

HIGH TEMPERATURE Products



TANTALUM CAPACITORS

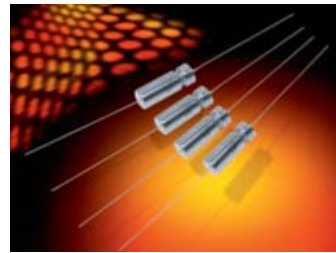
THJ and THJ+ Series Capacitors +175°C and +200°C



- 1st SMD +175°C tantalum capacitor on the market
- SMD = small size, fast pick & place ready
- Negative temperature operation (unlike wet electrolytics)
- 3x reflow +260°C and RoHS compliant
- Gold plated termination for hybrid assembly
- 200°C option available as THJ+ Series

Operating Temp	-55°C to +175°C (THJ) -55°C to +200°C (THJ+)
Case Size	1206 - 2917
Voltage	6.3V - 50V
Capacitance	0.1µF - 220µF

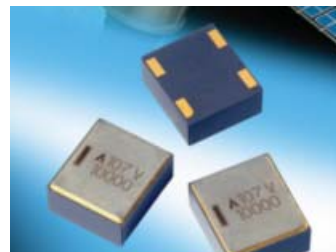
TWC-Y High Temperature Series Capacitors +200°C



- Hermetically Sealed Axial Leaded Tantalum Case
- Standard Case Sizes: T1-T4 per M39006
- Surge Resistant
- Meets Shock & Vibration per MIL-STD-202, Method 213 & 204
- Capable of Continuous Operation at 200°C with 60% rated voltage for most values rated for 500 hours

Operating Temp	-55°C to +200°C
Case	Axial T1 - T4
Voltage	6V - 125V
Capacitance	22µF - 560µF

THH Hermetic Series Capacitors +230°C

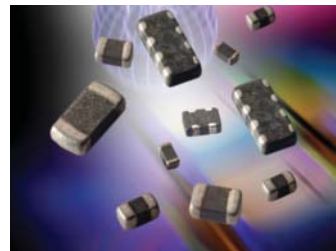


- Hermetically sealed SMD tantalum capacitors
- THH - Rated temperature up to 230°C
- Stability under humidity and ambient atmosphere
- Large case sizes including CTC-21D provide high capacitance values

Operating Temp	-55°C to +230°C
Case Size	9 (CTC-21D), I
Voltage	16V - 63V
Capacitance	3.3µF - 470µF

VARISTORS

High Temperature SMT Varistors +150°C



- Rated at 150°C
- ESD rating up to 25kV contact
- Low capacitance for capacitance sensitive applications - RF, antennas, data lines
- EMI/RFI attenuation in off state
- AEC Q200 qualified

Operating Temp	-55°C to +150°C
Case Size	0603 to 0612 4x array
Voltage	18V - 32V
Capacitance	10 - 22pF

High Temperature Radial Varistors +150°C



- Rated at 150°C
- Epoxy encapsulated for harsh environment
- EMI/RFI attenuation in off state
- Excellent current and energy handling
- AEC Q200 qualified

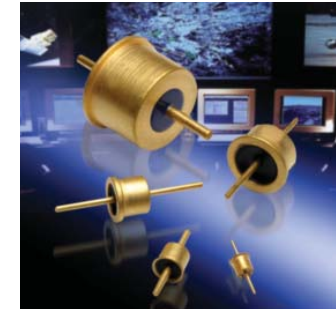
Operating Temp	-55°C to +150°C
Size	VR15, VR20
Voltage	14V - 48V
Energy	0.1 - 2.0J
Peak Current	30 - 120A

HIGH TEMPERATURE Products



EMI FILTERS

High Temperature Solder-in EMI Filters +200°C



- High temperature construction withstands 400°C installation temperatures
- Features rugged monolithic discoidal MIL-C-123 capacitor construction
- Glass hermetic seal on one end with epoxy seal on the opposite end
- High purity gold plating provides excellent solderability or compatibility with thermal and ultrasonic wire bonding
- Custom design available, multiple filter arrays

Operating Temp	-55°C to +200°C
Voltage	50V - 300V
Capacitance	10pF - 1.4mF

NTC THERMISTORS

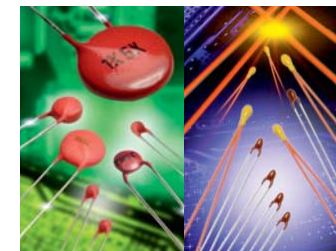
SMT NTC Thermistors +150°C



- Rated at 150°C
- Wide resistance range
- Fast thermal response
- Ni Barrier/100% Sn and PdPtAg termination options
- AEC Q200 qualified, custom hi-rel testing

Operating Temp	-55°C to +150°C
Case Size	0603 - 1206
Resistance	10Ω - 1MΩ
B value (25/85)	3250 - 4500K

Leaded and Leadless NTC Thermistors +150°C



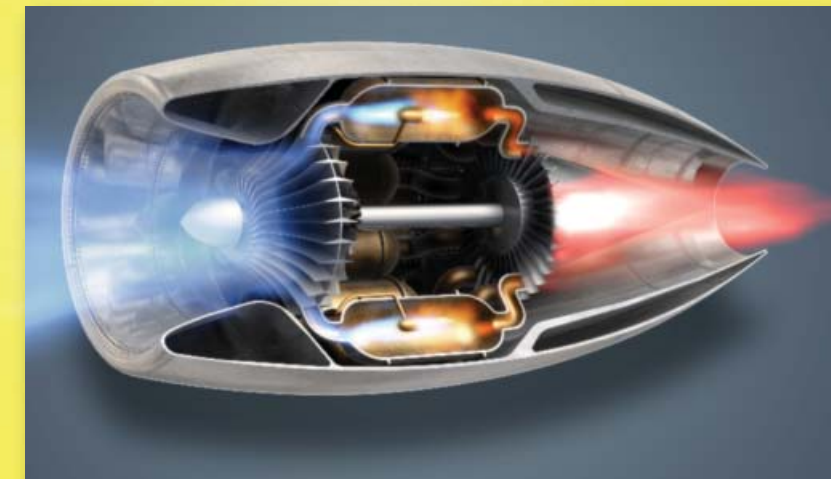
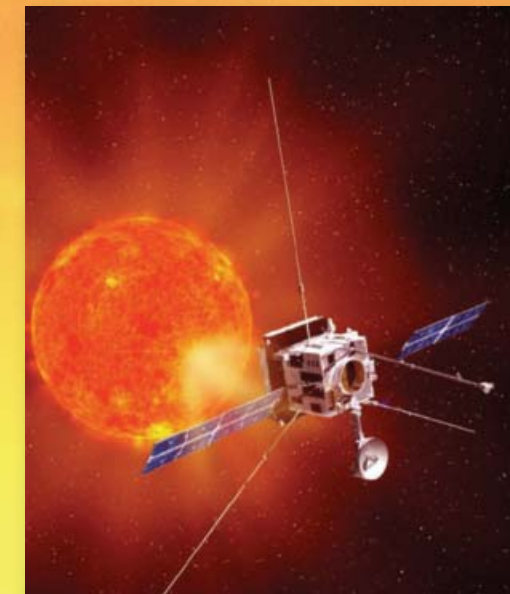
- Rated at 150°C
- Leaded disc or high accuracy bead NTC
- Various coating options and configurations
- Leadless options – metallized disc or high accuracy chip
- Fast response, excellent reliability
- AEC-Q200 qualified, custom hi-rel testing

Operating Temp	-55°C to +150°C
Head Size	2.4mm - 9mm
Resistance	68Ω - 1MΩ
B value (25/85)	3250 - 4840K
Tolerance	From +/-1%

© AVX Corporation

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.

AMERICAS	EUROPE	ASIA-PACIFIC	ASIA-KED
AVX Greenville, SC 864-967-2150	AVX Limited, England +44-1276-697000	AVX/Kyocera (S) Pte Ltd., Singapore +65-6286-7555	KYOCERA Electronic Devices +852-2363-3303
AVX Northwest, WA 360-699-8746	AVX S.A.S., France +33-1-69-18-46-00	AVX/Kyocera, Asia, Ltd., Hong Kong +852-2363-3303	KED Hong Kong Ltd. +852-2305-1080/1223
AVX Midwest, IN 317-861-9184	AVX GmbH, Germany +49-0811-95949-0	AVX/Kyocera Yuhon Hoesa, South Korea +82-2785-6504	KED Hong Kong Ltd. Shenzhen +86-755-3398-9600
AVX Mid/Pacific, CA 408-988-4900	AVX SRL, Italy +39-02-614-571	AVX/Kyocera HK Ltd., Taiwan +886-2-2656-0258	KED Company Ltd. Shanghai +86-21-3255-1833
AVX Northeast, MA 617-479-0345	AVX Czech Republic +420-57-57-57-521	AVX/Kyocera (M) Sdn Bhd, Malaysia +60-4228-1190	KED Hong Kong Ltd. Beijing +86-10-5869-4655
AVX Southwest, CA 949-859-9509	AVX/ELCO UK +44-1638-675000	AVX/Kyocera International Trading Co. Ltd., Shanghai +86-21-3256-1933	KED Taiwan Ltd. +886-2-2950-0268
AVX Canada 905-238-3151	ELCO Europe GmbH +49-2741-299-0	AVX/Kyocera Asia Ltd., Shenzhen +86-755-3336-0615	KED Korea Yuhon Hoesa, South Korea +82-2-783-3604/6126
AVX South America +55-11-4688-1960	AVX S.A., Spain +34-91-63-97-197	AVX/Kyocera International Trading Co. Ltd., Beijing +86-10-6588-3528	KED (S) Pte Ltd. Singapore +65-6509-0328
	AVX Benelux +31-187-489-337	AVX/Kyocera India Liaison Office +91-80-6450-0715	Kyocera Corporation - Japan +81-75-604-3449



AVX PRODUCT GUIDE FOR HIGH TEMPERATURE APPLICATIONS

RELIABLE SOLUTIONS FOR DEMANDING APPLICATIONS

CERAMIC CAPACITORS | TANTALUM CAPACITORS |
EMI FILTERS | MULTILAYER VARISTORS | NTC THERMISTORS



HIGH TEMPERATURE

Product Ranges/Applications



ABOUT AVX

AVX is an industry leader in the manufacture and supply of Passive electronic components and Connectors. Our worldwide manufacturing capability includes facilities located in seventeen countries in four continents, allowing us to continue meeting customer needs on a global basis.

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

INNOVATIVE TECHNOLOGIES FOR DEMANDING APPLICATIONS

The company has over 30 years experience in producing industry-leading, high-reliability passive components, offering an expanding range of products including capacitors, filters, timing devices, connectors and circuit protection devices which have been designed to provide industry-leading performance and quality.

AVX currently has 11 factories in Europe and USA qualified to BS9100, IECQCECC, TS16949-209 and ISO 9001-2008 standards. The company also has a number of products qualified to AEC-Q200, COTS+, ESCC, SRC, MIL and DSCC drawings, as well as optional custom screening and test service capabilities.

PRODUCT RANGES

300°C	Ceramic (Chip/Stacked)	In Development
250°C	Ceramic (Chip) – AT Ceramic (Custom Modules)	Available
230°C	Solid Tantalum – THH	Available
200°C	Ceramic (Stacked) – SMX, SXP, XH (under range extension) Ceramic (Custom Modules) Wet Tantalum – TWC-Y (TWA-Y in development) Solid Tantalum – THJ+ EMI Filters – High Temperature Solder-in	Available
175°C	Solid Tantalum – THJ RF Ceramic Capacitors - AQ	Available
150°C	Ceramic (Chips/Leaded) – X8R, X8L Multilayer Varistors NTC Thermistors	Available

APPLICATIONS

These products have been designed for the most demanding applications, such as “down-hole” oil exploration, aerospace programs and “under-hood” electronics.

AUTOMOTIVE

- Under Hood
- Hybrid Electric Vehicles
- Engine Controls
- Sensors
- Timing Circuits

ENERGY

- Down-hole drilling
- Down-hole logging
- Seismic
- Geothermal
- Wind/Solar
- Sensors
- Industrial
- Timing Circuits

AVIONICS/SPACE

- Transducer
- Engine Controls
- Spacecraft
- Satellites
- Flap and Brake Controls
- Sensors / Timing

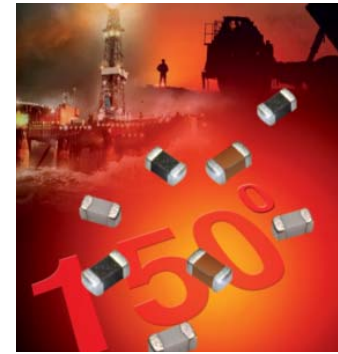
HIGH TEMPERATURE

Products



CERAMIC CAPACITORS

X8R/X8L Dielectric Surface Mount MLC Capacitors **+150°C**



- Designed for use in applications up to 150°C
- Excellent reliability compared to other capacitor technologies
- Low ESR / ESL compared to other technologies
- Tin solder finish
- FLEXITERM® available
- Epoxy termination for hybrid available
- Qualified to the highest automotive AEC-Q200 standards

Operating Temp	-55°C to +150°C
Case Size	0603 - 1206
Voltage	25 - 100V
Capacitance	330pF - 1µF

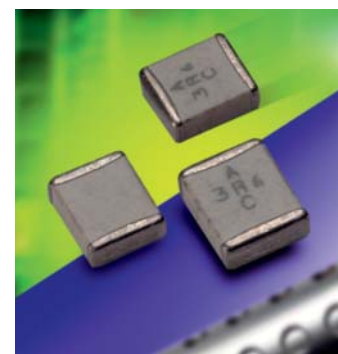
X8R Dielectric Leaded MLC Capacitors **+150°C**



- Designed for use in applications up to 150°C
- Excellent reliability compared to other capacitor technologies
- Low ESR / ESL compared to other technologies
- Radial and Axial epoxy encapsulated for harsh environment
- Qualified to the highest automotive AEC-Q200 standards

Operating Temp	-55°C to +150°C
Case	Radial, Axial
Voltage	50V, 100V
Capacitance	1000pF - 330nF

AQ Series SMT RF MLC Capacitors **+175°C**



- High current carrying capabilities
- High quality factors
- Very low ESR
- Very high series resonance;
- Excellent stability under stresses of changing voltage

Operating Temp	-55°C to +175°C
Case Size	0605 - 1210
Voltage	150V - 500V
Capacitance	0.1pF - 330pF

SMX Style Stacked MLC Capacitors **+200°C**



- Much lower ESR and lower losses
- Excellent capacitance retention with frequency
- Low ESR / ESL compared to other technologies
- Excellent high frequency performance
- Low DC leakage current
- Much higher current handling capabilities

Operating Temp	-55°C to +200°C
Case	SMX1 - 6
Voltage	25V - 500V
Capacitance	3900pF - 270µF

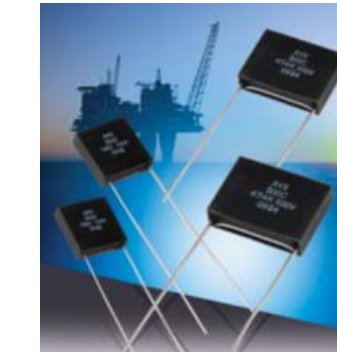
HIGH TEMPERATURE

Products



CERAMIC CAPACITORS

SXP Style SMPS MLC Capacitors **+200°C**



- Low ESR, low ESL
- Low DC leakage
- Excellent high frequency performance
- Ideally suited for high temperature applications up to 200°C
- Excellent mechanical protection suitable for extreme harsh environment

Operating Temp	-55°C to +200°C
Case	SXP1 - 4
Voltage	50 - 3000V
Capacitance	100pF - 12µF

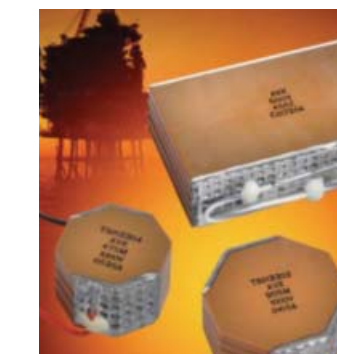
XH Series X9U X7R lead frame MLC Capacitors **+200°C**



- DIL, J type etc or customised lead frames offering thermo-mechanical stress reduction
- Screened at 2 x RV (50- 200 V) and 1.5 x RV (500 V) @ 200°C
- Cap change ±22% (-55°C) to ±56% (+200°C)
- High current handling capability
- Low ESR/ESL

Operating Temp	-55°C to +200°C
Case Size	CH71 - 94
Voltage	50V - 500V
Capacitance	0.82µF - 150 µF

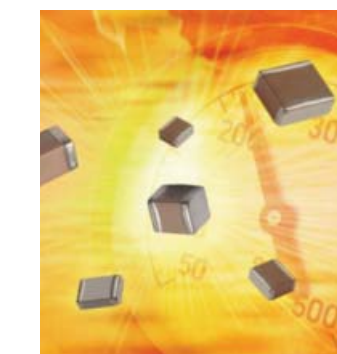
Custom Modules MLC Capacitors **+200°C to +250°C**



- Custom lead configurations
- Bespoke packaging options
- Temperature options up to +250°C
- Unique geometries
- Wide voltage and capacitance range
- Different dielectric options available

Operating Temp	-55°C to 250°C
Case Size	Custom
Voltage	50V - 500V
Capacitance	3900pF - 270µF

AT Series High Temp SMT MLC Capacitors **+250°C**



- High insulation resistance
- Very low ESR/ESL
- High volumetric efficiency
- Temperature Coef: COG(NPO), VHT(X7R)
- Life tested to 1,000 hours @ 200% rated voltage and +250°C

Operating Temp	-55°C to +250°C
Case Size	0805 to 2225
Voltage	16V - 25V
Capacitance	100pF - 1µF