



AUTOMOTIVE CIRCUIT PROTECTION PRODUCTS

MULTILAYER VARISTORS | NTC THERMISTOR



KYOCERA AVX PROVIDES A FULL LINE OF AUTOMOTIVE GRADE CIRCUIT PROTECTION DEVICES

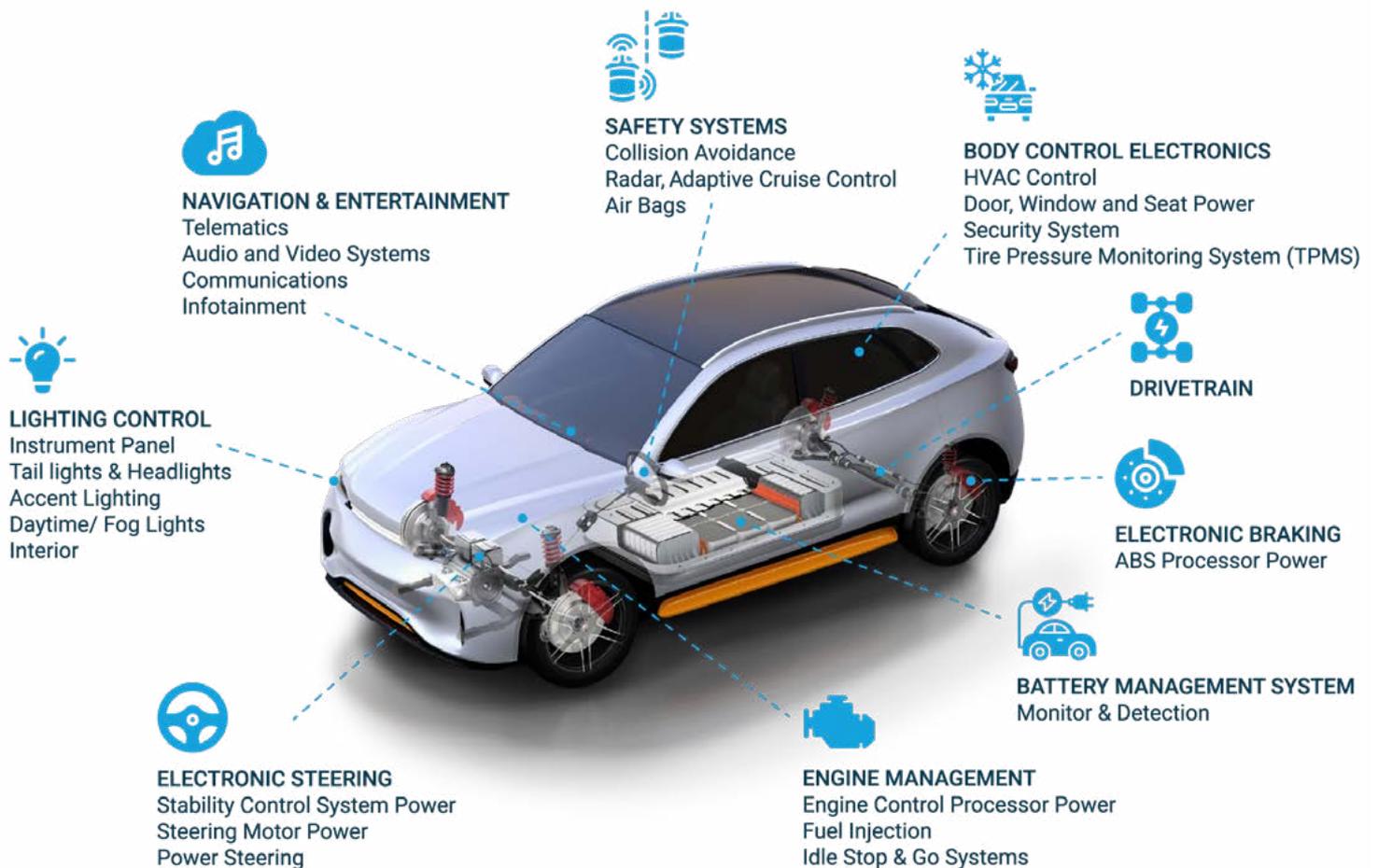


Designed and manufactured with the highest standards for performance and reliability in TS qualified facilities. All products are AEC Q200 compliant. KYOCERA AVX has a long history of satisfying needs of the automotive sector. The new automotive series embraces that history to guarantee maintenance of 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.



SCAN FOR
PRODUCT
OVERVIEW

TRANSIENT PROTECTION IN AUTOMOTIVE SYSTEMS



PRODUCT OFFERINGS

TVS + EMI FILTERING

TransGuard® Automotive Series VCAS



- High Reliability
- High Energy Absorption (Load Dump)
- High Current Handling
- AEC Q200 Qualified
- Bi-Directional protection
- EMI/RFI attenuation
- Multi-strike capability
- Sub 1nS response to ESD strike

APPLICATIONS

TPMS, TPS, Traction Control Immobilizer, Central Lock System, Anti-Lock Brake System, 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, Electric Mirror, GPS Location System, Electric Seat Controls, Bus Interface Protection, Load Dump Module, HEV Modules, HEV Monitors, GFI

Select Parts MultiGuard Automotive Series MG



- Bi-Directional protection
- Very fast response time to ESD strikes
- EMI/RFI filtering in the off-state
- 2 and 4 element arrays
- Multiple lines protection
- Space saving
- Pick & place cost savings

APPLICATIONS

External Diagnostic Equipment, In Cabin Electronics, After Market Add Ons, Electric Mirror, GPS Location System, Electric Seat Controls, Electric Window Controls, Plug in Charge Port Interfaces

Radial / High-Temp Radial Leaded Series VR**AS / VR**AT (high temp)



- AEC Q200 qualified
- ESD rated to 25kV (HBM ESD Level 6)
- EMI/RFI attenuation in off state
- Excellent current and energy handling

APPLICATIONS

Harsh Environment, Inductive switching, DC Motors, Water pump, Fuel pump, Relays and more

LOW CLAMP TRANSGUARD VLAS



- AEC Q200 qualified
- Low Clamping to Working Voltage Ratio
- EMI/RFI filtering in the off-state

APPLICATIONS

Infotainment, ECU, Displays, Microcontrollers, Low V_c to V_w ratio requirements

MINI 0201 VCAS0201



- AEC Q200 qualified
- Miniature 0201 Size and low profile
- EMI/RFI filtering in the off-state

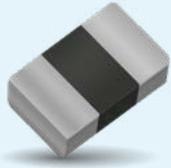
APPLICATIONS

Manifold Absolute Pressure Sensor, Camera Modules, Embedded Components, Circuits with Space Constraints

PRODUCT OFFERINGS

TVS & LOW SIGNAL DISTORTION

Controlled Capacitance Automotive Series VCAC

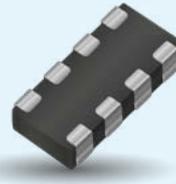


- AEC Q200 qualified
- Targeted center frequency
- Low leakage, <math><10\mu\text{A}</math> at RV
- Reduces emissions from high speed ASIC
- Offered in E6 capacitance values

APPLICATIONS

RF circuits, Sensors, Antennas, Radars, Data lines, Bluetooth, Ethernet and more

CANBUS / High Temperature Series CAN / CANAT



- AEC Q200 qualified
- High ESD capability (25kV)
- High In Rush current (4A @ 8X20 μ s)
- EMI/RFI attenuation
- Discrete, Dual and Quad packages
- Controlled Area Network protection

APPLICATIONS

CAN BUS, LIN BUS, Module interfaces, Sensors, Capacitance sensitive applications, Camera modules, Datalines, Switches

AntennaGuard / High Temp Series VCAS**AG / VCAT06AG (high temp)

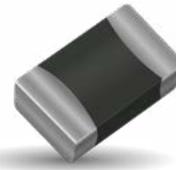


- AEC Q200 Qualified
- 25kV ESD rating
- Meet 27.5Vdc Jump Start requirements
- Multi-strike capability
- Sub 1nS response to ESD strike

APPLICATIONS

Sensors, High Voltage DC, Data Lines, Electronic Stability Control, Keyless Entry, Firewire BUS, Diagnostic Port, Charge Port, Transmission Control Unit, RF Links, Interfaces

Miniature AC Varistor Series MAV

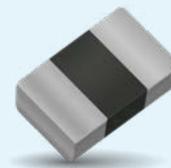


- AEC Q200 qualified
- 110V peak-to-peak rating
- Low capacitance
- Discrete and Dual packages
- High frequency transmission line protection

APPLICATIONS

LC resonant circuits, AC sampling circuitry, Transformer secondaries, GFI modules, Immobilizers, Keyless entry, Data lines and more

Low Capacitance PowerGuard VCAS**AP



- AEC-Q200 Qualified
- 25kV ESD rating
- Meet 48Vdc Jump Start requirements
- Multi-strike capability
- Sub 1nS response to ESD strike

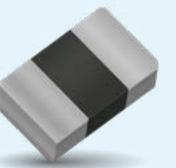
APPLICATIONS

RF Circuit, Sensors, Antennas, Data lines, Radars, Bluetooth, Ethernet

The following Part Numbers are Fully Compliant & Qualified for OPEN Alliance Ethernet Standards:

1000BASE-T1 Ethernet | VCAS04AP701R5YATWA
100BASE-T1 Ethernet | VCAS04AP704R7LATWA

Sub pF AntennaGuard VCASH4AG



- High Reliability
- Capacitance <math><1\text{pF}</math>
- Bi-Directional protection
- Fastest response time to ESD strikes
- Multi-strike capability
- Low insertion loss
- Low profile 0402 case size
- AEC-Q 200 Qualified

APPLICATIONS

Crash Avoidance, Satellite Links, RF Circuits, FlexRay, High Speed Communication BUS, GPS, RF Tolling

PRODUCT OFFERINGS

NEGATIVE TEMP 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

APPLICATIONS

Heating systems, Air-conditioning systems, Temperature control of Switch Mode Power Supplies, Compensation of pressure sensors, Protection of power transistors in various electronic circuits

LIGHTNING / HEAVY SURGE PROTECTION

CapGuard Series

CG



- AEC Q200 qualified
- Bi-Directional Protection
- Multiple Strike Capability
- Radial, epoxy encapsulated

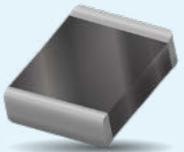
APPLICATIONS

EMI filtering with surge protection, DC motors, Inductive switching, Relays, Power supplies, I/O Ports

TVS & HARSH ENVIRONMENT

Glass Encapsulated MLV - Automotive Range

VGAS / VJ



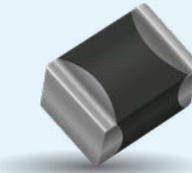
- AEC Q200 qualified
- Bi-directional transient voltage protection
- Glass encapsulated

APPLICATIONS

Protection of various semiconductor elements from overvoltage, absorption of switching surge and electrostatic surge for relays and motors, protection of electronic equipment for automobiles from induced lightning surge

High Temperature Automotive Series

VT / VGAH



- AEC Q200 qualified
- VTA3 & VGAH 150°C High Temp / VTA7 & 175°C High Temp
- EMI/RFI filtering in the off-state

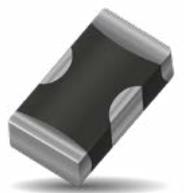
APPLICATIONS

Under Hood, Down Hole Drilling, Applications with Temperatures up to 150°C (VGAH & VTA3) / +175°C (VTA7)

LCT TRANSIENT VOLTAGE SUPPRESSORS

TransFeed Series

V2F1AS / V3F4AS



- AEC-Q200 qualified
- Enhanced EMI filtering
- Narrow band, high attenuation filter

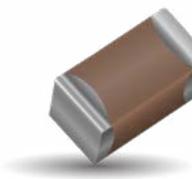
APPLICATIONS

Drive by Wire, Dimming Mirror Circuit, Filtering/Protection on Microcontroller I/O lines, Filtering/Protection on Interface I/O lines, Power Line Conditioning, Power Regulation, LCD Dashboard driver

TVS & LOW SIGNAL DISTORTION

StaticGuard Automotive Series

VCAS04LC / VCAS06LC / VCAS08LC



- AEC Q200 qualified
- EMI/RFI filtering in the off-state
- Low capacitance design
- Sub 1nS response to ESD strike
- ISO 7637 Pulse 1-3 capability
- Meet 27.5Vdc Jump Start Requirements

APPLICATIONS

CAN & LIN BUS, CMOS, Switches & Sensors, Camera modules, Datalines



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, 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.

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