INDUSTRIAL APPLICATIONS

CERAMIC CAPACITORS | TANTALUM & POLYMER CAPACITORS | FILM CAPACITORS
PULSE SUPERCAPACITORS | MULTILAYER VARISTORS | NTC THERMISTORS
INDUCTORS | DIODES | ANTENNAS | CONNECTORS
INDUSTRIAL OVERVIEW

SMT Ceramic Capacitors
Leaded Ceramic Capacitors
SMPS Ceramic Capacitors
Wet & Hermetic Tantalum
Niobium Oxide Capacitors
Supercapacitors
Chip Film Capacitors
Medium Power Capacitors
High Power Capacitors
Circuit Protection
TVS & Zener Diodes
Inductors
Antennas
Interconnect

Power Supply & Conversion
Renewable Energy
Process Control
Instrumentation
Motor Drives
Test Equipment / Data Acquisition
Battery Chargers / Battery Packs
Utility Meters/Smart Energy
Traction Motors
Inductive Heating
Lighting (incl. Ballasts)
Temperature & PID Controllers
PIR and Smoke Detectors
Keyless Entry / Keypads
CCTV Surveillance
Barcode Scanners/POS Systems

ABOUT AVX

AVX is a worldwide leading supplier of passive electronic components, connectors, passive and active antennas, sensors and control units. AVX offers a wide range of components manufactured to the highest quality and reliability standards.

Our products include ceramic, solid electrolytic and film capacitors, pulse supercapacitors, varistors, thermistors, inductors, diodes, antennas, connectors, sensors and control units.

Our worldwide manufacturing capability includes facilities located in seventeen countries on four continents, allowing us to continue meeting customer needs on a global basis.

AVX is committed to supporting the needs of its customers for applications today and in the future. Together with continuous quality improvement process, AVX components provide reliable solutions for industrial application needs.

As a technology leader, AVX will continue to add to its product portfolio on a regular basis. Details of new devices being offered and their specifications will be shown on the AVX website, www.avx.com
**NIOBIUM OXIDE CAPACITORS**

**OxiCap®** offers superior reliability with the same form, case size, and technical performance as standard tantalum capacitors. OxiCap® offers non-burn and non smoke safety technology, more resistance to overvoltage breakdown, and lower recommended derating.

**FILM CAPACITORS**

**FILM CHIP**
The self healing property of film dielectric provides an open failure mode capacitor with excellent reliability. The intrinsic characteristic of film provides a capacitor which exhibits low DC Bias, no piezo effect and low ESR / ESL and dissipation factor with excellent thermal behavior and thermal shock resistance.

**MEDIUM POWER**
Medium power film capacitors are used for DC & AC filtering, protection, discharge and tuning. Parts offer high rms current, high temperature up to 105°C and use dry segmented metallization for controlled self-healing. Parts are qualified to the highest International Railway Industry Standard (IRIS).

**HIGH POWER**
High power film capacitors are used for DC filtering and discharge applications. Parts offer high peak current, high energy options and low ESR / ESL compared to other technologies. Parts are impregnated with vegetable oil and incorporate controlled self-healing technology. Parts are qualified to the highest International Railway Industry Standard (IRIS).

**SUPERCAPACITORS**

**BESTCAP®**
BestCap® double layer electrochemical capacitors provide unique combination of characteristics, particularly very high energy, very high pulse power and capacitance densities. Parts are non polar, offer minimum capacitance loss for short duration pulses, low ESR, high reliability and long life.

**CYLINDRICAL SUPERCAPACITORS**
The new SCC and SCM series of cylindrical electrochemical double-layer capacitors offers excellent pulse power handling characteristics based on the combination of very high capacitance and very low ESR. Used by themselves or in conjunction with primary or secondary batteries, they provide extended back up time, longer battery life, and provide instantaneous power pulses as needed. Offers great solutions to Hold Up, Energy Harvesting, and Pulse Power Applications.

**PRIZMACAP™**
Ultra-low profile (0.5mm), double layer electrochemical capacitor with high power pulse characteristics thanks to very high capacitance and very low ESR in the milli-ohm range. Parts offer high power pulse characteristics, very high capacitance, low ESR, high reliability and long life.

**CIRCUIT PROTECTION**

**MULTILAYER VARISTORS**
Varistors provide reliable bi-directional circuit protection from voltage transients caused by ESD, inductive switching, lighting etc. Parts offer multiple strike capability, high reliability and also provide EMI/RFI filtering in the off-state. Available in wide range of components to suit various application needs - from high energy to low capacitance or ultra-low leakage.

**NTC THERMISTORS**
NTC Thermistors are widely used for temperature measurement or temperature compensation. Parts offer fast thermal response, excellent reliability in SMT, leaded and leadless configuration. High accuracy series available with tolerances from ±1%.
CERAMIC CAPACITORS

SMT CERAMIC CAPACITORS
Ceramic capacitors exhibit low ESR / ESL and excellent EMI filtering capabilities. NP0 parts are suitable for use in MHz range with very stable characteristics. X7R/X5R parts are suitable for use in general kHz range. High temperature dielectric parts are suitable for +150/250°C applications.

FLEXITERM® AND FLEXISAFE CAPACITORS
FLEXITERM® flexible termination technology for ceramic capacitors provides superior resistance to mechanical and thermal stress and is available in a number of ranges. FLEXISAFE capacitors are designed specifically for safety critical applications utilizing FLEXITERM® layer in conjunction with the cascade design structure to provide components with an industry leading set of safety features.

ESD SAFE™ CAPACITORS
The ESD-Safe™ series is an enhanced MLC capacitor with X7R dielectric designed specifically for general ESD protection. Capacitors are utilized for ESD protection of I/O gates and could be used on nearly every pin of an electronic module. Their use averages the voltage that the wiring harness can be charged to and the module voltage.

LOW INDUCTANCE CAPACITORS
The low inductance and high performance decoupling series are designed for operating frequencies of 300MHz or greater, high speed buses and low voltages. The lower the ESL of a capacitor, the faster that energy can be transferred to a load.

LEADED CERAMIC CAPACITORS
Designed for use in applications where leaded component is preferred, and available in radial and axial epoxy or plastic mold encapsulation for harsh environment. Parts offer low ESR / ESL and excellent reliability, available with NP0, X7R and X8R/X8L dielectrics.

SMPS MLC CAPACITORS
Stacked ceramic capacitors in a number of standard & bespoke packages. Parts offer higher current handling capabilities, excellent high frequency performance and low ESR/ESL compared to other technologies. Parts are suitable for harsh vibration and high temperature applications.

TANTALUM & POLYMER CAPACITORS

SMT SOLID ELECTROLYTIC CAPACITORS
High capacitance in small case size and are available as standard MnO₂ chip, Multianode or with Polymer cathode. Wide temperature range, long operational life and high reliability. Excellent resistance against thermo-mechanical shocks, no piezo effect and low ESR, polymer cathode parts offer lowest ESR and benign failure mode.

LEADED TANTALUM
Tantalum capacitors with dipped resin encapsulation and radial lead wire terminations for through-hole assembly. Low leakage current, very small physical sizes and excellent temperature stability.

WET AND HERMETIC SOLID CAPACITORS
Wet tantalum and solid hermetic capacitors offer higher capacitance, voltage and temperature capability than SMD solid tantalum. Hermetically-sealed and provided in axial-leded, SMD and module configurations. SMD hermetic are available in Polymer and MnO₂ technology. High reliability and life time, up to space qualification. Super capacitor offer high capacitance (up to 150mF) for temperatures up to 125°C. High reliability, low DCL and are suitable for automatic mounting and soldering.

TANTALUM MICROCHIP
Solid tantalum electrolytic capacitors are conformal coated chip capacitors with very high volumetric efficiency and industrial smallest SMD case size down to 0201 and with low profile options below 1mm. Parts have no piezo effect and have high reliability.
INDUCTORS

POWER INDUCTORS
Surface mount power inductors for applications ranging from power supply to power converters. Core types include ferrite and pressed iron powder with topologies including: non-shielded, shielded, pressed iron powder, ferrite coated and wirewound chip inductors.

Oper. Temp.: -40ºC to +85/105/125/155ºC
Inductance: 0.1 – 10,000µH
Tolerance: ±5% to ±30%
Current: 0.02 – 120A

RF INDUCTORS
Surface mount inductors designed for operating in the RF/Microwave frequency range. Technologies include MLO™, Thin Film, Air Core, Wire Wound Ceramic and Multilayer Ceramic. Parts offer high Q, high current capability, excellent SRF and excellent reliability.

Oper. Temp.: -55/-40ºC to +125ºC
Inductance: 0.3 – 15,000µH
Tolerance: +/-0.05mH to ±20%

DIODES

GIGUARD
Utilizing the latest in TVS Technology combined with a unique leadless package, the new GiGuard series of ESD Suppression Diodes offers Clamping Voltages below 12v and cap values as low as 0.3pF. This combination of excellence both protects sensitive ICs during ESD events and preserves the integrity of the protected high speed signals. The GG series fits perfectly onto the same PCB solder pads as standard EIA 0201/0402 components.

Oper. Temp.: -55ºC to +125ºC
Case Size: 0201, 0402
Voltage: 5 – 6.5V
Capacitance: 0.3pF to 17pF

TVS DIODES
Bi-directional and uni-directional TVS diodes in industry standard SMAJ (400W), SMBJ (600W) and SMCJ (1500W) sizes. Parts offer low leakage, flat camping and are halogen free with lead-free termination.

Oper. Temp.: -55ºC to +150ºC
Case Size: SMA, SMB, SMC
Voltage: 5 – 440V
Power: 400 – 1500W

SCHOTTKY DIODES
Schottky rectifier diodes offer unique lead-less chip packaging technology with top-bottom symmetry for fewer mounting problems, better heat transfer and current handling capability (compared to SOD devices). Parts offer low forward voltage, high current capability and low power loss/high efficiency.

Oper. Temp.: -55 to +125ºC
Case Size: 0603 – 3220
Max Reverse Voltage: 20 – 200V
Max Forward Current: 0.1 – 8A

ANTENNAS

ON BOARD
Standard SMT antennas using different technologies for easy implementation and fast time-to-market. Ceramic, PCB based, stamped metal, patch.

Bands: GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G
Frequency: 433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz

OFF BOARD
Standard antennas using different technologies for easy implementation and fast time-to-market. FPC and PCB with cable. Different connectors: w.fl or u.fl compatible, SMA, MMCX.

Bands: GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G
Frequency: 433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz

EXTERNAL

Bands: GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G
Frequency: 433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz

CUSTOMER SPECIFIC
Custom antennas in different manufacturing technologies: LDS, two-shot molding, insert molding. Smart antennas for high performance applications Active Steering Antenna technology embedded in LoRa module. Testing services: simulations and measurements in anechoic chambers and test houses Consulting services: RF characterization, system optimization.

Bands: GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G
Frequency: 433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz
## CONNECTORS

### WIRE TO BOARD: INSULATION DISPLACEMENT
Parts provide discrete wire-to-board connections for power, ground and leaded devices/components. Accept solid or stranded wires. Feature high performance phosphor bronze contacts. Parts meet automotive levels of temperature shock and vibration and can be potted or over molded. Parts are UL tested and certified.

- **Oper. Temp:** -40°C to +125°C
- **Positions:** 1–4
- **Wire Gauge:** 12 – 28AWG
- **Current Rating:** 1 – 15A
- **Voltage Rating:** 150 – 600VAC

### WIRE TO BOARD: POKE HOME
Parts provide discrete wire-to-board connections for power, ground and leaded devices/components. Accept solid or stranded wires. Feature high performance phosphor bronze contacts and high spring force dual beam contacts with simple wire insertion (strip and insert) and removal (twist and pull). Parts are UL tested and certified.

- **Oper. Temp:** -40°C to +125°C
- **Positions:** 1 – 8
- **Wire Gauge:** 18 – 26AWG
- **Current Rating:** 5 – 8A
- **Voltage Rating:** 200 – 300VAC

### WIRE TO BOARD: STRIPT™ CONTACTS
Parts provide discrete wire-to-board connections for power, ground and leaded devices/components. Accept solid or stranded wires. Feature high performance phosphor bronze contacts and high spring force dual beam contacts with simple wire insertion (strip and insert) and removal (twist and pull). Parts are UL tested and certified.

- **Oper. Temp:** -40°C to +125°C
- **Positions:** 1
- **Wire Gauge:** 12 – 28AWG
- **Current Rating:** 4 – 20A
- **Voltage Rating:** 300VAC

### BOARD TO BOARD: COMPRESSION
Broad range of 1pc BTB mezzanine stacking configurations along with robust battery connectors (5000 mating cycles). Parts feature high performance beryllium copper contacts, large “Z” axis tolerance and increased XY mating tolerances for staggered connectors. Stacking heights start at 0.4mm for signal level connectors and at 1.0mm for battery connectors.

- **Oper. Temp:** -40°C to +125°C
- **Positions:** 2 – 10
- **Pitch:** 2.0mm
- **Current Rating:** 2 – 3A
- **Voltage Rating:** 125VAC; 300VAC

### BOARD TO BOARD: 1-PIECE & 2-PIECE
1-Piece card edge, compression connectors, and individual contacts are available for a variety of signal and power requirements. 2-Piece connectors and individual contacts provide solutions for perpendicular, parallel and coplanar applications. Features include ultra small pitch, low stacking heights and a broad range of pin counts.

- **Oper. Temp:** -40°C to +125°C
- **Positions:** 2 – 10
- **Pitch:** 2.0mm; 3.0mm
- **Current Rating:** 2 – 5A
- **Voltage Rating:** 125VAC; 300VAC

### WIRE TO WIRE: POKE HOME
These connectors are based on industry proven IDC, Crimped, and Poke-Home contact technologies. Some of the typical features include latching, water resistant sealing, and branch and junction box connections.

- **Oper. Temp:** -40°C to +125/130°C
- **Positions:** 1 – 8
- **Wire Gauge:** 12 – 26AWG
- **Current Rating:** 2 – 12A
- **Voltage Rating:** 300 – 600VAC

### SPECIALTY
AVX offers wide range of additional connector types for various industrial applications such as:
- Card edge
- Memory card & SIM connectors
- Battery connectors
- Input/Output
- 1-piece compression
- Shunt connectors
- DIN

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**NORTH AMERICA**
Tel: +1 864-967-2150

**CENTRAL AMERICA**
Tel: +55 11-46881960

**EUROPE**
Tel: +44 1276-697000

**ASIA**
Tel: +65 6286-7555

**JAPAN**
Tel: +81 740-321250

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