

AVX Corporation is a leading manufacturer of passive electronic components and connector products. Our global capability generates over \$1 billion in sales and encompasses products from 37 facilities in 17 countries.

We operate in a market and at a time when acronyms and “buzzwords” are increasingly used. This terminology guide is our attempt at helping you understand the “technospeak” which surrounds us.

If you have any additions or questions, please contact me or e-mail at: hunterc@avxcorp.com.

AVX products include

Connectors

Automotive Connectors
Board to Board Connectors - SMT and Through-Hole
Card Edge
Compact Flash Connectors
Compact PCI
Custom Designed Connectors
Customized Backpanel, Racking and Harnessing Services
DIN 41612 Connectors
FFC/FPC Connectors
Insulation Displacement Connectors
I/O Connectors
Memory Card Headers and Sockets
MOBO™, I/O, Board to Board and Battery Connectors
PCMCIA Frameless Kit
Press-fit Connectors
Torson, 1.27mm (.050") Board to Board Connectors
Varicon
Wire to Board, Crimp or IDC

Passives

MLC Capacitors	Thin Film Inductors
Tantalum Capacitors	Thin Film Fuses
Microwave Capacitors	Voltage Suppressors
Thin Film Capacitors	Acoustical Piezos
Glass Capacitors	Ferrites
Chip Resistors	Thermistors (NTC, PTC)
Chip Resistor Arrays	Film Capacitors
EMI Filters	Suppression Capacitors
Bulk Filters	Power Capacitors
SAW Filters	Integrated Passive Components
Dielectric Filters	Varistors (MOV)
Resonators	Disc Capacitors
Oscillators	

4 Cap Array: IPC with four capacitors in an 0612 package

A/D: Analog to digital signal conversion

AC: Alternating current

Accu L: AVX name for tight tolerance, high frequency thin film inductors

Accu F: AVX name for tight tolerance, high frequency thin film capacitors

Accu P: AVX name for tight tolerance, high frequency thin film capacitors

AccuGuard: AVX name for the thin film fuse products

Active Components: Semiconductor devices e.g. Integrated circuits; components made with semiconductor materials

Alternating Current: Electrical current that periodically alters the direction (+/-) of current flow

Aluminum Electrolytic: Capacitor using aluminum oxide as the dielectric and a liquid electrolytic as one electrode and the aluminum foil as the other

Ambient Noise: Average level of noise at a specific location

Ambient Temperature: Average temperature surrounding a component

Ammo-Pack: Panasonic trademark for products where devices are taped together and then folded in a box

Ampere: Unit of measure for electrical current

Analog Circuit: A circuit that provides information from a varying electrical signal

Anode: The positive electrode of a component

Automatic Insertion: Machines used to place parts onto printed circuit boards

Axial Leads: Wire attachment to a component which extend along the axis of a unit, i.e. out of each end of the device

B Tolerance: Capacitor tolerance of $\pm 0.1\text{pF}$

Backpanel: Customer specific PCB assembly normally including Pressfit connectors manufactured by ELCO

Balun: Balanced and unbalanced transmission lines=unbalanced system to balanced system converter

Bandpass Filter: Filter which allows frequencies within a specific band to pass while rejecting others

Bandwidth: Range of specified frequencies over which the output response of a circuit remain above a defined value

Battery: Power (voltage) obtained from a chemical reaction in a cell. Cells that convert chemical energy to electric energy producing a direct current. Cells connected in series for higher voltage, or parallel for higher current

Baud Rate: Unit of signal speed which indicates the number of discrete signal events transmitted per second

Baud: Time needed for an individual signal event in a digital transmission. Unit of speed in data transmission - 1 bit per second

BitGuard: AVX name for thin capacitor (0.030") designed to be used under an IC

Blocking Capacitor: Coupling capacitor between electronic circuits used to block direct current and limit the flow of low-frequency alternating current signals without affecting high frequency alternating current signals

Board to Board: Connector system for interfacing two PCB boards

Bond: An electrical interconnection, e.g. wire bond

Boost Capacitor: Damper circuit capacitor for TV receivers which boost the DC power supply voltage already present

Boxed Film (BF): Film capacitor contained in molded plastic package

BPS: Bits per second

Breadboard: A circuit design in the initial stage of a system, i.e. prototype

Breakdown Voltage: Voltage applied to a capacitor which causes shorting

Bulk Cassette: Devices packaged loose in a plastic case used for automatic placement

Bulk Packaging: Devices packaged loose in a bag

Bulkhead Filter: Encased EMI filters mounted on walls, chassis or bulkheads

Burn-in: Subjecting parts to heavy electrical bias/load at elevated temperature for a specific time period in order to induce failure of marginal devices

Bypass Capacitor: Capacitor providing a low-impedance path to ground to filter unwanted noise

C Tolerance: Capacitor tolerance of $\pm 0.25\text{pF}$

C: Capacitance symbol

COG/NP0: Stable capacitor dielectric for ceramic capacitors ($0 \pm 30\text{ppm}/^\circ\text{C}$)

Capacitance: Ability to store energy in an electric field. Normally, expressed as the stored charge in farads

Capacitive Coupling: Capacitor which couples a signal between two electronic circuits

Capacitor: Energy storage device made from two conducting plates separated by a dielectric/insulating material

CapGuard: AVX name for a leaded component which has a ceramic capacitor and a TransGuard in series

Cathode: Negative electrode of a component

CDR: Military designation for chips

Celsius: Temperature scale where the freezing point of water is 0° and the boiling point of water is 100°

Centerline: Distance between the center point of two adjacent connector contacts

Ceramic Package: Package enclosure made from inorganic, non-metallic material

Chip: A leadless form of an electronic component

CK: Military designation for ceramic capacitors in MIL-C-11015

CKR: Military designation for military approved capacitors to MIL-C-39014 - established reliability

Clean-Room: A manufacturing area where air is filtered to minimize dust particles.nb Class 10 = 10 microns of dust per cubic meter. Class 100 = 100 microns of dust per cubic meter, etc.

Clock Oscillator: Electronic circuit generating precisely controlled, accurate timing signals at regular intervals

Clock Rate: Oscillation frequency of the clock in a system

Coaxial Cable: Concentric transmission line made up of an inner conductor, outer ground conductor and insulation layer for separation

Cofired Ceramic: The firing together of two different ceramic formulations

Coil: Component made from wire, wound around a core

Conductor: A substance/material through which electrons flow easily

Conformal Coating: A thin non-conductive protective coating that conforms to size of part

Contact: The metal part of a connector which connects two parts of a connector together or the connector to another component

CPU: Central processing unit

Crystal: Component made from quartz that vibrates very precisely at its natural frequency when excited with a voltage

Current: Flow of electrons, measured in amperes. One ampere will flow when one volt is provided to a circuit which has a resistance of one ohm

CV: Product of capacitance and voltage of a capacitor

Cycle: A single complete execution of a waveform that periodically occurs in time

D Tolerance: Capacitor tolerance of $\pm 0.5\text{pF}$

D/A: Digital to analog signal conversion

Damping: Energy loss which slows response

Date Code: Code, normally four digits, which identifies when a part was manufactured. Usually the first two digits are the week, e.g. 08 is week 8 and the remaining two digits are the year, e.g. 98 is 1998

DC: Direct current

Decibel (db): Standard unit that represents the relative intensity or power of a signal

Decoupling: Shunting of unwanted noise to ground

Die: Uncased component yielded from a wafer

Dielectric Constant: Ratio of the relative storage capacity of a material to that of a vacuum

Dielectric Strength: Capability of the dielectric to withstand voltage without damage

Dielectric: Non-conducting material separating the plates of a capacitor

Digital Circuit: A circuit which represents data with on and off signals

DIN41612: German industry standard connector

Diode: Device with two terminals which has a high resistance to current flow in one direction and a low resistance

DipGuard: AVX name for two pin dual-in-line ceramic capacitor

Dipped: Term used for leaded components, e.g. tantalum capacitors, usually epoxy coated

Direct Current (DC): Current flowing in one direction

Disk/Disc: Single layer ceramic capacitor

Dissipation: Loss of energy, usually in the form of heat

Dual-in-Line: Standard packaging arrangement which has connecting pins along each long side of a package

E12: The name of twelve standard values for capacitance/resistance between 1 and 99 and any multiple to the power of ten. E12 values are 10, 12, 15, 1, 22, 27, 33, 39, 47, 56, 68, 82

E24: The name of twenty-four standard values for capacitance/resistance between 1 and 99 and any multiple to the power of ten. E24 values are 10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, 91

E6: The name of six standard values for capacitance/resistance between 1 and 99 and any multiple to the power of ten. E6 values are 10, 15, 22, 33, 47, 68

ECOAX: TPC name for axial leaded ceramic capacitor
(AVX: SpinGuard)

ECOCAP: TPC name for radial leaded ceramic capacitor (AVX: SkyCap)

ECOMP 1,2,3,4: AVX name for the Kyocera product groups

EIA: Electronics Industry Association

Electrode: Contacts which emit or collect the movement of electrons

Electrolyte: Substance which enters into a chemical reaction and produces a conductive liquid

Electrolytic Capacitor: Capacitor whose one or more electrodes are impregnated or immersed in a wet electrolyte

Electrostatic: Electricity produced by the impact of two surfaces

Encapsulate: Covering for an element which provides environmental protection

Energy Density: Amount of energy stored in a given unit of volume

ESL: Equivalent series inductance. Inductance characteristic of the component in the circuit

ESR: Equivalent series resistance. Resistance characteristic of the component in the circuit

Extended Range: New higher capacitance versions of current capacitor families

F Tolerance: Capacitor/Resistor tolerance of $\pm 1\%$

Fahrenheit: Temperature scale where the freezing point of water is 32° and the boiling point of water is 212°

Failure Analysis: Analysis of a circuit or component to determine the reason for failure

Farad: Capacitance unit where one farad unit is one coulomb of charge with one volt across it

Feedthrough: Three terminal capacitor where two terminals are common conductors

Ferrite: A material that provides a magnetic field for filtering and power applications. Hard: Magnetic material; Soft: Non-magnetic material

FFC/FPC: Fine pitch connectors manufactured by ELCO

Film Capacitor: Capacitor made from plastic films usually polyester or polypropylene

Film: Coating or layer of material used to form various elements, inter-connections, or insulation

Filter (LPF/BPF): Device or circuit which allows signals of specific frequencies to pass while blocking those of other frequencies;
LPF = Low Pass Filter, BPF = Band Pass Filter

Fire: Heating of a ceramic material to change its crystalline structure

Flip-chip: Method of mounting devices with solder bumps (balls)

Flyback Transformer (FPT): Autotransformer generating high voltage in the horizontal output state of a TV receiver

FM: Frequency modulation

Frequency: The number of periodic waveform cycles completed in one second; KHz = 1000 cycles, MHz = 1,000,000 cycles, GHz = 1,000,000,000 cycles

G Tolerance: Capacitor/Resistor tolerance of $\pm 2\%$

GHz: Gigahertz

Gigahertz (GHz): 10^9 cycles per second (see Frequency)

Glass Capacitor: Capacitor made with a glass dielectric

Glass K: AVX name for a special glass formulation capacitor with properties similar in some cases to glass but higher dielectric constant

Ground: Common return path for electrical currents

Harmonic: Frequency multiple of a fundamental sine wave signal frequency

Henry (μH): Unit of inductance which indicates the induced force of one volt when the current is varied at 1 ampere per second

Hermetic-sealing: Sealing which is gas-tight

Hertz: One complete cycle per second

High Frequency: Signal frequency 3-30 MHz

High Q: Capacitor which has very low losses: Low ESR

Hybrid: A circuit on an insulating substrate that consists of an assembly of components

Hz: Hertz

IDCapacitor: Interdigitated capacitor designed for low inductance

IDConnector: Insulation displacement connector

IEEE: Institute of Electrical and Electronic Engineers

Impedance: Total resistance of a capacitor including capacitance reactance, ESL and ESR

Inductance: Property of an element by which an electromotive force is induced by a change in current

Ink: Paste or thick film material which is screen printable

Insulator: Material which is a poor conductor to the extent that current does not flow through it when voltage is applied

Integrated Circuit: Multiple components fabricated and interconnected on a semiconductor substrate

Interdigitated Capacitor (IDC): Low inductance capacitor

Intermediate Frequency (IF): The frequency at which the received signal is converted before final data abstraction

IPC: (Integrated passive components) Multiple components fabricated and interconnected on a ceramic substrate

J Tolerance: Capacitor/Resistor tolerance of $\pm 5\%$

Jitter: Signal misalignment which results in data misinterpretation

Joule: Measured unit of energy

K Band: Microwave frequency 11 GHz to 36 GHz

K Tolerance: Capacitor tolerance of $\pm 10\%$

Kilohertz: One thousand complete cycles per second

L: Inductor symbol

Laser Trim: Removal of material to adjust the value of a parameter on a device

Layout: A drawing showing components and interconnection used to generate artwork or masks for substrate metallization

LC Circuit: Circuit containing a capacitor and an inductor

Leaching: The migration of a material (usually metals) into another material under the influence of electrical gradient and usually moisture

Leadframes: Metal attachment used to electronically connect an element to the next level of assembly

Leadspacing: Measure of the distance between the two wires on a radial leaded product

Leakage: Unwanted electricity flow through or around a component or circuit

Life-test: Applying an electrical bias or load over a special time period normally at an elevated temperature for a sample lot to prove quality

Low Frequency: Signal frequency 30 Hz - 300 KHz

Low Pass Filter: Filter which allows frequencies below a given cut-off frequency to pass and rejects any above that frequency. Used primarily for EMI

Low Profile: Components which when mounted on a board offer a low height dimension

M Tolerance: Capacitor tolerance of $\pm 20\%$

MCM: (Multi chip module) Combination of devices in a single mountable package

Mean Time Between Failures (MTBF): Statistic showing average time between component failures

Medium Frequency: Signal frequency between 300 KHz - 3 MHz

Megahertz: One million complete cycles per second

Metallization: A conductive film pattern deposited on a substrate

Mic (Mike): Jargon for microfarad

Mica: Mineral with good insulating and heat resistance properties, often used as an insulator or dielectric

Micro: 1/1,000,000, e.g. microfarad (μF), microhenry (μH), micron 10^{-6}

Microcircuit: A circuit with high component density which performs a function

Microleaf: Two piece connector manufactured by ELCO

Microwaves: Signals with frequencies above 1 GHz with wavelengths $< 1\text{mm}$

Mil: One thousandth of a unit, often referring to 1/1000 of an inch

Miniceramic: AVX name for miniature ceramic capacitors

Miniresistor: AVX name for miniature resistors

Minitan: AVX trademark and name for miniature solid tantalum capacitors

MLC: Multilayer ceramic or multilayer capacitor

MOBO: Custom connectors for mobile communications applications manufactured by ELCO

Nano: 1/1,000,000,000, e.g. nanofarad, nanohenry 10^{-9}

Nanofarad (nF): Unit of capacitance 10^{-9} Farads

Nanohenry (nH): Unit of inductance 10^{-9} Henrys

NEDA: National Electronic Distribution Association

Nickel Barrier: A standard plated termination style for SMD components. A surface solderable termination is plated over it

NP0/C0G: Stable capacitor dielectric for ceramic capacitors that has little capacitance change over temperature as bias

NTC: Negative temperature coefficient

Ohm: Unit of resistance

Ohms Law: $I=E/R$ Current equals voltage divided by resistance

Open Circuit: Incomplete path for current to flow, infinite resistance

Oscillator: Device or circuit which produces a constant signal at a given frequency when a given bias is applied

P Tolerance: Capacitance tolerance -0 +100%

Package: The container for an electronic component with terminals for access

Paper Capacitor: Fixed capacitor made from wound metal foil separated by a paper dielectric

Passivation: An insulation layer which protects from contaminants such as moisture or loose particles

Passive Components: Devices like resistors, capacitors and inductors which do not amplify signal

Passive Network: Multiple passive components connected together which provide no circuit gain

Permeability: A measure comparing the ability of electrons to move through a material versus air

Pico: 1/1,000,000,000,000, e.g. picosecond, picohenry, picofarad 10^{-12}

Picofarad (pF): Unit of capacitance 10^{-12} Farads

Picohenry (pH): Unit of inductance 10^{-12} Henrys

Piezoelectric: Material property that emits a voltage when pressure is applied

Polar Devices: Devices which when assembled onto a PCB must be placed with the + and - connection correctly located. (Tantalum capacitors are polar)

Polycarbonate: Material used as a dielectric in a film capacitor

Polyester: Material used as a dielectric in a film capacitor

Polypropylene: Material used as a dielectric in a film capacitor

Polystyrene: Material used as a dielectric in a film capacitor

Porcelain: High Q ceramic capacitor dielectric

Potentiometer: Adjustable resistor with a mechanical mechanism for changing its value, e.g. a moving contact

Power Dissipation: Power expelled in the form of heat from within a device

Power Factor Correction: Energy saving application capacitor which helps to improve loss angle

Power Factor: The ratio of actual power to perceived power in an AC signal, at less than 10% equals dissipation factor

Pressfit: Varipin style connector product manufactured by ELCO

PTC: Positive temperature coefficient

Puff: Jargon for picofarad (pF)

Q Quality Factor: Q: measure of loss of an element

Quartz Crystal: Accurately cut quartz crystal which vibrates at a specific frequency, normally encased in a metal can

QV2000: AVX quality system, Quality Vision 2000

R: Resistor symbol

Radial: Connection leads which extend from the same end of a device

Resistance: Material characteristic resulting in energy loss by opposing the flow of electrons

Resistor: Device which provides resistance to current flow

Resonant Frequency: In an AC circuit the point at which capacitance and inductive reactance cancel each other out

RF: Communication signal frequencies between 10 KHz and 10,000 GHz

SAW Filter: Surface Acoustic Wave filter

Schematic: Diagram of an electronic circuit showing all components and interconnects

Self-healing: Ability of some film capacitors to isolate potential short circuits

Semiconductor: The material used as a substrate for devices like transistors, diodes, and integrated circuits

Shelf Life: Time period where components retain specified characteristics while unused, e.g. warehoused (stored inventory)

Silver Migration: Movement of silver metal ion under the influence of an electrical field and usually moisture

Single Layer (SLC): Ceramic dielectric which is one layer

SkyCap: AVX name for radial leaded ceramic capacitor (TPC: ECOCAP)

SLC: Single layer capacitor

SMD: Surface mount device

SMO: Switch-mode output capacitor

SMPS: Switch-mode power supply

SMT: Surface mount technology

SpinGuard: AVX name for axial leaded ceramic capacitor (TPC: ECOAX)

Stacked Foil: Construction technique for low inductance film capacitors

StaticGuard: AVX name for low energy rated transient voltage suppressors

Stray Capacitance: Capacitance present in a circuit between components

Substrate: Material upon which the components are placed

TACmicrochip: 0603 tantalum capacitor

Tape and Reel: Packaging method where components can be auto-inserted

Temperature Coefficient: The degree to which components exhibit change of any parameters with respect to temperature change over time

Temperature Cycling: An environmental test where parts are subjected to a series of cycles alternating between low and high temperature extremes

Termination: Method or material used to connect components to a circuit

Thermal Shock: An environmental test or circumstance where parts are subjected to rapid change in temperature to induce mechanical failure

Thermistor: Component where resistance changes due to a change in temperature

Thick Film: A film deposited by screen printing process which is fired at high temperature

Thin Film: Material deposited in a vacuum by sputtering used in the AVX Israel plant for manufacturing tight tolerance products

Tip and Ring Capacitor: Standard telecom filter to block -48v DC telephone line voltage and pass subscriber's AC signal pulse

Tolerance: Specification of allowable variance from a given value, e.g. 100 ± 20 in 20% tolerance

TPS: AVX designation for low ESR tantalum capacitor

TransGuard: AVX name for transient voltage suppressors

Trimmer Capacitor: Adjustable capacitor with a mechanical mechanism for changing capacitance value, normally a moving contact

Trimmer: Adjustable device with a mechanical mechanism for changing parametric values, normally a moving contact

Trimming: Ability to adjust or fine tune a parameter, normally by way of a mechanical tuner or a laser which removes material

UL: Underwriters laboratory, test registration body

UPS: Uninterruptable power supply

Varicon: Special contact system used in connectors manufactured by ELCO

Varistor: Device where resistance varies as voltage varies; as voltage increases resistance decreases

VDE: German equivalent of UL (Underwriters Laboratories) approved body

Voltage Rating: Maximum recommended voltage for a component

Voltage: Measure of force which causes current to flow. One volt enables one ampere to flow through one ohm of resistance

Weibull Failure Rate: A system of rating the predicted reliability used for military Ta capacitors

X Capacitor: Safety capacitor used across AC line for differential mode filtering

X7R: EIA designation for a temperature change causing capacitance to vary $\pm 15\%$ between -55 and $+125^{\circ}\text{C}$ Class II material - temperature stable

XY Capacitor: AC power line filtering capacitors. Fail safe mode is a requirement

Y Capacitor: Safety capacitor connected to ground for common mode filtering

Y5V: EIA designation for a temperature change causing capacitance to vary $+22/-82\%$ between -30 and 85°C Class II material - general application

Yield: The ratio of useable units at the end of a manufacturing process to the number of units started

Z5U: EIA designation for a temperature change causing capacitance to vary $+22/-56\%$ between $+10$ and 85°C Class II material - general application

NOTICE: Specifications are subject to change without notice. Contact your nearest AVX Sales Office for the latest specifications. All statements, information and data given herein are believed to be accurate and reliable, but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements or suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should not assume that all safety measures are indicated or that other measures may not be required. Specifications are typical and may not apply to all applications.

USA

AVX Myrtle Beach, SC Corporate Offices

Tel: 843-448-9411
FAX: 843-626-5292

AVX Northwest, WA

Tel: 360-699-8746
FAX: 360-699-8751

AVX North Central, IN

Tel: 317-848-7153
FAX: 317-844-9314

AVX Mid/Pacific, MN

Tel: 952-974-9155
FAX: 952-974-9179

AVX Southwest, AZ

Tel: 480-539-1496
FAX: 480-539-1501

AVX South Central, TX

Tel: 972-669-1223
FAX: 972-669-2090

AVX Southeast, NC

Tel: 919-878-6223
FAX: 919-878-6462

AVX Canada

Tel: 905-564-8959
FAX: 905-564-9728

EUROPE

AVX Limited, England European Headquarters

Tel: ++44 (0) 1252 770000
FAX: ++44 (0) 1252 770001

AVX S.A., France

Tel: ++33 (1) 69.18.46.00
FAX: ++33 (1) 69.28.73.87

AVX GmbH, Germany - AVX

Tel: ++49 (0) 8131 9004-0
FAX: ++49 (0) 8131 9004-44

AVX GmbH, Germany - Elco

Tel: ++49 (0) 2741 2990
FAX: ++49 (0) 2741 299133

AVX srl, Italy

Tel: ++390 (0)2 614571
FAX: ++390 (0)2 614 2576

AVX Czech Republic, s.r.o.

Tel: ++420 (0)467 558340
FAX: ++420 (0)467 558345

ASIA-PACIFIC

AVX/Kyocera, Singapore Asia-Pacific Headquarters

Tel: (65) 258-2833
FAX: (65) 350-4880

AVX/Kyocera, Hong Kong

Tel: (852) 2-363-3303
FAX: (852) 2-765-8185

AVX/Kyocera, Korea

Tel: (82) 2-785-6504
FAX: (82) 2-784-5411

AVX/Kyocera, Taiwan

Tel: (886) 2-2696-4636
FAX: (886) 2-2696-4237

AVX/Kyocera, China

Tel: (86) 21-6249-0314-16
FAX: (86) 21-6249-0313

AVX/Kyocera, Malaysia

Tel: (60) 4-228-1190
FAX: (60) 4-228-1196

Elco, Japan

Tel: 045-943-2906/7
FAX: 045-943-2910

Kyocera, Japan - AVX

Tel: (81) 75-604-3426
FAX: (81) 75-604-3425

Kyocera, Japan - KDP

Tel: (81) 75-604-3424
FAX: (81) 75-604-3425

Contact:

