

# AVX

A KYOCERA GROUP COMPANY

# & Circuit Protection

## Automotive Circuit Protection Products



[www.avx.com](http://www.avx.com)

## AVX introduces full line of Automotive Grade Circuit Protection Devices

Designed and manufactured with the highest standards for performance and reliability in TS qualified facilities. All products are AEC Q200 compliant. AVX has a long history of satisfying needs of the automotive sector. The new automotive series embraces that history to guarantee maintenance of high expectations by differentiating from the commercial grade product. The broad portfolio provides solutions for circuit protection needs in a large array of automotive applications.

	Safety	Body Electronics	Drive Train	Comfort & Convenience	Hybrid/Electric	Commercial Vehicle
<b>MULTILAYER VARISTORS</b>						
<b>TransGuard/ MultiGuard</b>	External Diagnostic Equipment	In Cabin Electronics, After Market Add Ons	External Diagnostic Equipment	Electric Mirror GPS Location System Electric Seat Controls Electric Window Controls	Plug in Charge Port Interfaces	External Diagnostic Equipment
<b>Automotive TransGuard Series</b>	TPMS TPS Traction Control Immobilizer Central Lock System Anti-Lock Brake System Bus Interface Protection	Electronic Control Unit HID Lighting Windshield Wipers Electric Windows LIN Communication Bus	Electronic Clutch Fuel Pump Gear Box Sensors ECU Power Steering Engine Cooling Fan Temperature Sensor Pressure Sensor Transmission Control Unit Bus Interface Protection	Electric Mirror GPS Location System Electric Seat Controls Bus Interface Protection	HEV Modules HEV Monitors GFI Bus Interface Protection	Load Dump Module Protection Bus Interface Protection
<b>Axial/Radial Leaded TransGuard</b>	DC Motor Turn Off Surge Suppression	DC Motor Turn Off Surge Suppression	DC Motor Turn Off Surge Suppression	DC Motor Turn Off Surge Suppression	HEV Relays and Disconnects	Inductive Load Suppression
<b>Miniature AC Varistor Series</b>		Transponders		Multiplex BUS System High Frequency Transmission Lines		
<b>AntennaGuard</b>	Sensors	High Voltage DC Data Lines Electronic Stability Control	Transmission Control Unit	Keyless Entry High Voltage DC Data Lines Firewire BUS Diagnostic Port Charge Port	Sensors, RF Links, Interfaces	Sensors
<b>Sub pF AntennaGuard</b>	Crash Avoidance Satellite Links	RF Circuits FlexRay Communication BUS	High Speed Communication Bus	GPS RF Circuits FlexRay RF Tolling		GPS Navigation Sensors
<b>Controlled Capacitance Series</b>	EMI TVS Module Control	EMI TVS Module Control	EMI TVS Module Control	EMI TVS Module Control	EMI TVS Module Control	EMI TVS Module Control
<b>CAN Series</b>	Bus Interface Protection	Body Control Module Lamp/LED Driver CAN Communication BUS	Motor Control Unit Transmission Control Unit	CANBUS Lamp/LED Driver LCD Module	Bus Interface Protection	Bus Interface Protection
<b>Hi-Temp Automotive Series</b>	Sensor Circuits	Underhood Modules	Turbo Charger		Power Conversion Interfaces	Underhood Modules
<b>Glass Encapsulated Automotive Series</b>	Airbag Seat Weight Sensor Electronic Power Assist Steering	Load Dump Applications Jump Start Applications Seat Weight Sensor Rain Sensor Light Sensor	Load Dump Applications Jump Start Applications Water Pump DC Motor	GPS Audio Entertainment	Regenerative Braking Electric Drive Engine Start/Stop Transition Circuitry	Load Dump Applications Jump Start Applications
<b>LCT TRANSIENT VOLTAGE SUPPRESSION</b>						
<b>TransFeed</b>	Crash Avoidance Circuit Interface EMI & TVS Control	LCD Dashboard Driver	Transmission Control Unit	PWM Noise Control, Interface TVS & EMI Control	TVS & EMI Filtering on High Power Drain Circuits	Programmable Agricultural Equipment GPS Tracking System
<b>LIGHTNING PROTECTION</b>						
<b>CapGuard</b>	Module ESD and EMC Control	Inductive Load Suppression	Power Distribution	Power Antenna Motor Noise Suppression	Start Stop Circuits, Relays, Safety Disconnects/Cut Offs	Inductive Dump Radiated Noise Attenuation
<b>THERMISTORS</b>						
<b>Leaded/SMT NTC</b>	TPMS	Alarm Electric Pump Module	Temperature Measurement Engine Management Automatic Transmission Coil Compensation Liquid Level Measurement	Temperature Control Sensors GPS Audio Compensation Air Conditioning Seat Heaters Outside Temperature	Battery Cell Temperature Monitoring, Power Electronics Temperature Monitoring	Instrumentation, Sensor and Power Electronic Temperature Sensing

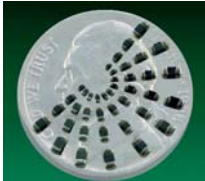
## MULTILAYER VARISTORS

### TransGuard®/MultiGuard Automotive Series VCAS



- AEC Q200 qualified
- High peak current and transient energy capability
- Off state EMI filter, on state transient protection
- 0402 to 1210 case size

### High Temperature Automotive Series VCAT/CANAT/VCAT06AG



- AEC Q200 qualified
- 150°C rated
- High reliability
- Low leakage current at rated temp/voltage
- Sub 1nS turn on

### Controlled Capacitance Automotive Series VCAC



- AEC Q200 qualified
- Targeted center frequency
- Low leakage, <math><10\mu\text{A}</math> at RV
- Reduces emissions from high speed ASIC
- Offered in E6 capacitance values

### CANbus Series CAN



- AEC Q200 qualified
- High ESD capability (25kV)
- High In Rush current (4A @ 8X20μs)
- EMI/RFI attenuation
- Discrete, Dual and Quad packages
- Controlled Area Network protection

### Axial/Radial Leaded Series VA/VR



- AEC Q200 qualified
- Available in Radial or Axial configuration
- High peak current and transient energy capability
- Off state EMI filter, On state transient protection

### Miniature AC Varistor Series MAV



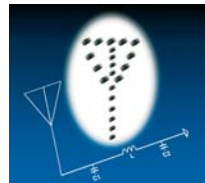
- AEC Q200 qualified
- 110V peak-to-peak rating
- Low capacitance, 5pF
- Discrete, Dual and Quad packages
- High frequency transmission line protection

### StaticGuard Automotive Series VCAS04LC/VCAS06LC/VCAS08LC



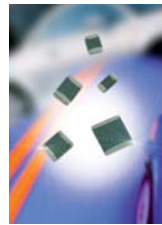
- AEC Q200 qualified
- General purpose ESD protection
- Low capacitance, low leakage current
- Ideal for CMOS ESD protection
- ESD protection for up to 15kV

### AntennaGuard Series VCAS04AG/VCAS06AG



- AEC Q200 qualified
- Ultra low capacitance for RF circuit protection
- Fastest response time to ESD strikes
- Space savings of single chip solution

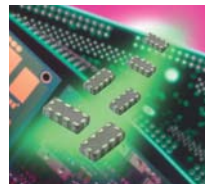
### Glass Encapsulated MLV – Automotive Range MA/PA



- AEC Q200 qualified
- Specified with Load dump and Jump Start requirements of ISO 7637
- Off state EMI filter, on state transient protection
- Energy absorption 1.5 to 25J

## LCT TRANSIENT VOLTAGE SUPPRESSORS

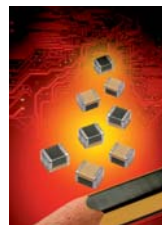
### TransFeed Series V2F1AS/V3F4AS



- AEC Q200 qualified
- L-C-T configured filter
- Bi-directional TVS
- Fastest sub ns turn on time
- Narrow band, notch filter

## LIGHTNING/HEAVY SURGE PROTECTION

### CapGuard Series MV



- AEC Q200 qualified
- Ideal for high transient applications
- User defined capacitor and varistor
- Ultra low ESR/ESL
- Fast Turn on time
- Multiple Strike capability

## NEGATIVE TEMPERATURE COEFFICIENT THERMISTORS

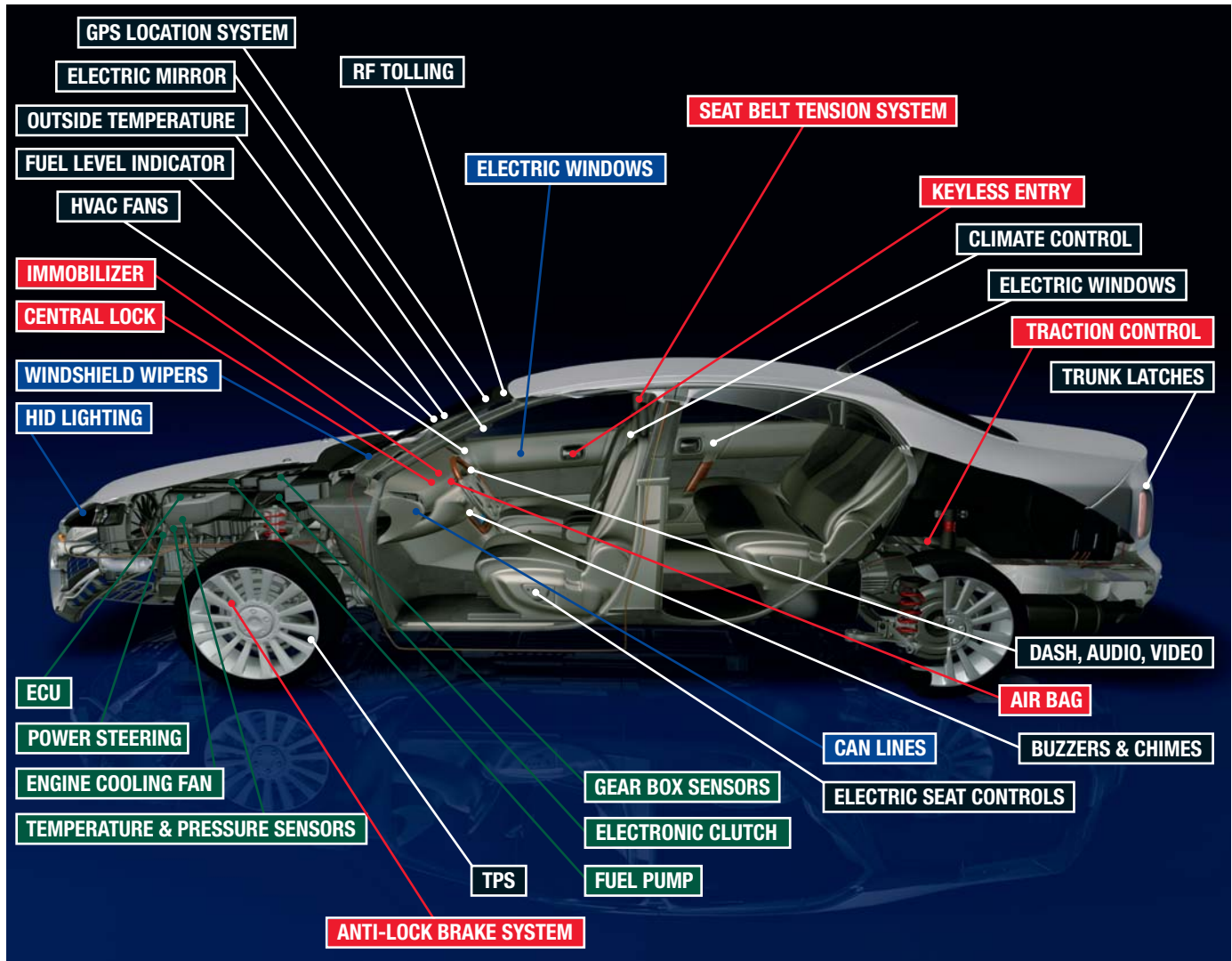
### NTC SMD & Leaded Thermistors NB/NC/ND/NE/NV/NI/NJ/NK



- AEC Q200 qualified
- Negative Temperature Coefficient
- Precision tolerance available
- Multiple temperature stability options
- Fast thermal response time



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