

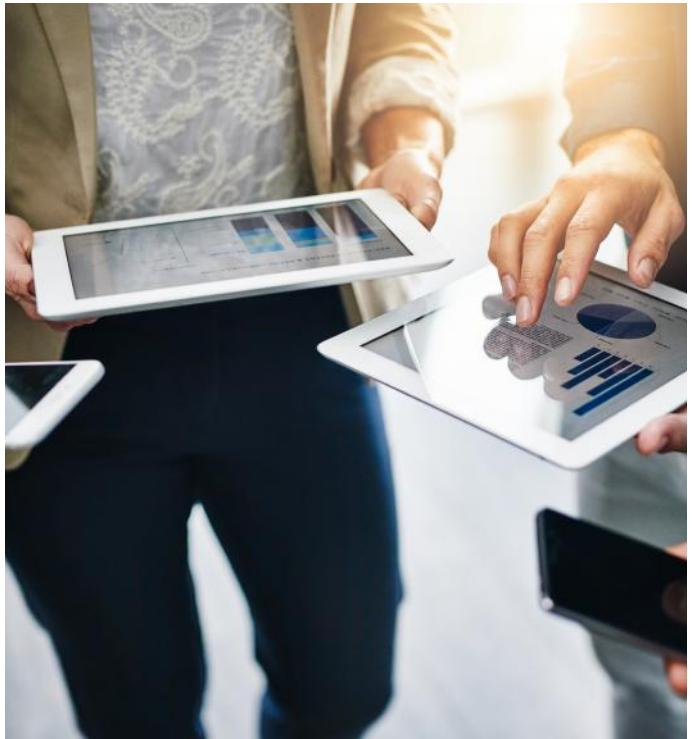


CONSUMER APPLICATIONS GUIDE

ANTENNAS | CERAMIC CAPACITORS | CONNECTORS | CRYSTALS | DIODES | FILM CAPACITORS
| INDUCTORS | MULTILAYER VARISTORS | NTC THERMISTORS | POLYMER CAPACITORS | PULSE
SUPERCAPACITOR | RF PRODUCTS | TANTALUM CAPACITORS



OVERVIEW



CONSUMER PRODUCT SELECTION GUIDE



ANTENNAS



ON BOARD

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

Bands	Frequency
GSM, 3G, LTE /4G, WiFi, BT, GNSS ISM LPWAN, 5G	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.

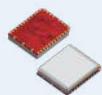
Bands	Frequency
GSM, 3G, LTE /4G, WiFi, BT, GNSS ISM LPWAN, 5G	433, 868 MHz 700 MHz – 2.7 GHz 5.1 – 5.9 GHz; 20 – 67 GHz



EXTERNAL

Standard and custom external antennas covering a wide range of applications. Cabled, direct connection, screw mounted, magnet mounted. Indoors and outdoors use. Ruggedized mechanics for critical environment.

Bands	Frequency
GSM, 3G, LTE /4G, WiFi, BT, GNSS ISM LPWAN, 5G	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.

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

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.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125/150/250 °C	01005 - 3640	4V - 5000V	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.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125 °C	0508 - 612	6V - 100V	0.1pF - 270nF



LOW INDUCTANCE CAPACITORS

The low inductance and 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 the energy can be transferred to a load.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +85/105/125 °C	0204 - 0612	4V - 50V	1nF - 3.3µF



FEEDTHRU CAPACITORS

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

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

CIRCUIT PROTECTION



MULTILAYER VARISTORS

Varistors provide reliable bi-dimensional circuit protection from voltage transients caused by ESD, inductive switching, lighting, etc. Parts offer multiples 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.

Op. Temp.	Case Size	Voltage	Energy
-55 °C to +125/150/175 °C	0201 - 3220, Radial, Axial	3.0 - 385V	up to 13.8J



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%.

Op. Temp.	Case Size	Resistance	B25/55
-55 °C to +150 °C	0603 - 1206, Radial	10Ω - 1MΩ	3250 - 4840K



FUSES

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.

Op. Temp.	Case Size	Voltage	Current Rating
-55 °C to +125 °C	0402 - 1206	16 - 63V	0.05 - 5A

CONSUMER PRODUCT SELECTION GUIDE



CONNECTORS



BOARD-TO-BOARD

1-Piece connector include compression stacking with robust contacts and card edge connectors for perpendicular and coplanar mating and industry standard PCI Express® M.2.
2-Piece connector offer wide variety options for vertical or parallel connection, low profile, and space-saving types with wide range of stacking heights to specialized solutions for end to end mating of PCB boards designed for the LED lighting strips.

Op. Temp.	Positions	Pitch	Current Rating	Voltage Rating
+85 / 105 / 125°C	1 - 140	0.35 - 4mm	0.3 - 3A	50 - 300VAC



WIRE-TO-BOARD

1-Piece interconnect system provides discrete wire-to-board connections for power, ground and leaded devices. Includes popular Insulation Displacement with excellent shock and vibration resistance, Poke-Home and Stript (naked) Contacts with simple wire insertion.
2-Piece interconnect system provides high density and multipurpose solution including 2.54mm pitch and miniature 2-pin wire connectors.

Op. Temp.	Positions	Wire Gauge	Current Rating	Voltage Rating
+85 / 105 / 125°C	1 - 40	12 - 32AWG	1 - 20A	30 - 600VAC



WIRE-TO-WIRE

1-Piece discrete through wire and junction box connectors based on industry proven IDC, Crimped and Poke-Home Contact technologies.
2-Piece connector provides high density and multipurpose solution with 2.54mm pitch.

Op. Temp.	Positions	Wire Gauge	Current Rating	Voltage Rating
+125 / 130 °C	1 - 8	12 - 26AWG	3 - 15A	300 - 600VAC



FFC/FPC

Compact, space saving connectors with narrow-pitch and low-profile for products requiring high-speed data transmission. Available in wide variety of types including one-touch lock, sliding ZIF or Non-ZIF.

Op. Temp.	Positions	Pitch
+85 / 105 / 125°C	3 - 100	0.2 - 12mm



SPECIALTY

KYOCERA AVX offers wide range of additional connector types for various applications such as:
Memory Card & SIM | Input/Output | Shunt Connectors | DIN | Single Pair Ethernet | RF Connectors | Branch Connectors and more.

CRYSTALS

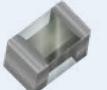


CRYSTALS

KAVX is a leading manufacturer in developing cutting edge crystal products, offering ultra miniature, high accuracy, and wide operating temperature range devices with high frequency options and a variety of output types. These products include crystal units, clock oscillators, voltage controlled crystal oscillators, and temperature compensated crystal oscillators.

Clock Osc.	Crystal Units	VCXO	TCXO
1.5 - 80 MHz	8 - 60 MHz	8 - 60 MHz	8 - 60 MHz

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.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125 °C	0201, 0402	5 - 6.5V	0.3pF - 17pF



TV 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.

Op. Temp.	Case Size	Voltage	Power
-55 °C to +150 °C	SMA, SMB, SMC	5 - 440 V	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.

Op. Temp.	Case Size	Max Reverse Voltage	Max Forward Current
-55 °C to +125 °C	0603 - 3220	20V - 200V	0.1 - 100A

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.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125 °C	1206 - 6054	16V - 630V	1nF - 4.7µF

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.

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

NIOBIUM OXIDE CAPACITORS



NIOBIUM OXIDE CAPACITORS

OxiCap® is an alternative technology to tantalum ones. The capacitors are made from oxide niobium materials and 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, high resistance to overvoltage breakdown.

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

RF PRODUCTS



RF CAPACITORS

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.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125 °C	01005 - 1210	10 - 500 V	0.1pF - 5100pF



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, excellent SRF and excellent reliability.

Op. Temp.	Inductance	Tolerance
-55/40 °C to +125 °C	0.3 - 15,000nH	+/-0.05nH to ±20%



RF FILTERS

Low Pass, Band Pass, High Pass, Broadband, and SAW Filters for frequencies from 500 kHz to 26 GHz. Thin Film and MLO™ technology filters suitable for WiMAX, WiBro, Mobile, GPS, and WLAN applications. Low profile MLO™ Dplexers for W/CDMA, GSM, 4G, Bluetooth WLAN, GPS, and SAW Duplexers and Quadplexers for 4G and 5G.

Operating Temperature	Filtering Frequency
-55/-40 °C to +85 °C	500kHz - 26GHz



RF COUPLERS

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 balance amplifiers and signal distribution in wireless communications.

Operating Temperature	Filtering Frequency
-55/-40 °C to +85 °C	40MHz - 6GHz

SUPERCAPACITORS



CYLINDRICAL SUPERCAPACITORS

The 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.

Op. Temp.	Voltage	Capacitance
-40 to +85 °C	2.3V - 5.4V	0.47F - 3000F

CONSUMER PRODUCT SELECTION GUIDE



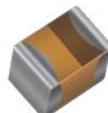
TANTALUM CAPACITORS CONTINUED



SMT SOLID ELECTROLYTIC CAPACITORS

High capacitance in small case size are available as standard MnO_2 chip or Multianode. Wide temperature range, long operational life, high reliability and stable electrical performance over lifetime. Excellent resistance against thermo-mechanical shocks, no piezo effect and low ESR.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +125/135/175/200 °C	0402 - 5831	2.5V - 50V	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 0402 and with low profile options below 0.5mm. Parts have no piezo effect and have high reliability.

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



POLYMER CAPACITORS

KYOCERA AVX Polymer technology targets general and specific market requirements with high capacitance in small and low profiles, lowest ESR, stability of performance in time.

Op. Temp.	Case Size	Voltage	Capacitance
-55 °C to +105/125/150 °C	0402 - 2924	2.5V - 125V	0.47µF - 1500µF

ABOUT KYOCERA AVX

KYOCERA AVX is a worldwide leading supplier of passive electronic components, connectors, passive and active antennas, sensors and control units. KYOCERA 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, crystals, 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. KYOCERA AVX is committed to supporting the needs of its customers for applications today and in the future. Together with continuous quality improvement process, KYOCERA AVX components provide reliable solutions for consumer application needs.

As a technology leader, KYOCERA 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 KYOCERA AVX website: WWW.KYOCERA-AVX.COM.

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

CENTRAL AMERICA
Tel: +55-11-46881960

EUROPE
Tel: +44-1276-697000

ASEAN / INDIA / TAIWAN
Tel: +65-6271-0500

CHINA
Tel: +86-21-5877-5366 *511

JAPAN
Tel: +81-75-604-3640

KOREA
Tel: +82-2-3463-3538

► WWW.KYOCERA-AVX.COM

KYOCERA
AVX

in f X i