single thickness of material (which can be the substrate) located directly beneath the material of interest.	SEMI MS3, MS4
underplating	plating layers that complete the required characteristics of the final plating layer and lies between the base material and final plating layer.	SEMI G64
undocked	the status of a carrier on a load port or in an internal buffer that is not at the docked position.	SEMI E87, E171
undocked location	the position of a FOUP at a load port where the FOUP may be loaded or unloaded from the equipment.	SEMI E164
uniaxial surface	surface whose roughness is confined to a particular direction or lay, so that it can be completely characterized by profile measurements perpendicular to the lay direction. Surfaces that display harmonic lines are frequently uniaxial. Also known as grating-like surface.	SEMI MF1811
unified modeling language (UML)	a notation for representing object-oriented designs and views.	SEMI T20.3
unimodal distribution	a distribution represented by a histogram with constant bin size that has a single peak.	SEMI M59
unique identifier (Uid)	SEMI E120 Nameable instance identifier based on uuid.	SEMI E164
unique identifier (UID)	an attribute associated with a node, which is unique over the whole XML file.	SEMI PV55
uninterruptable power supply (UPS)	an emergency backup power supply to provide an uninterrupted or continuous supply of electrical power during a failure in the main supply of utility power.	SEMI E70
union labor	a group of trained craftspeople that are represented by a single bargaining organization. A labor bargaining unit.	SEMI E70
unit	any wafer, substrate, die, packaged die, or similar piece part.	SEMI E10, E79
unit	any wafer, substrate, die, packaged device, or piece part thereof.	SEMI E35, E116, E140, E149
unit	the functional integrated circuit (or chip) that is to be electrically tested.	SEMI E122
unit	discreetly addressable element, such as an integrated circuit or chip, handled individually or in groups by a handler for a process tool.	SEMI E123
unit load	a single load for transportation made up of products and packaging materials, usually consisting of one or more products or packaged-products on a skid or pallet, secured together for distribution as a whole.	SEMI PV44
unit (of production)	the basic entity in the factory (such as a wafer in a fab, a glass pane in a flat panel factory, or a die in a post-wafer back-end chip production facility) which acts as a product substrate (and moves through the factory with no assembly or disassembly processes). Only product units are included (as opposed to test wafers or other non-product devices).	SEMI E124

Term	*Definition*	*Standard(s)*
unite inventory	a capability to realize and communicate the Device Profile. This provides property and configuration information of devices on the network.	SEMI E54.17
Unite States	a capability to communicate state of a device.	SEMI E54.17
units of pressure	several units of pressure are commonly used in conjunction with MFC's. The Pascal is the preferred unit of pressure for use within the semiconductor industry.	SEMI E28
unit of work	the extent of work which is directly controllable by a supervisor.	SEMI S24
uniformity	characterizes the change in brightness or color difference over the display area of the DUT.	SEMI D72
unjamming	service task used to loosen automated material handler from entanglement.	SEMI S13
unload	the operation of removing a carrier from a load port.	SEMI E87, E171, E174
unload	remove materials to the cassette slots from the probing or marking location.	SEMI E91
unload	the operation of removing a pod from a load port.	SEMI E109
unload	(1) remove a substrate from a substrate location. (2) remove a carrier from the equipment.	SEMI E130
Unload Stagnation	a stagnation caused by nonreadiness of a carrier which should be unloaded from the equipment.	SEMI E171
unmanned transport vehicle (UTV)	a vehicle used to automate the movement of production material within semiconductor or FPD factories. There are two types of UTVs; FTV and OTV.	SEMI S17
unsafe gas condition	a condition with a risk of Medium, High, or Very High as defined by SEMI S10 or SEMI S14.	SEMI S18
unscheduled downtime	during an observation period, the accumulated time when the equipment system is in the unscheduled downtime state (UDT).	SEMI E10, E79
unscheduled downtime state (UDT)	the equipment state when the equipment system is not in a condition to perform its intended function due to unplanned or unscheduled activities or conditions. UDT includes any activities required to restore the equipment system to a condition where it can perform its intended function.	SEMI E10, E79
unsigned double integer (UDINT)	an unsigned integer, four bytes long, in the range 0 to $2^{32} - 1$.	SEMI E54.1, E54.10
unsigned integer	may take the value of any positive integer or zero. Messaging protocol may impose a limit on the range of possible values.	SEMI E39, E40, E41, E53, E58, E90, E99, E118
unsigned integer (UINT)	an integer, 2 bytes long, in the range 0 to 65535.	SEMI E54.1, E54.10, E54.22
unsigned long integer (ULINT)	an unsigned integer, eight bytes long, in the range 0 to $2^{64} - 1$.	SEMI E54.10
unsigned short integer (USINT)	an integer, 1 byte long, in the range 0 to 255.	SEMI E54.1, E54.10, E54.22
unstable (reactive)	a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.	SEMI S4
upload	an operation that transfers a recipe (up) from an execution storage area.	SEMI E42
upper flammable limit (UFL)	the maximum concentration of a flammable substance in air through which a flame will propagate (see also the definition for flammable range).	SEMI S3, S6
upper range input value	highest value of input at which the instrument is specified to operate. In mass flow controllers this is full scale or the highest set point at which the instrument is specified. In mass flow meters this is full scale or the highest actual flow value at which the instrument is specified.	SEMI E27
upper specification limit (USL)	value of an attribute above which a product is said to be nonconforming.	SEMI E89

Term	*Definition*	*Standard(s)*
upper specification limit (USL)	value of a characteristic, above which a product is said to be nonconforming.	SEMI E35
up cycle reading	a reading approached from a set point less than the current set point and beyond the dead band.	SEMI E56
up cycle value, average	the sum of all up cycle readings, in one cycle, at a single set point, divided by the number of these values.	SEMI E56
upper 450 equipment boundry (EB_{UPPER})	the plane parallel to the FP and above z1 which defines the boundry between the SME and the overhead transport vehicle.	SEMI G95
upscale reading	a reading approached from a setpoint less than the current setpoint and beyond the deadband.	SEMI E69
upscale value, average	the sum of all upscale readings, in one cycle, at a single setpoint, divided by the number of these values.	SEMI E69
upstream, adj.	on the side from which fluid flows.	SEMI S5
upstream controller	a controller that directs the Carrier ID Reader/Writer through the communication interface.	SEMI E99
upstream controller	a controller that directs the Wafer ID Reader through the communication interface.	SEMI E118
upstream equipment	equipment that is in the position to send Material in an equipment-to-equipment interface in manufacturing line.	SEMI A2
uptime	during an observation period, the accumulated time when the equipment system is in a condition to perform its intended function. Uptime includes productive, standby, and engineering times, and does not include any portion of unscheduled downtime, scheduled downtime, or nonscheduled time.	SEMI E10, E79
uptime (equipment uptime)	the time when the equipment is in a condition to perform its intended function. It includes productive, standby, and engineering time, and does not include any portion of downtime or nonscheduled time.	SEMI E124
uptime state	the composite state when the equipment system is in a condition to perform its intended function. It includes the productive state (PRD), standby state (SBY), and the engineering state (ENG), and does not include any portion of the downtime state (DT) or the nonscheduled state (NST).	SEMI E10
UPW recycle	the reuse of spent water as feed water for the same process that discharged it (point-of-discharge [POD] recycling), or the plant UPW system.	SEMI F98
usage reduction	reducing the total volume of process chemicals requiring abatement.	SEMI F5
usecase	a defined subset of the standard applicable to a use defined set of requirements.	SEMI E183
use exposure machine	information related to equipment used for exposure.	SEMI P42
use rate	the amount of a certain resource such as energy, utility, or material consumed by SME per unit of time.	SEMI S23
useable volume, of brick	that volume of a brick complying with the material specifications and from which wafers are cut.	SEMI PV32
user	a human who represent the factory and enforce the factory operation model to the factory resources. A user is considered to be responsible for many setup and configuration activities that cause the equipment to best conform to factory operations practices.	SEMI A2, A5
user	a human or humans who represent the factory and enforce the factory operation model and is considered to be responsible for many setup and configuration activities that cause the equipment to best conform to factory operations practices.	SEMI E30, E170
user	a human who represent the factory and enforce the factory operation model. A user is considered to be responsible for many setup and configuration activities that cause the equipment to best conform to factory operations practices.	SEMI E174
user	a person interacting with an agent, directly through the agent's human interface or indirectly through the agent's supervisor.	SEMI E42

Term	*Definition*	*Standard(s)*
user	any entity interacting with the equipment, either locally as an operator or remotely via the host. From the equipment's viewpoint, both the operator and the host represent the user.	SEMI E10, E58, E79, E116
user	may refer to the user of fabrication equipment for EUV masks that contains a chuck, or the purchaser of an EUV mask from a mask supplier.	SEMI P40
user	party that acquires equipment for the purpose of using it to manufacture semiconductors. See also the definition for supplier.	SEMI E33, E176, E180, F107, S2, S30
user	the purchaser of semiconductor manufacturing who will use the equipment.	SEMI S7
user	person interacting with the equipment. Users may include operators, maintainers, service personnel, and others.	SEMI S8
user	the organization(s) or persons within those organization(s) who will operate the system or equipment for its intended purpose.	SEMI S12
user	party that acquires UTV system for the purpose of using it to manufacture semiconductors or FPDs.	SEMI S17
user	party that acquires equipment for the purpose of using it to manufacture semiconductors or FPD.	SEMI S21, S24
user	end user, customer, distributor, brand owner, or buyer.	SEMI T22
user layer	in communications, this is a set software function connected to the communication protocol's top layer, usually called the applications layer, from the user's application environment. It typically allows the user application to be protocol independent.	SEMI E54
user population	a specific cross section of persons that may reasonably be expected to interact with the equipment to perform operation, maintenance, or service tasks.	SEMI S8
user start	activities that are initiated on a system by another system or operator.	SEMI E94
utility	power, data communications, or any gas, liquid or other material which is supplied to or carried away from the equipment.	SEMI F107
utility point of connection (UPOC)	the mating fitting or terminal provided by the facility for interconnection with the EPOC for utility supply, the facility end/termination of the hookup at the equipment.	SEMI E76
utilization	the percentage of time the equipment system is performing its intended function during a specified observation period.	SEMI E10
utilization	the percentage of time the equipment systems is performing its intended function during a specified time period.	SEMI S23
utilization	fraction of a gas destroyed or transformed by reaction process such as CVD or etching (so-called 'use rate' in '2006 IPCC Guidelines for National Greenhouse Gas Inventories').	SEMI S29
UTV system	consists of UTV, and equipment and fixtures for driving and controlling UTV such as controller, guided rail, guards, etc.	SEMI S17
uuid	universally unique identifier. This 128-bit field (often represented as a 36-character string) is calculated according to the standard ISO/IEC 11578:1996—Remote Procedure Call (RPC). The field is guaranteed to be unique over all space and time. The uniqueness holds even though the uuids are created independently by separate entities.	SEMI E139
UV irradiance	radiant flux received by a surface of unit area during a unit period of time, covering the wavelength of 280 to 400 nm.	SEMI PV77
UV spectral distribution	UV spectral distribution falls within the wavelength range specified in § 5.2.3. UVA spectral is within 320 to 400 nm. UVB spectral is within 280 to 320 nm.	SEMI PV77
vacuum decay method	leakage detection determined by the loss of vacuum (increase in pressure), over a period of time within a vessel or piping system.	SEMI F6
vacuum generator	a component in a process gas panel which, via a suction created by an inert gas venture, allows for evacuation of the gas system to levels of 16.7 kPa (25 in. mercury) or less.	SEMI F22

Term	*Definition*	*Standard(s)*
vacuum pressure gauge (VPG)	a self-contained device, consisting of one or more vacuum pressure sensors and signal processing electronics, commonly used in semiconductor industry to measure the pressure of gas.	SEMI E54.22
vacuum pressure single gauge device (VG)	a self-contained device, consisting of one vacuum pressure sensor and signal-processing electronics, commonly used in semiconductor industry to measure the pressure of gas.	SEMI E54.22
vacuum pressure gauge/combo device (CG)	a self-contained device, consisting of several vacuum pressure sensors and signal-processing electronics, commonly used in semiconductor industry to measure the pressure of gas.	SEMI E54.22
vacuum pressure gauge/multi device (MG)	a self-contained device, consisting of several vacuum pressure sensors and signal-processing electronics, commonly used in semiconductor industry to measure the pressure of gas.	SEMI E54.22
vacuum pump	a pumping apparatus which exhausts gas or air from an enclosed space to achieve a desired degree of vacuum.	SEMI E73, E74
vacuum pump exhaust line	piping leading from vacuum pump outlet to an abatement device inlet, bypass connection or facility exhaust.	SEMI S30
validate	the action of checking recipe contents to ensure that parameter type and range are valid for the equipment configuration prior to execution.	SEMI E42
validated method	as applied for the purposes of industrial hygiene chemical exposure testing, is a reviewed documented protocol for the collection and analysis of a sample (e.g., NIOSH sampling method 1300). A validated method includes instructions on collection (media, efficiency, volume, flow rate, etc.), sample handling, analytical method, lower sensitivity and method error statistics. Validated methods are published by agencies or industrial hygiene organizations such as NIOSH, OSHA, IOHA, or ACGIH.	SEMI S2
validation testing	testing to confirm effectiveness of design. An item's 'effectiveness' is viewed in terms of its functional design, specific to SEMI S8.	SEMI S8
value engineering	a set of reviews to determine minimum requirements at a minimum cost.	SEMI E70
valve	a device that controls the flow or pressure of a gas. Valve functions can include shutoff, metering, backflow prevention, and pressure relief.	SEMI F36, F76
valve closure member	that part of the cylinder valve which is positioned in the flow stream to permit or obstruct flow, depending on its closure position.	SEMI F4
valve drive	electrical output from the DUT which is analogous to the level of power supplied to the control valve. This output is sometimes called valve voltage.	SEMI F55
valve manifold box (VMB)	a metal enclosure to house distribution valves and components required to distribute gases to multiple points of use from a single source.	SEMI E70
valve manifold box (VMB)	a gas distribution subsystem designed to allow the distribution from a single process gas source to multiple process equipment. Its manifold design uses a series of valves (manual or AOV), regulators, filers, and vaccum generator(s), and may be controlled manually or automatically.	SEMI F22
valve manifold box (VMB)	a chemical-resistant enclosure which houses manual and/or automatically actuated valves, tees, and fittings. The box can also act as a distribution point allowing multiple take offs for a delivered chemical.	SEMI F31
vapor	the gas phase of a substance that is usually considered to be a liquid.	SEMI S3, S6
vapor delivery equipment	equipment that includes a container of liquid or solid material and transfers it as a gas from the container to the point of use. The motive force may be a result of the material's vapor pressure (which can be controlled by heating and cooling) or via a matrix (also known as carrier) gas. The vapor delivery equipment may be close to or far from the point of use.	SEMI S30

Term	*Definition*	*Standard(s)*
vapor phase decomposition	a method in which impurities on the surface are collected by the so-called VPD procedure, i.e., the non-volatile products formed by acid decomposition of the oxide at the wafer surface are collected by a droplet of collecting agent, usually ultra-pure hydrofluoric acid or other reagent or combination of reagents, and the droplet subsequently being analyzed by AAS or ICP-MS, or dried in a manner which gives the least environmental contamination, the residue from the droplet subsequently being analyzed by TXRF.	SEMI E45
vapor phase decomposition	a method for dissolving an oxide film containing impurities to be examined by means of hydrofluoric (HF) acid vapor.	SEMI M59
vapor phase decomposition (VPD) box	the VPD box is an airtight container composed of acid-resisting materials (e.g., polytetrafluoroethylene and polyfluoroalkoxyethylene) and equipped with wafer stands.	SEMI M85
vapor pressure condensation point	pressure at which fluid phase changes from liquid to gas, for a given upstream condition.	SEMI F32
vaporizer	a component which, through heat transfer, is designed to convert a cryogenic liquid to a gas.	SEMI F22
variable	a quantitative or qualitative characteristic of an object, processes, or state that may take on more than one value.	SEMI E89
variable data (V)	a data item containing a status variable (SV), data variable (DVVAL), or equipment constant (ECV) value.	SEMI E30
variable data ID (VID)	a unique identifier of a variable data item. The set of VIDs is the union of all SVIDs, ECIDs, and IDs for DVVALs.	SEMI E30
variable parameter	a formally defined variable (setting) defined in the body of a recipe, permitting the actual value to be supplied externally.	SEMI E42, E139, E172
variance	population variance.	SEMI E89
variance	a statistical estimator that quantifies spread around the mean of a probability density function.	SEMI E35
variations in lead position/location	are defined with respect to a 90° angle from the top or bottom of the smooth surface of the molded package as viewed on the end or side projections.	SEMI G14, G16, G36, G37
Vegard's Law	this law states that the lattice parameter of a ternary alloy epilayer $A_xB_{1-x}C$ varies linearly with composition, x, between the lattice parameters of the two component binary alloys AB and AC, i.e., between $0 \leq x \leq 1$.	SEMI M63
vehicle	a *transport unit* which transfers a *transfer unit* between *transfer locations*. Vehicle picks up a carrier from *transfer location* in unloading action, and place a carrier to *transfer location* in loading action.	SEMI E153
velocity of propagation (VP)	the velocity of propagation, VP, is defined as the ratio of the speed of an electrical signal down a length of cable divided by the speed in free space. It is the reciprocal of the square root of the relative dielectric constant of the dielectric material between the inner and outer conductor of a coaxial assembly. For example, the VP for cable type RG-217 is nominally 0.66.	SEMI E114
velocity pressure (VP)	the pressure required to accelerate air from zero velocity to some velocity V. Velocity pressure is proportional to the kinetic energy of the air stream.	SEMI S2
velocity, vA, in linear feet per minute (LFPM)	the velocity of the air at a specified location upstream of the DUT.	SEMI G38
vena contracta	point in a duct where the diameter of the fluid stream is smaller than the diameter of the duct.	SEMI F32
vena contracta	a location downstream of an orifice (e.g., the opening of a duct) where the static pressure falls to a minimum and the velocity pressure reaches a maximum.	SEMI S6
vendor ident number	central administrative number assigned by the PNO.	SEMI E54.14
verification	is to determine that the goods are not counterfeit by comparing the authentication codes allocated to the devices or license plates with the codes registered in ASB.	SEMI T22

Term	*Definition*	*Standard(s)*
verification run	a single cycle of the equipment (using units or no units) used to establish that it is performing its intended function within specifications.	SEMI E10
verify	the operation of reading a recipe's contents to ensure that it is syntactically correct and identifying elements that must be made public.	SEMI E42
version	a version of a document in a state wherein the document has completed a formal approval process. The process must be auditable and available for review as part of the document history.	SEMI E36
version	part of a recipe's identifier that is used to show its heritage.	SEMI E42
Version ID	an additional ID for a recipe, which provides a unique version name to the recipe. In case Recipe ID cannot ensure naming uniqueness of recipes, Version ID may be used in addition to the Recipe ID.	SEMI E170
Vertical Communication (VC)	communication between the host and equipment.	SEMI A1, A2, A5
vertical datum plane	the plane that bisects the tool port and is perpendicular to the horizontal and facial datum planes.	SEMI D16
vertical datum plane	a plane that is vertical to both facial and horizontal datum planes at the cassette loading position.	SEMI D28
vertical illuminator	used with reflected light in which the objective both illuminates and images the specimen.	SEMI MF728
vertical spacing	the distance from the HP of one load port to the HP of another load port above on an LEDME.	SEMI HB3
vertical wafer shipping box	a wafer shipping box that, when stood on its base, holds the wafers such that the front and back surfaces are oriented perpendicular to the base.	SEMI 3D3
verticality	an angle that quantifies the deviation from the perpendicular intersection between the ingot's end face and the reference plane, and same to the relationship of end face and cylindrical surface of ingot.	SEMI HB11
very low frequency (VLF)	the spectrum range from 3 kHz to 30 kHz.	SEMI E33, E176
vessel	a receptacle fabricated from or equipped with an inner lining of chemically inert and resistant materials which is specifically deisgned to contain and/or maintain the purity level of the chemical for a long period of time. All containers are fabricated from or at least contain an inner lining of chemically inert and resistant materials and are specifically designed to maintain the purity level of the chemical for long periods of time. The larger containers are generally designed in conformance to Department of Transporation Regulations (DOT) and may be transported by ground. These containers have fittings which are compatible to this purpose so that they may be hooked up to the BCD Systems directly. Such containers include but are not limited to drums, totes and ISO containers.	SEMI F31
vessel	a 'closed vessel' or an 'open vessel'.	SEMI S3
v-groove	etched structure for use in aligning an optical fiber.	SEMI MS3
vibration	acceleration occurring in each axis (Measurement unit: G – gravity acceleration).	SEMI D43
vibration test specification	data required to perform a vibration test using the apparatus in § 6 [of SEMI PV23], including the power spectral density, overall root-mean-square of the acceleration and the test duration.	SEMI PV23
vibration test specification	data required to perform a vibration test using the apparatus in § 6 [of SEMI PV38], including PSD – Grms and test time, etc.	SEMI PV38
vibration sensor	a device that responds to time varying accelerations, generally of a small rapid displacement.	SEMI MS3
vibration table	a mechanized table that will vibrate with a controlled frequency, direction(s), and amplitude. It is commonly used for vibration testing.	SEMI F74
vibrometer	an instrument for non-contact measurements of surface motion.	SEMI MS4

Term	*Definition*	*Standard(s)*
Vickers hardness	a type of pressure test. A diamond pyramid indentator with a face angle of 136° is pressed into the glass surface to find the degree of hardness by measuring trace indentation on the overall squareness.	SEMI D9
video	a medium for delivering information created from the recording of real events into both visual and auditory components, to be viewed and heard at the same time. The initial recording, typically captured on tape or digital memory, is edited and converted to a standard digital compressed format like Moving Picture Experts Group (MPEG) or audio visual interleave (AVI).	SEMI E149
video package, kit	any training video, whether to deliver content or a demonstration, together with written instructions for its use, and, in some cases, student worksheets.	SEMI E150
viewer crosstalk	viewer crosstalk causes the viewer to see multiple ghost images. The phenomenon of the multiple ghost images comes from a pixel by pixel issue of the local image pair. It can be quantified. In general, viewer crosstalk can be obtained by the product of system crosstalk and co-location image contrast, and reduced by an algorithm of crosstalk cancellation method. Viewer crosstalk is unit-less.	SEMI D59
viewing angle	the horizontally and vertically inclination angle (degree) to the normal direction to the plane of the display surface.	SEMI D76
viewing angle	the maximum angle of viewing direction (scalar in degree) to the normal direction which satisfies the specified threshold for acceptable visual performance in horizontal or vertical viewing directions.	SEMI D82
viewing direction	the angle between the CCD equipment and the test sample.	SEMI E54.14
viewing direction	direction from which the observer looks at the point of interest on the DUT. Viewing direction dependence characterizes the change in brightness, contrast ratio, and color relative to their values at the normal viewing direction.	SEMI D72
viewing direction	the directional viewing condition that describes the horizontal and vertical inclination direction (vector direction) to the normal direction to the plane of the display surface.	SEMI D82
virgin HPIX resin	an unused, high purity ion exchange (HPIX) resin that has not been regenerated.	SEMI C93
virgin test wafer	test wafer that has not been used previously in semiconductor manufacturing.	SEMI M59
virtual center line (virtual datum line)	the center line of a substrate placed in a loader/unloader (with no openings) shall be the virtual center line (virtual datum line).	SEMI D44, D48, D49
virtual classroom	an online learning space where students and instructors interact live with the help of specialized software typically including audio, interactive elements, and an electronic white board.	SEMI E150
virtual destination	a destination which represents a group of ports.	SEMI E82
virtual location	a virtual location does not necessarily correspond to a single *physical location*, and may hold one or more carriers. For example a loop in the AMHS temporarily holding one or more carriers in cycle storage would be a virtual carrier location.	SEMI E153
Virtual Metrology	the technology of prediction of post process metrology variables (either measurable or nonmeasurable) using process and wafer state information that could include upstream metrology and/or sensor data.	SEMI E174
virtual sensor (synthetic sensor, derived sensor)	one or more calculated measured values that are based on one or more sensor readings. This may include results based on neural nets, statistical analysis, etc. or may be based on a single sensor value.	SEMI E98
virtual tester	the virtual tester is a logical concept which describes the dynamic allocation of a portion of the physical hardware available in a test system to a test program that uses those resources to test a unit or set of units.	SEMI E122
virtual tracking unit	an entity (which could be a number of substrates or an individual die or mask group) that the factory floor control system treats as a single unit for tracking purposes.	SEMI E1.9, E119, M31
virus (computer virus)	a piece of code capable of copying itself and, typically, having a detrimental effect, such as corrupting a system or destroying data.	SEMI E169
visual angle (VA)	used to describe Mura size in degrees.	SEMI D57

Term	*Definition*	*Standard(s)*
void	an absence of metallization or glass from a designated metalized or glassed area on the ceramic surface.	SEMI G1, G26, G34
void	an absence of aluminization from a designated area of the leadframe.	SEMI G2
void	local absence of SOI layer and/or BOX.	SEMI M59
void (ceramic)	an absence of screen-printed ceramic from a designated area greater than 0.075 mm (0.003 in.) in diameter.	SEMI G39, G50
void (metal)	an absence of refractory metallization, braze, or plating material from a designated area greater than 0.075 mm (0.003 in.) in diameter.	SEMI G3, G22, G39, G53
void wafer	wafer with recesses etched into the surface, to produce voids in the bond when incorporated in a bonded wafer pair. The void wafers used in this study were oxidized after etching the recesses.	SEMI 3D13
void wafer	the bottom wafer of the bonded wafer pair (BWP) that has been etched with the specified pattern to simulate voids.	SEMI 3D17
voids	an absence of refractory metallization, braze, or plating material from a designated area greater than 0.002 in. (0.051 mm) in diameter.	SEMI G22
volatile memory	a semiconductor memory which loses it data when power is turned off.	SEMI G91
voltage sag	an rms reduction in the ac voltage at power frequency for durations from half-cycle to a few seconds. [IEEE 1250] Also known as voltage dip.	SEMI F47, F49, F50
volume color reproduction capability	the volume of the perceived color gamut obtained in three-dimensional color space which is composed of colorfulness, hue and brightness.	SEMI D75
volume efficiency	the normalized production efficiency times the balance efficiency (measures the total efficiency of the process with respect to factory dynamics).	SEMI E124
volume requirement	the number of units required to be processed by the equipment in a specific time period, normally units per week.	SEMI E35, E140
volumetric flow rate (Q)	Q = the volume of air exhausted per unit time. Associated equation: Q = VA, where V = air flow velocity, and A = the cross-sectional area of the duct or opening through which the air is flowing at standard conditions.	SEMI S2
v-pit	a small depression in a c-plane GaN wafer surface with a symmetrical inverted pyramidal shape featuring six or twelve facets and a width-to-height ratio near 1. This is also known as an inverted hexagonal pyramid (IHP). When a V-pit or an IHP is formed, a hexagonal region of the (0001) surface is replaced with semipolar sidewall facets.	SEMI M86
vulnerability	a weakness that could be used to endanger or cause harm to an information asset.	SEMI E169, E187
vulnerability	a weakness that could be used to endanger or cause harm to data on the manufacturing equipment.	SEMI E188
ω-2θ	scanning mode where the detector angle (2θ) is scanned at twice the rate of the sample angle (ω).	SEMI M63
W type	the type has an alphabetic ‘W’ shape, which mixes the convex shape and the concave shape, as shown in Figure 12. This substrate shape is named ‘W’ type. W type combines sag and lift. Also W type requires lift to exist at both edge regions of the substrate, even if the substrate has a continuous wave or corrugation in its shape.	SEMI D40
wafer	object made of semiconducting material to be processed, handled or stored in the minienvironment to be tested (i.e., prime or processed silicon wafer).	SEMI E108
wafer	a round substrate on which an array of devices are fabricated.	SEMI E142
wafer	a round substrate.	SEMI MS3
wafer bond	a process by which two or more wafers are physically attached to each other using chemical and/or thermal and/or mechanical means.	SEMI 3D2, 3D8, 3D9, 3D10
wafer bond, permanent	any wafer bond which is intended to remain through the lifetime of the bonded layers.	SEMI 3D2, 3D9, 3D10

Term	*Definition*	*Standard(s)*
wafer bond, temporary	any wafer bond which is intended to be debonded.	SEMI 3D2, 3D8, 3D9, 3D10
wafer bottom surface	the wafer surface opposite the wafer top surface.	SEMI 3D1
wafer box	a sealable container, consisting of a base and a cover, used for storing or transporting wafers. Compare with transport package in CEA-556-C.	SEMI T3
wafer box label	the label on the wafer box identifying the product and its manufacturer.	SEMI T3
wafer carrier	any cassette, box, pod, or boat that contains wafers.	SEMI E1, E1.9, E15, E47.1, E57, E62, E63, E92, E119, HB2, M31, M59
wafer carrier centroid	a datum representing the theoretical location of the center of a stack of wafers in the carrier.	SEMI E15
wafer carrier envelope	a rectangular volume with vertical sides which completely contains a carrier, even if the carrier is tilted.	SEMI E15
wafer center point	a point on a square or rectangular wafer surface defined by the intersection of the diagonals of the square or rectangle.	SEMI PV29
wafer deflection	change in wafer shape (TIR) due to gravity while the wafer is resting on the carrier wafer supports with the carrier door open.	SEMI E158, E159, M80
wafer end	the end of measuring process of a wafer.	SEMI E91
wafer extracting volume	the open space for extracting a wafer from the cassette.	SEMI E158, E159
wafer extraction volume	the open space for extracting a wafer from the cassette.	SEMI E1.9
wafer extraction volume	the open space for extracting a wafer from the carrier.	SEMI E119, M31
wafer extraction volume	the open space for extracting a wafer from the FOSB.	SEMI M80
wafer handling robot (WHR)	a robot that is designed for transfer of wafers, but not for moving wafers while they are being processed.	SEMI S28
wafer ID	an identifier for a wafer. A value that uniquely identifies a given wafer in a factory. The identifier may be represented physically with LASER technologies, etc.	SEMI E118
wafer ID	the unique identifier of a wafer.	SEMI HB13
wafer ID	a BSC containing brick ID and slice ID.	SEMI PV32
wafer ID mark	a physical structure for storing Wafer ID and other information.	SEMI E118
wafer ID reader	a unit (subsystem) that detects and decodes data from the Wafer ID mark, and that communicates with the upstream controller. Wafer ID Reader may be composed of Multiple Wafer ID Reader controller and reader heads.	SEMI E118
wafer information	information related to the target wafer for processing.	SEMI P42
Wafer Job (WJ)	a management capability which observes and/or controls a wafer in the equipment individually. One Wafer Job instance is created for one wafer.	SEMI E174
Wafer Job Flow (WJFlow)	a list of WJs which are in a same flow in wafer management.	SEMI E174
Wafer Job Management Job (WJMJ)	a management capability which observes and/or controls multiple WJs in the equipment. Normally, equipment has one WJMJ and the WJMJ communicates with the host representing all WJs in the equipment.	SEMI E174

Term	*Definition*	*Standard(s)*
Wafer Job Management Job Object (WJMJOBJ)	a software representation of a Wafer Job Management Job in the equipment.	SEMI E174
Wafer Job Object (WJOBJ)	a software representation of a Wafer Job in the equipment.	SEMI E174
wafer mapper	a subsystem that scans a carrier to determine which slots contain wafers and whether they are oriented correctly.	SEMI S28
wafer mapping exclusion volume	a space inside the carrier reserved for break-the-beam type wafer mapping.	SEMI E158, E159, M80
wafer mark	a mark formed on a wafer for the purpose of wafer alignment. It can be used to align the wafer, where reticle image will be projected.	SEMI P42
wafer mark position	the mark coordinate origin as defined by the equipment. It is expressed as coordinate relative to a reference position of the shot that exposes a wafer mark or a wafer reference position.	SEMI P42
wafer mark type	type of wafer alignment mark.	SEMI P42
wafer package	the combination of a wafer box and box wrap.	SEMI T3
wafer pick-up volume	the space that contains entire bottom of a wafer if the wafer has been pushed to the rear of the cassette.	SEMI E1.9, E158, E159
wafer pick-up volume	the space that contains entire bottom of a wafer if the wafer has been pushed to the rear of the carrier.	SEMI E119, M31
wafer pick-up volume	the space that contains entire bottom of a wafer once the door is removed from the FOSB for wafer transfer.	SEMI M80
wafer retaining wall	a circular wall located on main body in order to retain the wafers placed on main body.	SEMI G90, G94
wafer rotation	the direction of wafer rotation. It is defined by exposure tool.	SEMI P42
wafer seating plane	the bottom surface of an ideally rigid flat disk that meets the diameter specification for 450 mm wafers, with negligible droop due to gravity, as it rests on the wafer supports.	SEMI E158, E159, M80
wafer set-down volume	the open space for inserting and setting down a wafer in the cassette.	SEMI E1.9, E158, E159
wafer set-down volume	the open space for inserting and setting down a wafer in the carrier.	SEMI E119, M31
wafer set-down volume	the open space for inserting and setting down a wafer in the shipping box.	SEMI M80
wafer shipping box	a box that directly holds the wafers.	SEMI 3D3, M45
wafer shipping tray	an open-top stackable wafer shipping container where the base of one tray holding a wafer serves as the cover for the next wafer. The cover to the top tray occupied by a wafer is an additional tray which is not holding a wafer.	SEMI 3D3
wafer size	the diameter of a wafer.	SEMI P30, P42
wafer size	typically a measurement of the diameter of the wafer from one edge to the other through the center of the wafer.	SEMI MS13
wafer spacer	a material inserted between the adjacent wafers to prevent damage caused by friction.	SEMI G90, G94
wafer stack	two or more wafers bonded to one another.	SEMI 3D8, 3D9, 3D10
wafer support platform	a slot, pedestal, or set of pins used to hold a wafer in a horizontal attitude.	SEMI E22
wafer tape	an adhesive plastic tape which retains the wafer or diced chip.	SEMI E185, G74, G77. G88
wafer tape	adhesive plastic tape to hold the wafer or cut die.	SEMI 3D3, G87

Term	*Definition*	*Standard(s)*
wafer tape	an adhesive plastic tape which retains the wafer or separated die.	SEMI G92, G95
wafer thickness	thickness of the target wafer for processing.	SEMI P42
wafer tilt	the possible unparallel position of the wafer in relation to the bar end of the carrier when the carrier is resting on the bar end.	SEMI E1
wafer tilt	the possible unparallel position of the wafer, when the cassette is resting on the bar end, in relation to a nominal horizontal wafer plane that is parallel to the plane at the bar end of the cassette.	SEMI HB2
wafer top surface	the wafer surface where the TSV opening is initially created and where the excavation of the TSV begins. This surface is defined to be horizontal; its perpendicular is defined to be vertical.	SEMI 3D1
wafer-to-wafer (W2W) control	a form of R2R control in which a 'run' is the processing of a single wafer. This is differentiated from 'wafer level control' in which the recipe may be determined for multiple individual wafers before processing begins, but not necessarily modified from wafer to wafer; for example, between wafers.	SEMI E133, E174
wafer transfer	the act of relocating wafers from one carrier into another. This can be accomplished by several methods.	SEMI E1
wafer transfer	the act of relocating wafers from one cassette into another. This can be accomplished by several methods.	SEMI HB2
wafer transfer plane	a plane with a maximum distance from the interface plane to the level where a wafer can be transferred.	SEMI E48
wafer transport axis	the centerline of transport module end effector motion. This centerline is symmetric with the wafer transport zone as described in SEMI E21.	SEMI E22
wafer transport plane	the horizontal surface a wafer traverses between modules.	SEMI E21, E166
wafer transport position	a location within a process or cassette module where the wafer is accepted or presented by the transport module end effector. This is also the location of the wafer centroid.	SEMI E22
wafer transport zone	the area of the interface plane free of physical obstructions, reserved for wafer movement between modules.	SEMI E21, E166
wafer type	the identification to use notch or OF (orientation flat) as a base for the direction of wafer rotation.	SEMI P42
waist	minimum diameter of the middle section or part of an object, especially when narrower than the rest.	SEMI 3D16
waist	the smallest circumference of an hour-glass or irregular shaped object that is neither the bottom nor the top opening.	SEMI 3D22
wait time	the time segments when no physical service or action is being performed on the product unit. The product unit is waiting for some external activity to complete (e.g., previous lot to complete processing) and/or for a factory resource to initiate activity (e.g., start a ProcessJob).	SEMI E168
waiting time t_w (sometimes also called decay time)	time after end of irradiation until start of measurement. An additional index i is used, such as t_{wi} with $i = 1, 2,\ldots$ for several measurements.	SEMI PV10
wakame	waviness along the edge of the tape.	SEMI G76
walking or working surface	a surface on which the supplier intends personnel to walk, stand, squat, kneel, sit, or lie for work.	SEMI S2
wall	physical barrier between two adjacent ports.	SEMI MS11
wall end, of a wafer shipping box	the end of the shipping box that is opposite the bar end.	SEMI T3
wall thickness	thickness of the wall of the PFA tube.	SEMI F52
wall thickness deviation	deviation of wall thickness.	SEMI F52

Term	*Definition*	*Standard(s)*
wall thickness tolerance	allowable deviation of actual measurement of wall thickness from its specification.	SEMI F52
warm-up	a process where the MFC goes from an unpowered condition to a condition where the output is within ±1% full scale, of the final steady state output.	SEMI E68
warm-up time	the period from power-on to stable state of the light intensity.	SEMI D64
warm-up time	for mass flow controllers and mass flow meters, the time required, after going from an unpowered to a powered state, for the device to achieve sufficient electrical and thermal stability such that rated performance specifications can be met.	SEMI E29
warm-up time	a period of time that it takes for the device to produce stable output from the time the input power is first applied after the device has been un-powered for a minimum time period of 24 hours.	SEMI F113
warm-up time	the time between power on in a specified environment and the time when the performance tolerances are reached.	SEMI MS14
warp	the difference between the most positive and most negative distances of the median surface of a free, unclamped wafer from a reference plane.	SEMI 3D4
warp	the difference between the most positive and most negative distances of the median surface of a free, unconstrained panel from a reference plane.	SEMI 3D20
warp	the gap between (a) the bottom surface of glass carrier and (b) the reference plate on which the glass carrier rests.	SEMI 3D23
warp	the gap between (a) the bottom surface of an FPD substrate and (b) the reference plate on which the substrate rests.	SEMI D24
warp	defined as the maximum distance from a reference plane to the guaranteed surface, this includes twists, partial rises or declines in the glass compared with the reference plane. Warp expression a condition of the whole glass (substrate).	SEMI D9
warp	of a semiconductor slice or wafer, the difference between the maximum and minimum distances of the median surface of a free, unclamped wafer from a reference plane, encountered during a scan pattern.	SEMI M23
warp	of a semiconductor slice or wafer, the difference between the maximum and minimum distance of the median surface of the wafer from a reference plane, encountered during a scan pattern. Warp is a bulk property of the test specimen, not a property of an exposed surface. Warp is generally expressed in micrometers.	SEMI M79
warp	of a semiconductor slice or wafer, the difference between the most positive and most negative distances of the median surface of a free, unclamped wafer from a reference plane, encountered during a scan pattern. Warp is a bulk property of the test specimen, not a property of an exposed surface. Warp is generally expressed in micrometers.	SEMI M86
warp, back-surface, of a wafer	the algebraic difference between the maximum most positive and minimum most negative deviations of all points of the back surface of an unconstrained, horizontally positioned wafer from a back-surface reference plane that is established by three points within the boundary of the fixed quality area.	SEMI HB1
warp, front-surface, of a wafer	the algebraic difference between the maximum most positive and minimum most negative deviations of all points of the front surface of an unconstrained, horizontally positioned wafer from a front-surface reference plane that is established by three points within the boundary of the fixed quality area.	SEMI HB1
warp, of a wafer	the difference between the maximum most positive and minimum most negative distances of the median surface of a free, unclamped wafer from a reference plane within the fixed quality area.	SEMI HB1
warp, of a semiconductor slice or wafer	of a semiconductor slice or wafer, the difference between the maximum and minimum distances of the median surface of the slice or wafer from a reference plane, encountered during a scan pattern. Warp is a bulk property of the test specimen, not a property of an exposed surface. Warp is generally expressed in micrometers or mils (thousandths of an inch).	SEMI M9

Term	*Definition*	*Standard(s)*
warp, of a semiconductor wafer	the difference between the most positive and most negative distances of the median surface of a free, unclamped wafer from a reference plane within the fixed quality area.	SEMI M59
warp, of grid LC	the maximum height deviation of the LC front face across the LC lying on a flat surface	SEMI E177
water reactive	a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.	SEMI S4
water reclamation	a process of extracting/purifying water from waste water for subsequent secondary use.	SEMI F98
water reuse	the secondary use of water with or without reclamation for any purpose.	SEMI F98
water recycling	the process that leads to water reuse at the system where it was originally used or produced from.	SEMI F98
wavelength dependence	differences in optical properties caused by differences in the wavelength of transmitted light through a phase shifter film, in the case of exposure process using broadband light source with several peak wavelength. It is shown as the difference between the characteristic values of one peak wavelength and other peak wavelength.	SEMI D84
wavenumber	reciprocal wavelength of IR radiation, measured in units of cm^{-1}.	SEMI M82
waviness	the residual unevenness after the long wavelength component (warp) and the short wavelength component (surface roughness) have been eliminated. This is also called 'FPD Waviness' when referring specifically to FPD substrates, as in SEMI D15.	SEMI D9
waviness	components of surface irregularities with spatial wavelength intermediate between long wavelength {flatness} and short wavelength {roughness}.	SEMI D15
waviness	the more widely spaced component of surface texture. Unless otherwise noted, waviness is to include all irregularities whose spacing is greater than the roughness sampling length. Waviness may result from such factors as machine or work deflections, vibrations, chatter, heat treatment, or warping strains. Roughness may be considered as superimposed on a 'wavy' surface.	SEMI F19
waviness	the more widely spaced component of surface texture. Waviness may result from such factors as machine or workpiece deflections, vibrations, chatter, heat treatment, or warping strains. Roughness may be considered as superimposed on a 'wavy' surface.	SEMI F37
waviness	the more widely spaced components of silicon wafer surface texture caused by such factors as machine or work piece deflections, vibration, and chatter. Roughness may be considered as superimposed on a wavy surface.	SEMI M59, PV42
waviness	a surface height variation with spatial wavelengths of typically a few millimeters.	SEMI PV40
w-bit	a bit in the header signifying that a reply is expected.	SEMI E4
web service	a Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP-messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.	SEMI E142.3
weight loss method	a method to calculate depths of etching by comparing differences in specimen weights before and after the etch sequence.	SEMI D10
weld bead	a weld resulting from a weld pass.	SEMI F78, F81
weld fittings	machined fittings to be welded or welded fittings.	SEMI F44
weld level	a segment or portion of a weld schedule in which one or more weld parameters can be changed independently; part of a weld sequence.	SEMI F78
weld sequence	a series of steps executed by the welding power supply to make a particular orbital weld.	SEMI F78
weld splatter	melted preform material which extends from the weld.	SEMI G53
welder	a person who does welding (sometimes used to refer to a welding machine or power supply).	SEMI F78

Term	*Definition*	*Standard(s)*
welding equipment	power supply, weld heads, torches, and associated cables and accessories used for welding.	SEMI F78
welding operator	a person who welds with an orbital or machine welding system.	SEMI F78
wet station	open surface tanks, enclosed in a housing, containing chemical materials used in the manufacturing of semiconductor materials. Synonyms: wet sink, wet bench, wet deck.	SEMI S2
wettability	the tendency of a fluid to make contact with a surface.	SEMI MS6
wetted area	the area of contact between the electrolyte and the sample.	SEMI M46
wetted surface	surface within the interior of the cylinder valve which is in contact with the controlled gas.	SEMI F4
wetted surface	any surface which comes into contact with the process or waste media.	SEMI F31
wetted surface	surfaces of a component in contact with contained fluids.	SEMI C92, F73, F77, F119
wetted surface	a surface of a component in contact with the contained fluids.	SEMI F120
wetted surface	surfaces of the components that are in contact with the contained gases and/or liquids used in semiconductor manufacturing processes.	SEMI F19, F60
width (W)	base line for short edge of a substrate.	SEMI D44, D48, D49, D52
whisker	a plating metal burr-like filament attached to the surface of the plating.	SEMI G62
white balance	adjustment or accuracy of color coordinates at a white input level, usually equal to or greater than 70% APL of full screen.	SEMI D71
white defect	white dot-shaped defect existing in the quality area that can be detected using transmitted light.	SEMI D13
wide viewing angle	the viewing angle specification which is greater than the maximum angle of vantage point viewing direction in all viewing angles for contrast, gray scale, and chromaticity in horizontal or vertical viewing direction.	SEMI D82
wind uplift resistance	the performance of the system assemblies to resist wind uplift forces on photovoltaic module roof.	SEMI PV100
window compare	monitor DUT continuously during a time interval.	SEMI G79, G80
window cut rate (WCR)	the rate with which window top layer of the window polymer is being removed during conditioning.	SEMI C104
window frame	a separate member of ceramic which is joined to the surface of the package on which a flat lid is attached for sealing.	SEMI G33
window function, $W(x_n)$	bell-shaped or smooth-edged function that multiplies the detrended profile data set before it is inserted into the periodogram estimation routine. Also known as *data window.*	SEMI MF1811
WIP capacity	the maximum number of units of production the factory can contain (including on shelves, in stockers, on material handling transport vehicles, on equipment load ports, in internal carrier buffers, and in process chambers, but not including space required for nonproduct units such as test wafers, dummy wafers, and monitor wafers).	SEMI E124
WIP efficiency	the quotient of the smaller of the critical WIP and the average WIP divided by the larger of the two (measures the efficiency of WIP levels with respect to factory dynamics).	SEMI E124
WIP nest	a storage structure for Work in Process (WIP).	SEMI S8
WIP turnover	the finished units out divided by the average WIP (shows how often the inventory was replaced during the period being measured).	SEMI E124
wire bond ring	metalized area in the shape of a complete or partial ring surrounding the die mounting area intended for group electrical interconnections.	SEMI G72
wire-connected interface	a parallel I/O interface connected by means of wire and a connector.	SEMI E23

Term	*Definition*	*Standard(s)*
wire grid	a mounting surface created by a precise monofilament strung across the surface of an optical flat to create a semicontinuous flat mounting surface for support.	SEMI 3D12
wire guide	any method of mechanically securing wire or cable into a restrictive routing.	SEMI S22
withstand voltage	the highest voltage stress at which no device failures occur during discharge testing of integrated circuit (IC) devices.	SEMI E78, E129
WL%	the sample weight loss percentage in the frst stage.	SEMI PV45
work (W)	any measurable value; other than units, cycles, or time; that can be used to measure equipment reliability or to schedule maintenance activities (e.g., laser pulses, kilowatt-hours, liters filtered).	SEMI E10
work	a group of one or more substrates that undergo processing in a factory. Something that may be work in one kind of factory, such as reticles and leadframes, may have a different role in other types of factories. Work includes, but is not limited to, material intended as product. For example, it may include product substrates, test substrates, and filler substrates. From the point of view of the equipment, work is either new (processing has not started), completed (all intended processing has been performed, terminated, or aborted, including rejected and resorted work, and no further processing is to be done) or incomplete (work in progress, on hold).	SEMI E98
work	any activity performed on semiconductor or FPD manufacturing equipment, utilities connected to the equipment, or facilities associated with the equipment within the work area.	SEMI S21
work area	room or defined space where semiconductor or FPD manufacturing equipment is located and where workers are present. This can include service chases and sub-fab areas.	SEMI S21, S24
work environment	the location where semiconductor devices and associated support processes are designed, developed, manufactured, assembled, measured, and tested.	SEMI S8
work surface	a (typically horizontal) surface provided for the location of input devices, handwriting, assembly work, etc. that is part of a seated or standing workstation.	SEMI S8
work in process (WIP)	the number of units of production that have been released into the factory but have not yet been scrapped, have not been sent out for external rework, and have not finished processing through all of the production steps.	SEMI E124
work supervisor	person who manages workers directly as a team leader to conduct a unit of work.	SEMI S24
workers	personnel who install, operate, maintain, service, decontaminate, or disassemble equipment.	SEMI S21
working curve	the relationship between known metal concentrations prepared by standard solutions and the observed values of instrumental analysis.	SEMI P32
working distance	the distance between the surface of the specimen being examined and the front surface of the objective lens.	SEMI F73
working reference material	reference material made by a laboratory for its own use. This term is gradually replacing the term, secondary reference material, which has been used widely in the past.	SEMI M59
working sensor	an RF power sensor used for testing RF generators or other RF power equipment.	SEMI E136
workplace layout	the physical arrangement of equipment in the facility.	SEMI S8
workspace	the available area where the user is expected to operate, maintain, and service the equipment.	SEMI S8
workstation	the location where equipment controls and displays are found or the location of loading/unloading of material.	SEMI S8
write position	any position on a load port or in an internal buffer from which the tag on a carrier can be written to. This position may vary on any particular equipment depending on the write technology selected by the end user. Some technology/load ports may allow the carrier to be moved during writing. The read position and the write position may or may not be the same position.	SEMI E87

Term	*Definition*	*Standard(s)*
write position	any position on a load port or in an internal buffer from which the tag on a pod can be written to. This position may vary on any particular equipment depending on the write technology selected by the end user. The read position and the write position may or may not be the same position.	SEMI E109
WSDL binding	a definition of how a port type definition is bound to a concrete network protocol and message format (e.g., SOAP).	SEMI E139.3
X1	an extended line tangent to either side of the bottom of the equipment opening plane and orthogonal to the Y-axis.	SEMI D44, D48
X2	an extension of a line tangent to other side of the bottom of the equipment (on the opposite side and parallel to X1), and orthogonal to Y-axis.	SEMI D44, D48
X-axis	the *X* axis is the horizontal axis from left to right when the substrate is rotated according to Orientation.	SEMI E130
X-axis	the direction in which the cassette is transported.	SEMI D43
XML schema	defines the rules (grammar) how the XML file has to be structured to fulfill the given purpose. It can be used to check the validity of an XML file. There are different formats for the schema file available.	SEMI PV55
XML Schema Definition (XSD)	a schema that describes the structure of an XML document. A schema file has an XSD file extension.	SEMI E173
x-ray topography (XRT)	imaging of the intensity of a diffracted x-ray beam.	SEMI M91
X-*Y* deviation uniformity	the spread of the distribution of the difference between the width of all considered feature widths in *X* and *Y* directions (horizontal and vertical direction), stating the same information as *feature width uniformity*. (DEFAULT: selecting the same values as used for *feature width uniformity*.)	SEMI P43
Y-axis	the *Y* axis is the vertical axis from bottom to top when the substrate is rotated according to Orientation.	SEMI E130
Y-axis	the direction horizontal and perpendicular to the *X*-Axis.	SEMI D43
yield efficiency	the line yield times the test yield (shows overall material efficiency).	SEMI E124
yield management system (YMS)	a system that stores visual inspection data of geometrical defects on wafer and electrical test data of each die. The system processes those data statistically to discover correlation between them.	SEMI E107
yield strength	the stress at which a material exhibits a specified permanent deformation or set. This is the stress at which, the strain departs from the linear portion of the stress-strain curve by an offset unit strain of 0.002.	SEMI S2
Young's modulus	a type of elasticity ratio, which shows the stretch (or compression) elasticity. When stretch (or compression) deformation stress σ and the strain ε resulting from the stress are proportionate, the proportionate constant $E = \sigma / \varepsilon$ is called Young's Modulus, a material characteristic.	SEMI D9
Young's modulus	a parameter indicative of material stiffness that is equal to the stress divided by the strain when the material is loaded in uniaxial tension, assuming the strain is small enough such that it does not irreversibly deform the material.	SEMI MS2, MS4
Z1	height of datum point 1 from the floor.	SEMI D44, D48
Z2	height of datum point 2 from the floor.	SEMI D44, D48
Z-axis	the direction perpendicular to the *X*- and *Y*-Axes.	SEMI D43
z-axis, of a cross-sectional view of the edge of a wafer	the line perpendicular to the reference line passing through the periphery of the wafer with origin at the intersection of the periphery and the reference line and the positive direction toward the front surface of the wafer.	SEMI M59

Term	*Definition*	*Standard(s)*
Z plane	lead and pad planarity require a reference in the Z dimensions. The recommendation for the reference plane, hereafter called the 'Z' plane, is the average of the two dambars when measured at their geometric center. This reference method is incorporated into SEMI G10 (Specification for Mechanical Measurements).	SEMI G9, G41
zero adjustment	a process of adjusting the output of the device under test (DUT) to zero per the manufacturer's instructions.	SEMI F113
zero count	the maximum particle count indicated by a particle counter, in a specified period of time, that is sampling particle-free air. This value is specified by the manufacturer, and is commonly also referred to as false call rate, false count, noise, or noise level.	SEMI E104
zero-day attack	an attack taking advantage of a vulnerability (security hall) before the existence of the vulnerability is widely publicized.	SEMI E169
zero drift	the undesired change in electrical output, at a no-flow condition, over a specified time period, reported in sccm or slm.	SEMI E56, E69, E77
zero drift	the undesired change in electrical output (i.e., indicated flow), at a no-flow condition, over a specified time period, reported in sccm or slm.	SEMI E80
zero gas	in determining contaminant contribution by gas distribution system components, a purified gas that has an insignificant particle concentration above the lower detectable limit (LDL) of the analytical instrument. This gas is used for both instrument calibration and component testing.	SEMI E104
zero gas	nitrogen, argon, helium or hydrogen with an estimated level an order of magnitude, or more, lower than the lowest calibration point for each impurity of interest.	SEMI F33, F67, F68
zero offset	the deviation from zero, at a no-flow condition, reported in sccm or slm.	SEMI E56, E69
zero offset	the deviation from zero at a 'no-flow' condition reported in sccm, slm, or mV.	SEMI E77
zero offset	the deviation from zero at a 'no-flow' condition reported in sccm, slm, % F.S. or mV.	SEMI E80
zero padding	procedure of adding zero values to a data set to bring the total number of data points, *N*, to a power of two to facilitate the evaluation of the FFT appearing in the periodogram spectral estimate.	SEMI MF1811
zero setpoint	manufacturer's setpoint for no flow from the MFC.	SEMI F62
zero shift	the change in zero due to a change in ambient temperature from one normal operating temperature to a second normal operating temperature. All other conditions must be held within the limits of reference operating conditions.	SEMI E18
zero_reference_measurement	oscilloscope measurement of the midpoint of a 0–3v NR signal rising edge with delay = 0s. This is an arbitrary reference signal selected by the user of this method. The method user is free to choose a convenient reference signal that will allow consistent use of that signal for making edge placement timing measurements during tests described in level 2 of this procedure.	SEMI G80
zone	a logical assignment referencing a set of one or more locations. A stocker can have several logical zone assignments.	SEMI E88
zone	term used for describing the intervals during PIO communication.	SEMI E84
zone	a logical assignment referencing a set of one or more *storage locations*. Each storage location does not need to belong to a zone. A storage location can belong to at most one zone.	SEMI E153

Table 3 Symbols

Symbol	*Definition*	*Standard(s)*
°C	degrees Celsius	SEMI C3, F59, F67, F68, PV45, PV65, PV66
°F	temperature, degrees Fahrenheit	SEMI C3, F67, F68

Symbol	*Definition*	*Standard(s)*
Δ	delta, difference.	SEMI M59
Δ_c	relative phase retardation angle	SEMI MF576
Δσ	excess conductivity due to photo-excitation.	SEMI PV13
Δn(t)	(time-dependent) average excess carrier density.	SEMI PV13
ΔP	pressure drop across valve, kPa (psi)	SEMI F32
ΔPF	change in pressure with respect to time	SEMI F64
ΔQ	steady state deviation of actual flow during inlet pressure ramp from that while inlet pressure is constant.	SEMI F64
ΔT	the allowable deviation of the practical value.	SEMI PV68
δ	bias	SEMI E35
δM	deviation of mass of material relative to steady-state mass delivery.	SEMI F64
δQ-	maximum negative deviation of actual flow from nominal.	SEMI F64
δQ+	maximum positive deviation of actual flow from nominal.	SEMI F64
τ	pneumatic time constant	SEMI F64
θ	angular direction in a counter clockwise direction from the diameter perpendicular to the bisector of the primary fiducial in the wafer coordinate system defined in SEMI M20.	SEMI M59
Φ'_{ms}	potential barrier difference between the Fermi level in the gate electrode material and the Fermi level in the silicon substrate in an MIS capacitor structure.	SEMI M66
Φ_i	ordinate intercept of a V_{fb}–W_{ox} plot for a test specimen incorporating a high-κ gate stack dielectric.	SEMI M66
Ω	ohm	SEMI E78, E113, E129, E135, E143, E176
Ω	ohm, the unit of resistance, combined with a linear dimension, usually centimeter, to be the unit of resistivity.	SEMI M59
ω-2θ	a scanning axis where the detector angle (2θ) is scanned at twice the rate of the sample axis (ω)	SEMI M63
×	multiplication sign, also sometimes indicated by a center dot (·) especially when separating various units in a group of units such as Ω·cm.	SEMI M59
σ	standard deviation	SEMI E35
σ	conductivity.	SEMI M59
σ6ave	the maximum of two uncalibrated values (σ_{before} and σ_{after}) where σ_{before} is the standard deviation of the six step height measurements taken along the physical step height standard before the data session and σ_{after} is the standard deviation of the six measurements taken along the physical step height standard after the data session.	SEMI MS2
σ_{6same}	the maximum of two uncalibrated values (σ_{same1} and σ_{same2}) where σ_{same1} is the standard deviation of the six step height measurements taken at the same location on the physical step height standard before the data session and σ_{same2} is the standard deviation of the six measurements taken at this same location after the data session.	SEMI MS2
σ_μ	one sigma uncertainty of the value of μ.	SEMI MS4
σ_B	the one sigma uncertainty of the value of *B*.	SEMI MS5
$\sigma_{cantilever}$	uncertainty in the cantilever's resonance frequency due to geometry and/or composition deviations from the ideal.	SEMI MS4
σ_{cert}	the one sigma uncertainty of the physical step height standard used for calibration.	SEMI MS2
σ_{cert}	the certified one sigma uncertainty of the load cell.	SEMI MS5
$\sigma_{d,p}$	the standard deviation of the particles given by the particle supplier.	SEMI E104

Symbol	*Definition*	*Standard(s)*
σ_E	the one sigma uncertainty of the value of $\overline{E}$.	SEMI MS5
σEinit	estimated standard deviation of E_{init}.	SEMI MS4
σ_{Fmax}	the one sigma uncertainty of the value of $F_{max.}$	SEMI MS5
σfreqcal	the calibrated standard deviation of the frequency measurements (used to obtain f_{can}) that is due to the calibration of the time base for which the uncertainty is assumed to scale linearly.	SEMI MS4
σfresol	the calibrated standard deviation of the frequency measurements (used to obtain f_{can}) that is due to the frequency resolution.	SEMI MS4
σfundamped	one sigma uncertainty of the calibrated undamped resonance frequency measurements.	SEMI MS4
σ_g	stress gradient of the thin film layer.	SEMI MS4
σ_L	one sigma uncertainty of the value of $L_{can.}$	SEMI MS4
σmeter	for calibrating the time base of the instrument: the standard deviation of the measurements used to obtain f_{meter}.	SEMI MS4
σ_ρ	one sigma uncertainty of the value of ρ.	SEMI MS4
$\sigma_{p,LPPD}$	the standard deviation of the observed particle distribution.	SEMI E104
σ_r	residual stress of the thin film layer.	SEMI MS4
σsupport	the estimated uncertainty in the cantilever's resonance frequency due to a non-ideal support (or attachment conditions).	SEMI MS4
σthick	one sigma uncertainty of the value of *t*.	SEMI MS4
$\sigma_{V,LPPD}$	the standard deviation of the voltage sensor signal.	SEMI E104
σ_W	the one sigma uncertainty of the value of *W*.	SEMI MS5
σ_w	the one sigma uncertainty of the value of *w*.	SEMI MS5
σ_W	one sigma uncertainty of the value of $W_{can.}$	SEMI MS4
σ_{wLL}	the one sigma uncertainty of the value of $w_{LL.}$	SEMI MS5
σ_{Ymin}	the one sigma uncertainty of the value of $Y_{min.}$	SEMI MS5
ρ	resistivity.	SEMI M59
α	alpha probability	SEMI E35
α	temperature coefficient ($°C^{-1}$).	SEMI PV57
α_0	the initial crack length ratio.	SEMI MS5
A_0	the minimum mouth length in the *x*-direction, that is, the positive distance from the physical opening of the mouth to the tip of the micro-chevron tongue.	SEMI MS5
a_0	the minimum mouth length in the *x*-direction from the load line, that is, the positive distance from the opening of the mouth at the load line to the tip of the micro-chevron tongue.	SEMI MS5
A_1	measured value, down cycle (units of flow)	SEMI E56
A_1	the maximum mouth length in the *x*-direction, that is, the positive distance from the physical opening of the mouth to where the micro-chevron tongue meets the edge of the test structure.	SEMI MS5
a_1	the maximum mouth length in the *x*-direction from the load line, that is, the positive distance from the opening of the mouth at the load line to where the micro-chevron tongue meets the edge of the test structure.	SEMI MS5
Å	angstrom (s)	SEMI C1, F19
A	ampere	SEMI E129

Symbol	*Definition*	*Standard(s)*
A	acceptable record	SEMI P44
A	cell area (m^2)	SEMI PV57, PV69, PV76, PV89
Acf	cost footprint rectangle area	SEMI E35, E140
Ai	alternative equipment module.	SEMI E10
A_L	the detection area (mm2), defined through detector optics and light beam of the LPPD.	SEMI E104
A_{RC}	the opening area (mm2) of the probe inlet of the reference particle counter.	SEMI E104
β	beta probability	SEMI E35
β	the angle at the tip of the micro-chevron test structure.	SEMI MS5
B	boron	SEMI F79
B	the test structure width.	SEMI MS5
Br	bromine	SEMI F79
C_{16}	n-hexadecane (n-$C_{16}H_{34}$)	SEMI MF1982
C_{20}	n-eicosane	SEMI MF1982
C	coulomb	SEMI E129
C	capacitance	SEMI E129, E163
C	carbon	SEMI F79
c	speed of light (299,792,458 m/s)	SEMI PV69
c_h	the distance from the center of the hole in the stud to the gluing surface of the stud.	SEMI MS5
cal_f	the calibration factor for a frequency measurement.	SEMI MS4
cal_z	the *z*-calibration factor of the interferometric microscope or comparable instrument.	SEMI MS2
cc	cubic centimeter(s) (mL)	SEMI C1, C3, F74
cert	the certified value of the physical step height standard used for calibration.	SEMI MS2
cert	the certified value of the load cell.	SEMI MS5
CH_4	methane	SEMI F30
Cl	chlorine	SEMI F79
C_L	the number concentration (cm-3) of particles in the line at the LPPD.	SEMI E104
C_G	the number concentration (cm-3) of particles generated from aerosol generator at given V'_G.	SEMI E104
cm	centimeter	SEMI E113, E129, E176
cm	centimeter(s)	SEMI C1, C3, E96
cm^2	square centimeter(s)	SEMI C1
CO	carbon monoxide	SEMI F30
CO_2	carbon dioxide	SEMI F30
D_l	lower dead band value (units of flow)	SEMI E56
D	diffusion coefficient	SEMI PV13
D	initial light-induced degradation	SEMI PV74
db	decibel	SEMI E113, E135, E136, E143

Symbol	*Definition*	*Standard(s)*
dbc	decibels relative to carrier power	SEMI E136, E143
dbm	decibels relative to 1 milliwatt	SEMI E143
dBμV	decibel-microvolt	SEMI E176
d_h	the diameter of the hole in the stud.	SEMI MS5
D_L	the diameter of the pump line (mm) at the LPPD.	SEMI E104
d_p	the diameter of the spherical particle (μm).	SEMI E104
D_{RC}	the diameter of the sample drawing line (mm) for the reference particle counter.	SEMI E104
D_{VM}	the diameter of the pump line (mm) at the velocity meter.	SEMI E104
ε_r	residual strain of the thin film layer.	SEMI MS4
e	charge of an electron (1.6021×10^{-19} C)	SEMI PV69
E	set of equipment types	SEMI E124
E	calculated Young's modulus value of the thin film layer.	SEMI MS4
E	irradiance ($W \cdot m^{-2}$)	SEMI PV57, PV69, PV72, PV76, PV89
e*	bottleneck equipment type	SEMI E124
$\overline{E}$	the plane strain elastic modulus.	SEMI MS5
EB_{UPPER}	equipment boundary above z100	SEMI E154
$E_{clamped}$	calculated Young's modulus value obtained from the average resonance frequency of a fixed-fixed beam assuming clamped-clamped boundary conditions.	SEMI MS4
E_{init}	initial estimate for the Young's modulus value of the thin film layer.	SEMI MS4
E_{simple}	calculated Young's modulus value obtained from the average resonant frequency of a fixed-fixed beam assuming simply-supported boundary conditions at both supports.	SEMI MS4
f	element of an equipment set	SEMI E124
F	fluorine	SEMI F79
f_c	carrier frequency of the operating field	SEMI E144
f_{can}	average calibrated undamped resonance frequency of the cantilever, which includes the frequency correction term.	SEMI MS4
F_e	set of equipment of type e.	SEMI E124
F_{e^*}	set of bottleneck equipment.	SEMI E124
FF	fill factor (%).	SEMI PV57
f_{ffb}	average uncalibrated resonance frequency of the fixed-fixed beam.	SEMI MS4
$f_{instrument}$	for calibrating the time base of the instrument: the frequency setting for the calibration measurements (or the manufacturer's specification for the clock frequency).	SEMI MS4
F_K	ratio of specific heats factor.	SEMI F32
F_L	liquid pressure recovery factor.	SEMI F32
F_{max}	the maximum fracture load.	SEMI MS5
f_{meter}	for calibrating the time base of the instrument: the calibrated average frequency of the calibration measurements (or the calibrated average clock frequency) taken with a frequency meter.	SEMI MS2
f_{resol}	uncalibrated frequency resolution for the given set of measurement conditions.	SEMI MS4
ft.	foot	SEMI C3, E143, E176

Symbol	*Definition*	*Standard(s)*
g	gram(s)	SEMI C1, C3, PV45, PV66
g	a unit of force equal to that exerted by gravity upon a mass in equilibrium on the earth's surface. Expressed in Newtons (kg-m/sec.^{2}).	SEMI F69
G_{cwb}	the critical wafer bond toughness.	SEMI MS5
G_{cwbmax}	the maximum critical wafer bond toughness as determined in an uncertainty calculation.	SEMI MS5
G_{cwbmin}	the minimum critical wafer bond toughness as determined in an uncertainty calculation.	SEMI MS5
GHz	gigahertz	SEMI E176
gpm	gallons per minute.	SEMI F32
G_{rms}	root-mean-square acceleration	SEMI PV56
GS	gigasamples	SEMI E176
G(t)	(time-dependent) photogeneration rate for electron-hole pairs.	SEMI PV13
h	Plank's constant (6.626068×10^{-34} m^2 kg/s)	SEMI PV69
H	the test structure height, namely, the thickness of the test structure after the two wafers are bonded.	SEMI MS5
h_1	the thickness of the top wafer.	SEMI MS5
h_2	the thickness of the bottom wafer.	SEMI MS5
H	hydrogen	SEMI F79
H_2	hydrogen	SEMI F30
H_2O	moisture	SEMI F30
H_K	the etch depth of the bottom wafer, or the opening of the mouth in the *z*-direction.	SEMI MS5
HNO_3	nitric acid	SEMI C90
Hz	hertz	SEMI E176
I	iodine	SEMI F79
I	ignore record	SEMI P44
I	current (A)	SEMI PV57, PV69, PV72, PV76
in.	inch	SEMI E143
I_{sc}	short-circuit current	SEMI PV56
I_{sc}	short-circuit current (A)	SEMI PV57, PV69
I_{sc}	short circuit current	SEMI PV60, PV79
l_S	the length of the studs in the *y*-direction at the gluing surface.	SEMI MS5
I-V	current-voltage	SEMI PV76, PV89
j	imaginary unit	SEMI E113
J_{0e}	emitter saturation current density of a dopant diffused layer.	SEMI PV13
kHz	kilohertz	SEMI E176
kW	kilowatt	SEMI E113, E143
L	liter(s)	SEMI C1, C3
lb.	pound(s)	SEMI C3
L_{can}	suspended cantilever length.	SEMI MS4

Symbol	*Definition*	*Standard(s)*
L_{ffb}	suspended fixed-fixed beam length.	SEMI MS4
Li	load lock i.	SEMI E10
LN_2	liquid nitrogen	SEMI E10, PV10
m	meter	SEMI E129, E143, E176
m	value of the slope of the segment.	SEMI E136
M	molar concentration	SEMI F120
M	mandatory record	SEMI P44
MFC_1	inlet mass flow controller.	SEMI F62
Mi	equipment module i.	SEMI E10
MHz	megahertz	SEMI E113, E136, E143
mL	milliliter	SEMI C1, C3
mm	millimeter	SEMI C1, C3, E129
MMF	spectral mismatch parameter (or factor)	SEMI PV57, PV69, PV76
MS	megasamples	SEMI E176
η	the ratio of thicknesses of the bottom (patterned) and top (unpatterned) wafers used in the calculation of Y_{min}. η is calculated by dividing the smaller of the these values by the larger.	SEMI MS5
η	efficiency (%).	SEMI PV57
η_e	effective efficiency	SEMI E136
N	nitrogen	SEMI F79
N_2	nitrogen	SEMI F30
N/A	particle burden added to a wafer (number of particles per unit area)	SEMI E78, E129
$N_{A/D}$	concentration of dopant acceptors or donors.	SEMI PV13
nC	nanocoulomb	SEMI E78, E129
nm	nanometer	SEMI E78, E129, E176
O_2	oxygen	SEMI F30
ohm-cm	ohm-centimeter	SEMI C3
P	mainframe equipment module.	SEMI E10
p	the line pressure (torr or mbar).	SEMI E104
p	element of a set of product types	SEMI E124
P	set of product types	SEMI E124
P	phosphorous	SEMI F79
P	power incident on the test sample	SEMI PV69
P_1	absolute pressure at upstream pressure tap, kPa (psi)	SEMI F32
P_2	absolute pressure at downstream pressure tap, kPa (psi)	SEMI F32
ρ	density of the thin film layer.	SEMI MS4
$P_{average}$	average maximum output power of the module at standard test conditions after exposure	SEMI PV74

Symbol	*Definition*	*Standard(s)*
p_{diff}	estimated percent difference between the damped and undamped resonance frequency of the cantilever.	SEMI MS4
pF	picofarad	SEMI E129
platNrD	the calibrated average of the reference platform height measurements taken from multiple data traces on one step height test structure, where *N* is the test structure number (*1*, *2*, *3*, etc.), *r* indicates it is from a reference platform, and *D* directionally indicates which reference platform (using the compass indicators *N*, *S*, *E*, or *W* where *N* refers to the reference platform designed closest to the top of the chip).	SEMI MS2
platNrDt	an uncalibrated reference platform height measurement from one data trace, where *N* is the test structure number (*1*, *2*, *3*, etc.), *r* indicates it is from a reference platform, *D* directionally indicates which reference platform (using the compass indicators *N*, *S*, *E*, or *W* where *N* refers to the reference platform designed closest to the top of the chip), and *t* is the data trace (*a*, *b*, *c*, etc.) being examined.	SEMI MS2
platNX	the calibrated platform height measurement, where *N* is the test structure number (*1*, *2*, *3*, etc.) and *X* is the capital letter (or *r* is used if it is the reference platform) associated with the platform (*A*, *B*, *C*, etc.) as lettered starting with *A* for the platform closest to *platNrW* or *platNrS*.	SEMI MS2
platNXt	an uncalibrated platform height measurement from one data trace, where *N* is the test structure number (*1*, *2*, *3*, etc.), *X* is the capital letter associated with the platform (*A*, *B*, *C*, etc.) as lettered starting with *A* for the platform closest to *platNrW* or *platNrS*, and *t* is the data trace (*a*, *b*, *c*, etc.) being examined.	SEMI MS2
P_{max}	maximum power	SEMI PV56
P_{max}	maximum power (W)	SEMI PV57, PV72
P_{max}	maximum generating electric-power	SEMI PV79
$Pmax_1$	power of PV modules before the test	SEMI PV44
$Pmax_2$	power of PV modules after the test	SEMI PV44
PMj	processing equipment module j	SEMI E10
P_O	initial maximum output power of the module at standard test conditions	SEMI PV74
ppm	mole/mole × 10^6	SEMI C3
ps	picosecond	SEMI E129
P_V	absolute vapor pressure of liquid at inlet temperature, kPa (psi).	SEMI F32
Q	quality factor	SEMI E113
q	charge	SEMI E129
Q	charge	SEMI E163
Q	oscillatory quality factor of the cantilever.	SEMI MS4
Q_A	actual flow	SEMI F64
Q_a	the output value of the flow standard in units of mass flow.	SEMI F62
Q_{ind}	the output value of the device under test in units of mass flow.	SEMI F62
Q_{max}	the maximum flow rate (choked flow conditions) at a given upstream condition	SEMI F32
Q_{sp}	the intended output in mass flow units for a particular setpoint.	SEMI F62
r	number of failures.	SEMI E10
r	radial dimension of wafer coordinate system as defined in SEMI M20 with origin at the wafer center.	SEMI M59
RH	the relative humidity (%).	SEMI E104
R_s	series resistance (Ω).	SEMI PV57
R_{sh}	shunt resistance (Ω).	SEMI PV57
s	second	SEMI E113, E129, E176

Symbol	*Definition*	*Standard(s)*
s	element of a set of process steps	SEMI E124
S	sulfur	SEMI F79
S_f	specific gravity of a liquid relative to water	SEMI F32
$S_{front/back}$	front or back surface recombination velocity.	SEMI PV13
S_g	specific gravity of a gas relative to air	SEMI F32
s_g	strain gradient of the thin film layer.	SEMI MS4
Si	serial equipment module.	SEMI E10
Si	silicon	SEMI F79
S_{pe}	set of process steps of product type p on equipment type e	SEMI E124
$s_{platNrDt}$	the uncalibrated standard deviation of the data from Trace *t* on *platNrD*.	SEMI MS2
$s_{platNXave}$	the average of the calibrated standard deviation values from the data traces on *platNX*.	SEMI MS2
$s_{platNXt}$	the uncalibrated standard deviation of the data from Trace *t* on *platNX*.	SEMI MS2
$s_{platNYt}$	the uncalibrated standard deviation of the data from Trace *t* on *platNY*.	SEMI MS2
$s_{roughNX}$	the uncalibrated surface roughness of *platNX* measured as the smallest of all the values obtained for $s_{platNXt}$; however, if the surfaces of the platforms (including the reference platform) all have identical compositions, then it is measured as the smallest of all the standard deviation values obtained from data traces *a*, *b*, and *c* along these platforms.	SEMI MS2
$s_{roughNY}$	the uncalibrated surface roughness of *platNY* measured as the smallest of all the values obtained for $s_{platNYt}$; however, if the surfaces of the platforms (including the reference platform) all have identical compositions, then it is measured as the smallest of all the standard deviation values obtained from data traces *a*, *b*, and *c* along these platforms.	SEMI MS2
$stepN_XM_Y$	the calibrated step height measurement taken from two different step height test structures (*N* and *M*) on the same test chip, which is equal to the final platform height minus the initial platform height, where the step is from the initial platform to the final platform and where *X* is the capital letter associated with the initial platform from test structure number *N*, and *Y* is the capital letter associated with the final platform from test structure number *M*.	SEMI MS2
$stepN_{XY}$	the average of the calibrated step height measurements taken from multiple data traces on one step height test structure, where *N* is the number associated with the test structure, *X* is the capital letter associated with the initial platform (or *r* is used if it is the reference platform), *Y* is the capital letter associated with the final platform (or *r* is used if it is the reference platform), and the step is from the initial platform to the final platform.	SEMI MS2
$stepN_{XYt}$	a calibrated step height measurement from one data trace on one step height test structure, where *N* is the number associated with the test structure, *X* is the capital letter associated with the initial platform (or *r* is used if it is the reference platform), *Y* is the capital letter associated with the final platform (or *r* is used if it is the reference platform), *t* is the data trace (*a*, *b*, *c*, etc.) being examined, and the step is from the initial platform to the final platform.	SEMI MS2
T	transport equipment module.	SEMI E10
T	temperature	SEMI E136
T	temperature (°C)	SEMI PV57, PV69, PV72, PV76, PV89
t	wafer thickness.	SEMI M59
t	thickness of the thin film layer.	SEMI MS4
T_A	the ambient temperature (°C) around the measurement or calibration system.	SEMI E104
t_{bit}	bit duration	SEMI E144

Symbol	*Definition*	*Standard(s)*
τ_{bulk}	the bulk carrier recombination lifetime in a specimen; the average time interval that would be spent by the excess charge carrier in the valence or conduction band before an electron-hole recombination event if the surface recombination were reduced to negligible levels.	SEMI PV13
T_c	transmission ratio	SEMI MF576
t_{ch}	capacitor charge time	SEMI E144
TC_e	temperature coefficient due to changing environmental temperature of DUT,	SEMI F62
TC_g	temperature coefficient due to changing gas temperature of DUT.	SEMI F62
TC_{span}	the thermal coefficient across the span range.	SEMI F113
TC_{zero}	the thermal coefficient at zero.	SEMI F113
$TC_{zero,e}$	the maximum value of the temperature coefficient for the operating range of the DUT at no flow condition due to changing environmental temperature of DUT.	SEMI F62
$TC_{zero,g}$	the maximum value of the temperature coefficient for the operating range of the DUT at no flow condition due to changing gas temperature of DUT.	SEMI F62
T_e	the temperature of the environmental chamber.	SEMI F62, F113
τ_{eff}	the effective measured carrier recombination lifetime in a specimen; the average time interval spent by the excess charge carrier in the valence or conduction band before an electron-hole recombination event.	SEMI PV13
T_G	the gas temperature (°C).	SEMI E104
T_g	the gas temperature at the inlet to the DUT.	SEMI F62
T_{low}	the lower limit value of the control range for wire tension, determined by the performance parameters of equipment.	SEMI PV68
T_{max}	the maximum manufacturer-rated temperature for an MFC.	SEMI F62
T_{max}	maximum operating temperature specified by the DUT manufacturer.	SEMI F113
T_{max_i}	the maximum allowable value of T_{pi} when the set value is T_{si}.	SEMI PV68
T_{min}	20°C or manufacturer rated minimum temperature, whichever is greater.	SEMI F62
T_{min}	minimum operating temperature specified by the DUT manufacturer.	SEMI F113
T_{min_i}	the minimum allowable value of T_{pi} when the set value is T_{si}.	SEMI PV68
t_{offH}	power off duration for ‘1’ bit	SEMI E144
t_{offL}	power off duration for ‘0’ bit	SEMI E144
t_{onH}	power on duration for ‘1’ bit	SEMI E144
t_{onL}	power on duration for ‘0’ bit	SEMI E144
T_{pi}	the average of practical values when the set value is T_{si}.	SEMI PV68
T_{pij}	the j^{th} practical value of the wire tension when the set value is T_{si} (j = 1, 2, 3 ... m).	SEMI PV68
t_{pr}	data programming time	SEMI E144
t_{rd}	data read time	SEMI E144
T_{si}	the i^{th} set value of the wire tension (i = 1, 2, 3 ... n).	SEMI PV68
T_{up}	the upper limit value of the control range for wire tension, determined by the performance parameters of equipments.	SEMI PV68
t_{wr}	data write time	SEMI E144
µ	micro, one millionth, usually associated with meters (m) or seconds (s).	SEMI M59
µ	carrier mobility as of an electron or hole in a semiconductor.	SEMI M59
µ	viscosity of the ambient surrounding the cantilever.	SEMI MS4
µA/cm^2	microamperes per square centimeter	SEMI F120
µ-PCD	microwave photoconductance decay	SEMI PV22

Symbol	*Definition*	*Standard(s)*
μm	micrometer or micron	SEMI E78, E129, E176
μm	micrometer	SEMI PV65
$U_{\sigma g}$	the expanded uncertainty of a stress gradient measurement.	SEMI MS4
$U_{\sigma r}$	the expanded uncertainty of a residual stress measurement.	SEMI MS4
u_B	component in the combined standard uncertainty calculation that is due to the uncertainty of *B.*	SEMI MS5
u_c	the combined standard uncertainty value (that is, the estimated standard deviation of the result).	SEMI MS5
u_{cal}	the component in the combined standard uncertainty calculation for step height measurements that is due to the uncertainty of the measurements taken across the physical step height standard.	SEMI MS2
u_{cE}	combined standard uncertainty of a Young's modulus measurement as obtained from the resonance frequency of a cantilever.	SEMI MS4
$u_{c\varepsilon r}$	combined standard uncertainty value for residual strain.	SEMI MS4
u_{cert}	the component in the combined standard uncertainty calculation for step height measurements that is due to the uncertainty of the value of the physical step height standard used for calibration.	SEMI MS2
u_{certf}	for calibrating the time base of the instrument: the certified uncertainty of the frequency measurements as specified on the frequency meter's certificate.	SEMI MS4
u_{cmeter}	for calibrating the time base of the instrument: the uncertainty of the frequency measurements taken with the frequency meter.	SEMI MS4
$u_{c\sigma g}$	combined standard uncertainty value for stress gradient.	SEMI MS4
$u_{c\sigma r}$	combined standard uncertainty value for residual stress.	SEMI MS4
u_{csg}	combined standard uncertainty value for strain gradient.	SEMI MS4
u_{cSH}	the combined standard uncertainty of a step height measurement.	SEMI MS2
u_{drift}	the component in the combined standard uncertainty calculation for step height measurements that is due to the amount of drift during the data session.	SEMI MS2
U_E	the expanded uncertainty of a Young's modulus measurement.	SEMI MS4
u_E	uncertainty of a Young's modulus measurement as obtained from the resonance frequency of a fixed-fixed beam.	SEMI MS4
u_E	the component in the combined standard uncertainty calculation that is due to the uncertainty of $\overline{E}$.	SEMI MS5
u_{Fmax}	the component in the combined standard uncertainty calculation that is due to the uncertainty of $F_{max.}$	SEMI MS5
u_{linear}	the component in the combined standard uncertainty calculation for step height measurements that is due to the deviation from linearity of the data scan.	SEMI MS2
$u_{LplatNX}$	the component in the combined standard uncertainty calculation for platform height measurements that is due to the measurement uncertainty across the length of *platNX*, where the length is measured perpendicular to the edge of the step.	SEMI MS2
u_{Lstep}	the component in the combined standard uncertainty calculation for step height measurements that is due to the measurement uncertainty of the step height across the length of the step, where the length is measured perpendicular to the edge of the step.	SEMI MS2
$\mu_{n/p}$	(dopant and excess carrier density dependent) carrier mobility of electrons or holes.	SEMI PV13
u_{platNX}	the component in the combined standard uncertainty calculation for step height measurements obtained from two step height test structures that is due to the uncertainty of the platform height measurement for *platNX*.	SEMI MS2

Symbol	*Definition*	*Standard(s)*
$u_{repeat(samp)}$	the component in the combined standard uncertainty calculation for step height measurements that is due to the repeatability of measurements taken on step height test structures processed similarly to the one being measured.	SEMI MS2
$u_{repeat(shs)}$	the component in the combined standard uncertainty calculation for step height measurements that is due to the repeatability of measurements taken on the physical step height standard.	SEMI MS2
U_{SH}	the expanded uncertainty of a step height measurement.	SEMI MS2
u_w	the component in the combined standard uncertainty calculation that is due to the uncertainty of *w*.	SEMI MS5
$u_{WplatNX}$	the component in the combined standard uncertainty calculation for platform height measurements that is due to the measurement uncertainty across the width of *platNX*, where the width is measured parallel to the edge of the ste*p*.	SEMI MS2
u_{Wstep}	the component in the combined standard uncertainty calculation for step height measurements that is due to the measurement uncertainty of the step height across the width of the step, where the width is measured parallel to the edge of the step.	SEMI MS2
u_{Ymin}	the component in the combined standard uncertainty calculation that is due to the uncertainty of $Y_{min.}$	SEMI MS5
V	volt	SEMI E176
V	voltage	SEMI E163, PV69, PV72, PV76, PV89
V	voltage or volts	SEMI E129
V	voltage (V)	SEMI PV57
V_a	valve A	SEMI F62
V_b	valve B	SEMI F62
$V_{I\,i}$	inlet isolation valve.	SEMI F62
V_{io}	outlet isolation valve.	SEMI F62
V_{max}	maximum voltage supply specified by the DUT manufacturer.	SEMI F113
V_{min}	minimum voltage supply specified by the DUT manufacturer.	SEMI F113
V_{oc}	open-circuit voltage (V)	SEMI PV57, PV72, PV79
V_{oc}	open circuit voltage of cluster	SEMI PV60
V_L	the velocity (m/s) of the aerosol at the LPPD.	SEMI E104
$v_{L,\,min}$, $v_{L,\,max}$	for applications, the velocity range (m/s) of the aerosol at the LPPD specified by the manufacturer.	SEMI E104
V'_L	the volume flow rate (l/min) in the line at the LPPD.	SEMI E104
V'_G	the volume flow rate (l/min) of the aerosol sample (measured directly behind the aerosol generator).	SEMI E104
V_{oc}	open-circuit voltage	SEMI PV56
v_{VM}	the velocity (m/s) of the aerosol at the velocity meter.	SEMI E104
V'_{ZG}	the volume flow rate (l/min) of the zero gas.	SEMI E104
W	watt	SEMI E113, E143
W	the physical test structure length.	SEMI MS5
w	the test structure length from the load line.	SEMI MS5
W	tungsten	SEMI F79
w	wafer thickness.	SEMI PV13
W_{can}	suspended cantilever width.	SEMI MS4

Symbol	*Definition*	*Standard(s)*
w_{LL}	the positive distance of the load line in the *x*-direction from the unbonded edge of the test structure.	SEMI MS5
w_S	the width of the studs in the *x*-direction at the gluing surface.	SEMI MS5
x	direction of the wafer coordinate system as defined in SEMI M20 along the diameter perpendicular to the bisector of the primary fiducial with origin at the center and positive direction to the right when the top surface is up and the primary fiducial is toward the operator.	SEMI M59
X	prohibited record.	SEMI P44
Xe	xenon	SEMI F79
Y	Ideal linearity value (units of flow)	SEMI E56
y	direction of the wafer coordinate system as defined in SEMI M20 along the diameter that is the bisector of the primary fiducial with origin at the center and positive direction to the top (away from the fiducial) when the top surface is up and the primary fiducial is toward the operator.	SEMI M59
Y_{min}	the minimum value of the geometry function derived by numerical simulations using 3D finite element analysis (FEA).	SEMI MS5
z	direction of the wafer coordinate system as defined in SEMI M20 through the bulk of wafer with the positive direction upwards when the top surface is up.	SEMI M59
z_{drift}	the uncalibrated positive difference between the average of the six calibration measurements taken before the data session (at the same location on the physical step height standard) and the average of the six calibration measurements taken after the data session (at this same location).	SEMI MS2
z_{lin}	over the instrument's total scan range, the maximum relative deviation from linearity (typically less than 3 %), as quoted by the instrument manufacturer.	SEMI MS2
$\bar{z}_{6ave}$	the uncalibrated average of the six calibration measurements from which σ_{6ave} is found.	SEMI MS2
$\bar{z}_{6same}$	the uncalibrated average of the six calibration measurements used to determine σ_{6same}.	SEMI MS2
$\bar{z}_{ave}$	the average of the twelve calibration measurements (taken along the physical step height standard before and after the data session) used to calculate cal_z.	SEMI MS2