Definitions of Common Electronics Manufacturing Industry Acronyms

Acronym	Definition	Description
AC	Alternating Current	
ACA	Anisotropically Conductive Adhesive	This type of conductive adhesive is intended to only conduct electricity in the Z-direction
ACF	Anisotropic Conductive Film	
ALD	Atomic Layer Deposition	A technique for growing thin films for a wide range of applications.
ANOVA	Analysis Of Variance	A statistical analysis methodology
ANSI	American National Standards Institute	The standards organization that handles the J-STD test methods.
AOI	Automated Optical Inspection	AOI is used in the SMT process after stencil printing to verify the consistency of the print deposition or after reflow to inspect the presence of solder joints.
ASIC	Application Specific Integrated Circuit	A type of integrated circuit that is customized for a specific application.
ASQ	American Society For Quality	
ASTM	American Society For Testing And Materials	
ATE	Automated Test Equipment	
AXI	Automated X-Ray Inspection	A type of x-ray inspection that is done in-line as part of the electronics assembly process
BGA	Ball Grid Array Component	A component which has all the leads (I/Os) on the bottom side which allows it to occupy less real estate on a PCB.
BOM	Bill Of Material	The BOM is the list of all the materials required to complete an assembly. In electronics assembly, it includes things such as the integrated circuits, passive components, PCB, and housings. The BOM typically doesn't include consumables like solder paste and fluxes.
BTC	Bottom Terminated Component or Bottom Termination Component	A leadless component type where terminations are protectively plated on the underside of the package.
BWD	Bandwidth Density	
C4	Controlled Collapse Component Connection	A specific type of process for semiconductor die attach
CABGA	ChipArray Ball Grid Array	
CAF	Cathotic Anionic Filaments	A type of filament growth that can happen within the layers of a circuit board that may result in failures due to a conductive path being formed between an anode and cathode
CBGA	Ceramic Ball Grid Array	A type of BGA in which the die resides on a ceramic substrate. This can allow for hermeticity as compared a standard BGA which is on FR4.
CCD	Charge Coupled Device	
CCGA	Ceramic Column Grid Array	
CFP	Ceramic Flat Pack	
CLCC	Ceramic Leadless Chip Carrier	

Definitions of Common Electronics Manufacturing Industry Acronyms

Acronym	Definition	Description
CM	Contract Manufacturer	
CMOS	Complimentary Metal-Oxide Semiconductor	
COB	Chip-On-Board	
COF	Chip-On-Flex	
COG	Chip-On-Glass	
COTS	Commercial Off The Shelf	
Cp	Capability Performance	Cp is a statistical assessment of closely packed as set of data is to one another
CPGA	Ceramic Pin Grid Array	
Cpk	Process Capability Index	Cpk is a statistical assessment of closely packed as set of data is to one another and how close that bunch of data is to the center of your target
CPU	Central Processing Unit	
CSP	Chip Scale Package	
CTE	Coefficient of Thermal Expansion	The rate at which a material expands. In electronics, bonding materials with significantly different CTEs can lead to solder joint stress and possibly early failure.
DBI	Direct Bond Interconnect	
DC	Direct Current	
DCA	Direct Chip Attach	
DFM	Design For Manufacture	
DFR	Design For Reliability	
DFT	Design For Testability	
DFX	Design For Excellence	
DI Water	De-ionized Water	
DIMM	Dual Inline Memory Module	
DIP	Dual-Inline Package	Dual In-Line Package. A popular through hole package with leads in rows on opposite sides of the package.
Dk	Dielectric Constant	
DOE	Design Of Experiments	
DRAM	Dynamic Random Access Memory	
DSC	Differential Scanning Calorimetry	
Dual LF	Dual Lead Frame	
ECM	Electrochemical Migration	One of the serious failure modes encountered in electronic devices due to the electrochemical reactions triggered by the presence of moisture and bias voltage, leading to the growth of dendrites and short circuits. "Tin Whiskers" is a notable defect in this category.
ECN	Engineering Change Notice	

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Acronym	Definition	Description
ECO	Engineering Change Order	
ECR	Engineering Change Request	
EEPROM	Electrically Erasable Programmable Read Only Memory	
EIA	Electronics Industry Association	
EIS	Electrochemical Impedance Spectroscopy	
EMC	Electromagnetic Compatability	
EMF	Electro-Motive Force	
EMI	Electromagnetic Interference	
EMP	Electromagnetic Pulse	
EMS	Electrical Manufacturing Services	
ENEPIG	Electroless Nickel Electroless Palladium Immersion Gold	
ENIG	Electroless Nickel Immersion Gold	
ENIPIG	Electroless Nickel Immersion Palladium Immersion Gold	
EPA	Environmental Protection Agency	
ESD	Electrostatic Discharge	Electrostatic Discharge. A transfer of electrostatic charge between bodies at different electrostatic potentials caused by direct contact or induced by an electrostatic field.
eWLP	Embedded Wafer Level Package	
FAI	First Article Inspection	
FCBGA	Flip Chip Ball Grid Array	
FC-CBGA	Flip Chip Ceramic Ball Grid Array	
fcCSP	Flip Chip Chip Scale Package	
FC-PBGA	Flip Chip Platic Ball Grid Array	
FCT	Functional Circuit Test	A testing methodology that identifies if a circuit board functions as intended. If there is a problem, this test method won't identify the location of the issue.
FEA	Finite-Element Analysis	
FEM	Finite-Element Modeling	
FET	Field-Effect Transistor	
FFT	Fast Fourier Transform	
FHE	Flexible Hybrid Electronics	
FMEA	Fault Mode And Effect Analysis	
FPC	Flexible Printed Circuit	
FPGA	Field Programmable Gate Array	
FPT	Fine Pitch Technology	

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Acronym	Definition	Description
FR4	Flame Retardant 4	The standard material used for making circuit boards.
GaAs	Gallium Arsenide	A type of wide bandgap semiconductor material.
GaN	Gallium Nitride	
GPU	Graphics Processing Unit	
HASL	Hot Air Solder Level	Hot air is used to blow off the excess after the PWB is dipped in solder. Typically used with the SMOBC process
HBM	High Bandwidth Memory	
HDI	High Density Interconnect	
HiP	Head-in-Pillow	A defect in which the solder ball from a BGA doesn't coalesce with the solder paste during reflow. Component warping is generally the leading root cause for this defect.
HoP	Head-on-Pillow	Alternate name for Head-in-Pillow
HPC	High Performance Computing	
HPFS	High-Purity Fused Silica	
HSIP	Heterogeneous System in Package	
I/O	Input/Output (Terminations)	I/O generally refers to the number of terminations on an integrated circuit
IC	Integrated Circuit	Integrated Circuit. A small, complete circuit made by vacuum deposition and other techniques, usually on a silicon chip, and mounted in a package
ICA	Isotropically Conductive Adhesive	An adhesive that conducts electricity equally in all directions
ICT	In-Circuit Test	A method of testing a circuit board in which test probes access many points on a board and measure current flow between points.
IEEE	Institute of Electrical and Electronic Engineers	
IEPS	IEEE Electronics Packaging Society	
IMC	Intermetallic Compound	
ISHM	International Society for Hybrid Microelectronics	
JEDEC	Solid State Technology Association (Formerly The Joint Electronic Device Engineering Council)	Joint Electronic Devices Engineering Council, a part of the Electronic Industries Association (EIA) that publishes specifications and standards for electronic components
JFET	Junction-Gate Field-Effect Transistor	The junction-gate field-effect transistor is one of the simplest types of field-effect transistor.
JIT	Just-In-Time (Manufacturing)	
KBQ	Knowledge Base Qualification	
LCCC	Leadless Ceramic Chip Carrier	Leadless Ceramic Chip Carrier (or CLCC for Ceramic Leadless Chip Carrier). A hermetically sealed ceramic package that has pads (castellations) around its sides for solder connection in a surface mounting application.
LFF	Large Form Factor	
LGA	Lang Grid Array	

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Acronym	Definition	Description
LQFP	Low-profile Quad Flat Package	
LTCC	Low Temperature Co-Fired Ceramic	
LTS	Low Temperature Solder	Low temperature solders have melting points below 190°F.
MCM	Multichip Module	Multichip Module. A circuit comprised of two or more silicon devices bonded directly to a substrate by wire bond, TAB, of flip chip
MCU	Microcontroller	
MELF	Metal Electrode Face (Discrete Leadless Component)	Metal Electrode Face Bonding. A cylindrical leadless component with a round body and metals terminals on the ends.
MFG	Mixed Flow Gas Testing	A type of laboratory environmental testing for products, particularly electronics, to evaluate resistance to corrosion due to gases in the atmosphere.
MITI	Ministry Of International Trade And Industry (Japan)	
MLF	Micro Lead Frame	
MMIC	Monolithic Microwave Integrated Circuit	
MOSFET	Metal-Oxide-Semiconductor Field-Effect Transistor	Also known as the metal–oxide–silicon field-effect transistor, a MOSFET is a type of insulated-gate field-effect transistor that is fabricated by the controlled oxidation of a semiconductor, typically silicon.
MSD	Moisture Sensitive Device	
MSDS	Material Safety Data Sheets	
MSL	Moisture Sensitivity Level	
MTBF	Mean Time Between Failures	Mean Time Between Failures. The arithmetic or statistical mean average time interval, usually in hours, that may be expected between failures of an operating unit. Results should be designated actual, predicted, or calculated
MTTR	Mean Time To Repair	Mean Time to Repair. A measure of how long it takes to access a failed system and identify, locate, and repair the fault.
NADCAP	National Aerospace And Defense Contractors Accreditation Procedures	
NASA	National Aeronautics And Space Administration	
NBS	National Bureau Of Standards	
NIST	National Institute for Science and Technology	
NPI	New Product Introduction	
NWO	Non-wet Open	A defect similar to HIP where the entire solder deposit lifts from the PCB leaving a bare pad with no solder wet to it.
OA	Organic Acid (Flux)	Generally refers to a type of flux in which the residues need to be cleaned with DI water.
OEM	Original Equipment Manufacturer	

Definitions of Common Electronics Manufacturing Industry Acronyms

Acronym	Definition	Description
OFHC	Oxygen-Free High-Conductivity Copper	
OSP	Organic Solder Preservative	
PBGA	Plastic Ball Grid Array	
PCB	Printed Circuit Board	
PCBA	Printed Circuit Board Assembly	
PCMCIA	Personal Computer Memory Card International Assoc	
PDC	Professional Development Course	
PECVD	Plasma Enhanced Chemical Vapor Deposition	A hybrid process used to deposit thin films, where plasma energy, rather than only thermal energy, drives the reactions between excited species and the substrate.
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances	Known as “forever chemicals” because they break down very slowly over time, PFAS have been used since the 1950s in many consumer products and industrial processes. There are thousands of types of PFAS. From a manufacturing standpoint, PFAS are desirable because they are generally effective at resisting things like heat, water, oil, and grease. However, many of these chemicals are toxic and due to major health and environmental risks, legislation now restricts and deters the use of these chemicals in products.
PGA	Pin Grid Array (Leaded Component Package)	
PID	Photo-Imageable Dielectric	
PIP	Pin-In-Paste Technology	
PLCC	Plastic Leaded Chip Carrier	
PoP	Package on Package	
Pp	Process Performance (See Also Cp)	
PPM	Parts Per Million	
PTH	Plated-Through Hole	
PWB	Printed Wiring Board	
QFN	Quad Flat No-lead	
QFP	Quad Flatpack	
QML	Qualified Manufacturers List	
QPL	Qualified Products List	
R	Rosin (Flux)	
R&R	Repeatability and Reproducibility	
RA	Rosin Activated (Flux)	Highly activated flux that is more effective on difficult to solder metalizations. Generally, the residue needs to be cleaned after reflow.
RDL	ReDistribution Layer	

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Acronym	Definition	Description
REACH	Registration, Evaluation, Authorization, and Restriction of Chemicals	
RMA	Rosin Mildy Activated (Flux)	A moderately activated flux that is typically suitable for most soldering applications. Most no-clean materials could be classified as an RMA.
RO Water	Reverse Osmosis Water	
RoHS	Restriction of Hazardous Substances	A European Union legislation initially restricting six substances in electronics. The most impactful was the restriction of Pb (lead) which caused massive swing in 2006 from Pb-bearing solders to Pb-Free ones.
ROM	Read Only Memory	
RPI	Reflow Process Inspection	
RRAM	Resistive Random Access Memory	
RSS	Ramp Soak Spike	A type of reflow profile in which you soak
RTS	Ramp To Spike	
SAC	Sn/Ag/Cu (tin/silver/copper)	Generic acronym for the family of common Pb-Free alloys
SAC105	98.5Sn/1.0Ag/0.5Cu	
SAC305	96.5Sn/3.0Ag/0.5Cu	
SAC387	95.5Sn/3.8Ag/0.7Cu	
SAC405	96.0Sn/4.0Ag/0.5Cu	
SAE	Society Of Automotive Engineers	
SB^2	Solder Ball Squared	A unique solder ball jetting process for stack formations
SEC	Solvent Extract Conductivity	
SEM	Scanning Electron Microscope	
SFF	Small Form Factor	
SIP	Single Inline Package	
SIR	Surface Insulation Resistance	
SMD	Surface Mount Device	
SMEMA	Surface Mount Equipment Manufacturers Association	
SMT	Surface Mount Technology	Surface Mount Technology. The technology used to manufacture electronic assemblies using components that are soldered directly to the surface of the substrate or PWB.
SMTA	Surface Mount Technology Association	
SOIC	Small-Outline Integrated Circuit	
SOT	Small Outline Transistor	Small Outline Integrated Circuit. A plastic IC package for surface mounting applications that has leads on two opposite sides
SPC	Statistical Process Control	Statistical Process Control. The use of statistical techniques to analyze a process or its output to determine any variation from a benchmark and to take appropriate action to restore statistical control, if required

Definitions of Common Electronics Manufacturing Industry Acronyms

Acronym	Definition	Description
SRAM	Static Random Access Memory	
TAB	Tape-Automated Bonding	Tape Automated Bonding. An IC interconnection process that uses organic tape to support pre-formed leads during bonding to the chip (inner lead bonding-ILB) and connection to the substrate (outer lead bonding-OLB). The IC chip is usually bare during the interconnecting processes.
TAL	Time Above Liquidus	
TCXO	Temperature Compensated Crystal Oscillator	
Tg	Glass Transition Temperature	
TGA	Thermo Gravimetric Analysis	
THT	Through-Hole Technology	
TLPS	Transient Liquid Phase Sintering	
TMA	Thermo Mechanical Analysis	
TO	Transistor Outline	
TSOP	Thin Small Outline Package	
TSV	Through Silicon Via	
UBM	Under Bump Metallization	
UL	Underwriter's Laboratories	
VIPPO	Via in Pad Plated Over	
VLSI	Very-Large Scale Integration (Integrated Circuit)	
VOC	Volatile Organic Compound	
VOC-Free	Free from Volatile Organic Compound	A standard term for water based wave solder fluxes.
VPX	Video Pixel Decoder	
XMC	X Memory Controller	