CONSUMER APPLICATIONS

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

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, filters, 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 consumer 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

<table>
<thead>
<tr>
<th>Computers and Consoles</th>
<th>SMT Ceramic Capacitors</th>
<th>Capacitor Array</th>
<th>Low Inductance</th>
<th>Feedthru Capacitors</th>
<th>SMT Solid Electrolytic</th>
<th>Tantalum Microchip</th>
<th>Niobium Oxide</th>
<th>Chip Film Capacitors</th>
<th>Pulse Super-Capacitors</th>
<th>RF Products</th>
<th>Circuit Protection</th>
<th>TVS &amp; Zener Diodes</th>
<th>Inductors</th>
<th>Interconnect</th>
<th>Antennas</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV &amp; Multimedia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smartphones</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Toys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wearables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet of Things (IoT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Automation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Goods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating, Ventilation, &amp; Air Conditioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Detectors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security - CCTV, Alarms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CONSUMER PRODUCT SELECTION GUIDE

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.

- Oper. Temp: -55°C to +125/150/250°C
- Case Size: 01005 – 2225
- Voltage: 4 – 5000V
- Capacitance: 0.1pF – 100µF

CAPACITOR ARRAY
Capacitor 2 and 4-element arrays offer designers the opportunity to lower placement costs, increase assembly line output through lower component count per board and to reduce real estate requirements. Available with NP0 and X7R dielectric.

- Oper. Temp: -55°C to +125°C
- Case Size: 0508 – 612
- Voltage: 6V – 100V
- Capacitance: 1.0pF – 270nF

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.

- Oper. Temp: -55°C to +125/150/250°C
- Case Size: 1206 – 6054
- Voltage: 16V – 630V
- Capacitance: 1nF – 4.7µF

FEEDTHRU CAPACITORS
Feedthru capacitors are ideal choices for EMI suppression, broadband I/O filtering, or Vcc power line conditioning. The unique construction of a feedthru capacitor provides low parallel inductance and offers excellent decoupling capability for all high di/dt environments and provides significant noise reduction in digital circuits to <5 GHz.

- Oper. Temp: -55°C to +125°C
- Case Size: 0805 – 1206
- Voltage: 50V – 100V
- Capacitance: 22pF – 47nF

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.

- Oper. Temp: -55°C to +105/125/175/200°C
- Case Size: 0603 – 2924
- Voltage: 2.5V – 125V
- Capacitance: 0.1µF – 3300µF

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.

- Oper. Temp: -55°C to +125°C
- Case Size: 0402 – 1210
- Voltage: 2V – 35V
- Capacitance: 0.1µF – 220µF

NIOBIUM OXIDE CAPACITORS

NIODIUM 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.

- Oper. Temp: -55°C to +105/125°C
- Case Size: 1206 – 2924
- Voltage: 1.8V – 10V
- Capacitance: 2.2µF – 1000µF

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.

- Oper. Temp: -55°C to +125°C
- Case Size: 1206 – 6054
- Voltage: 16V – 630V
- Capacitance: 1nF – 4.7µF
### SUPERCAPACITORS

| BESTCAP® | Oper. Temp: -20°C to +70°C  
|          | -40°C to +75°C  
|          | Voltage: 3.6V – 20V  
|          | Capacitance: 4.7mF – 1F  

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 | Oper. Temp: -40°C to +85°C  
|                            | Voltage: 2.3 – 5.4V  
|                            | Capacitance: 0.47F – 3000F  

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™ | Oper. Temp: -55°C to +90°C  
|            | Voltage: 1.1V – 4.2V  
|            | Capacitance: 1F – 500F  

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.

### RF PRODUCTS

| RF CAPACITORS | Oper. Temp: -55°C to +125°C  
|               | Case Size: 01005 – 1210  
|               | Voltage: 10V – 500V  
|               | Capacitance: 0.1pF – 5100pF  

RF/Microwave SMD capacitors provide optimal performance in RF and microwave frequencies, high RF power, and optical applications. Technologies include: High Q/low ESR multilayer ceramic, Thin Film and Multilayer Organic.

| RF INDUCTORS | Oper. Temp: -55/-40°C to +125°C  
|             | Inductance: 0.3 – 15,000nH  
|             | Tolerance: +/-0.05nH to ±20%  

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.

| RF FILTERS | Oper. Temp: -55/-40°C to +85°C  
|            | Filtering Frequency: 500kHz – 26GHz  

Low Pass, Band Pass, High Pass and Broadband Filters for frequencies from 500kHz to 26 GHz. Thin Film and MLO™ technology filters suitable for WiMAX, WiBro, Mobile, GPS and W-LAN applications. Low profile MLO™ Diplexers for W/CDMA, GSM, 4G, Bluetooth, W-LAN, GPS.

| RF COUPLERS | Oper. Temp: -55/-40°C to +85°C  
|            | Filtering Frequency: 400MHz – 6GHz  

High directivity and 3dB 90° couplers based on thin-film and multilayer organic technology with excellent high frequency performance, offering high directivity, low insertion loss, high isolation and rugged construction for reliable automatic assembly. Used for balanced amplifiers and signal distribution in wireless communications.

### CIRCUIT PROTECTION

| MULTILAYER VARISTORS | Oper. Temp: -55°C to +125/150/175°C  
|                      | Case Size: 0201 – 3220, Radial, Axial  
|                      | Voltage: 3.0 – 385V  
|                      | Energy: up to 13.8J  

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 | Oper. Temp: -55°C to +150°C  
|                 | Case Size: 0603 – 1206, Radial  
|                 | Resistance: 100 – 1MΩ  
|                 | B25/85: 3250 – 4840K  

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%.

| FUSES | Oper. Temp: -55°C to +125°C  
|       | Case Size: 0402 – 1206  
|       | Voltage: 16V – 63V  
|       | Current Rating: 0.05 – 5A  

The Accu-Guard® series of fast acting fuses is based on thin-film techniques. This technology provides a level of control on the component electrical and physical characteristics that is generally not possible with standard fuse technologies.
### 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.

- **Operating Temp:** -40°C to +85/105/125/155°C
- **Inductance:** 0.1 – 10,000µH
- **Tolerance:** ±5% to ±30%
- **Current:** 0.02 – 120A

### 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.

- **Operating 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.

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

#### Wire to Board: Strip™ 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.

- **Operating 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.

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

#### Board to Board: 1-Piece Card Edge
Broadeest offering in low pin count perpendicular and coplanar mating configurations (linear, top entry, inverted thru board) with high spring force phosphor bronze single and double sided contacts. Gold and tin plating options, keyed or polarized for proper alignment/mating. UL tested and certified.

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

#### Board to Board: 2-Piece
Board-to-Board Interconnect system allows two PCBs to be mated end-to-end creating strips of LED lighting. Designed for the Solid State Lighting (SSL) requiring coplanar or vertical PCB mating. High reliability with gold plated beryllium copper contacts. Available also as Strip™ contacts. UL tested and certified.

- **Operating Temp:** -40°C to +125°C
- **Positions:** 2 – 6
- **Pitch:** 3.0mm
- **Current Rating:** 5A
- **Voltage Rating:** 125VAC

#### 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.

- **Operating 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
## 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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oper. Temp.</td>
<td>-55ºC to +125ºC</td>
</tr>
<tr>
<td>Case Size</td>
<td>0201, 0402</td>
</tr>
<tr>
<td>Voltage</td>
<td>5 – 6.5V</td>
</tr>
<tr>
<td>Capacitance</td>
<td>0.3pF to 17pF</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oper. Temp.</td>
<td>-55ºC to +150ºC</td>
</tr>
<tr>
<td>Case Size</td>
<td>SMA, SMB, SMC</td>
</tr>
<tr>
<td>Voltage</td>
<td>5 – 440V</td>
</tr>
<tr>
<td>Power</td>
<td>400 – 1500W</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oper. Temp.</td>
<td>-55 to +125ºC</td>
</tr>
<tr>
<td>Case Size</td>
<td>0603 – 3220</td>
</tr>
<tr>
<td>Max Reverse Voltage</td>
<td>20 – 200V</td>
</tr>
<tr>
<td>Max Forward Current</td>
<td>0.1 – 8A</td>
</tr>
</tbody>
</table>

## ANTENNAS

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

**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.

**EXTERNAL**

**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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bands</td>
<td>GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G</td>
</tr>
<tr>
<td>Frequency</td>
<td>433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz</td>
</tr>
<tr>
<td>Bands</td>
<td>GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G</td>
</tr>
<tr>
<td>Frequency</td>
<td>433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz</td>
</tr>
<tr>
<td>Bands</td>
<td>GSM, 3G, LTE / 4G, WiFi, BT, GNSS ISM LPWAN, 5G</td>
</tr>
<tr>
<td>Frequency</td>
<td>433, 868 MHz; 700 MHz–2.7 GHz; 5.1–5.9 GHz; 20–67 GHz</td>
</tr>
</tbody>
</table>

## Contact Information

**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

FOLLOW US: [Twitter] [Facebook] [LinkedIn]

VISIT US AT: WWW.AVX.COM