

### GENERAL DESCRIPTION

KYOCERA AVX ASPGuard® products are an ultra low capacitance extension of reliable AntennaGuard range with new voltage, capacitance and energy ratings. Designed for use in RF circuits, sensors, high-speed lines, optic circuits and capacitance sensitive applications.

The ability to handle larger transients makes the ASPGuard® series useful in applications where capacitance sensitive circuit needs to be protected against higher energy and AEC-Q200 qualification allows for use in automotive applications.

These low capacitance values have low insertion loss, low leakage current and unsurpassed reliability compared to diode options. These advantages combined with size advantages and bi-directional protection make the ASPGuard® the right choice for automotive and general applications, that are sensitive to capacitance.

### GENERAL CHARACTERISTICS

- Operating Temperature: -55°C to +150°C
- Case Size: 0402, 0603
- Working Voltage: 18 - 70Vdc
- Capacitance: 1.5 - 4.7pF
- Energy: 0.02 - 0.04J
- Peak Current: 1 - 3A

### FEATURES

- 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 (IEEE 802.3bw and IEEE 802.3bp) VCAS06AP303R3LAT

KYOCERA AVX is an adopting member of the OPEN Alliance to collaborate with other technology providers and the customers to further develop and standardize Ethernet-based networks in Automotive applications.

The following parts are fully compliant and qualified for OPEN Alliance Ethernet standards:

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

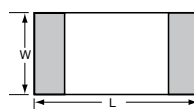
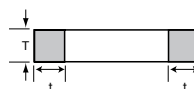


### HOW TO ORDER

<p><b>Varistor Chip</b></p> <p><b>Series</b> AS = Automotive</p> <p><b>Case Size</b> 04 = 0402 06 = 0603</p> <p><b>Type</b></p> <p><b>Working Voltage</b> 18 = 18Vdc    60 = 60Vdc 24 = 24Vdc    70 = 70Vdc 30 = 30Vdc</p> <p><b>Capacitance</b> 1R5 = 1.5pF 1R5 = 1.55pF (Y tol) 2R0 = 2pF 3R0 = 3pF 120 = 12pF</p>	<p><b>VC</b></p> <p><b>AS</b></p> <p><b>06</b></p> <p><b>AP</b></p> <p><b>18</b></p> <p><b>1R5</b></p> <p><b>D</b></p> <p><b>A</b></p> <p><b>T</b></p> <p><b>1</b></p> <p><b>A</b></p>	<p><b>Reel Quantity</b> A = 4K or 10K pcs (i.e.: 1A = 4,000 3A = 10,000 WA = 10,000)</p> <p><b>Reel Size</b> 1 = 7" reel* 3 = 13" reel* W = 7" reel** * for 0603 ** for 0402</p> <p><b>Termination</b> T = Ni/Sn Plated Z = FLEXITERM** * for 0603</p> <p><b>N/A</b></p> <p><b>Non-Std' Cap Tol</b> D = ±0.5pF L = ±1.0pF K = ±0.15pF Y = ±0.13pF</p>
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### PHYSICAL DIMENSIONS: MM (INCHES)

Size (EIA)	Length (L)	Width (W)	Max Thickness (T)	Land Length (t)
0402	1.00±0.10 (0.040±0.004)	0.50±0.10 (0.020±0.004)	0.60 (0.024)	0.25±0.15 (0.010±0.006)
0603	1.60±0.15 (0.063±0.006)	0.80±0.15 (0.031±0.006)	0.90 (0.035)	0.35±0.15 (0.014±0.006)



**ELECTRIAL CHARACTERISTICS**

Part Number	V <sub>w</sub> (DC)	V <sub>w</sub> (AC)	V <sub>B</sub>	V <sub>C</sub>	I <sub>L</sub>	E <sub>T</sub>	I <sub>p</sub>	Cap	Cap Tolerance	V <sub>Jump</sub>	Case Size
VCAS04AP181R5KA	18	14	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP181R5DA	18	14	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP181R5YA	18	14	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS04AP182R0LA	18	14	80-140	300	0.1	0.02	1	2.0	±1.0pF	48	0402
VCAS06AP181R5DA	18	14	150-200	375	0.1	0.02	1	1.5	±0.5pF	48	0603
VCAS06AP182R0LA	18	14	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS06AP243R3LA	24	17	90-150	240	0.1	0.04	3	3.3	±1.0pF	48	0603
VCAS04AP301R5KA	30	21	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP301R5DA	30	21	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP301R5YA	30	21	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS06AP302R0LA	30	21	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS06AP303R3LA	30	21	90-150	240	0.1	0.04	3	3.3	±1.0pF	48	0603
VCAS04AP423R5LA	42	32	50.4-61.6	135	10	0.03	2	3.5	±1.0pF	48	0402
VCAS06AP423R54A	42	32	50.4-61.6	135	10	0.03	2	3.5	±2.0pF	48	0603
VCAS04AP601R5DA	60	42	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS06AP602R0LA	60	42	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS06AP603R3LA	60	42	90-150	240	0.1	0.04	3	3.3	±1.0pF	48	0603
VCAS04AP701R5KA	70	52	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP701R5DA	70	52	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP701R5YA	70	52	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS04AP704R7LA	70	52	90-110	190	1	0.03	1	4.7	±1pF	48	0402
VCAS06AP701R5DA	70	52	150-200	375	1	0.02	1	1.5	±0.5pF	48	0603
MGAS04AP704R7LA	70	52	102-138	225	10	0.02	3	4.7	±1pF	48	0405 2x

V<sub>w</sub> (DC) DC Working Voltage [V] VB

V<sub>w</sub> (AC) AC Working Voltage [V]

V<sub>B</sub> Breakdown Votage [V @ 1mA<sub>DC</sub>]

V<sub>C</sub> Clamping Votage [V @ 1A]

I<sub>L</sub> Maximum leakage current at the working voltage [μA]

E<sub>T</sub> Transient Energy Rating [J, 10x1000μS]

I<sub>p</sub> Peak Current Rating [A, 8x20μS]

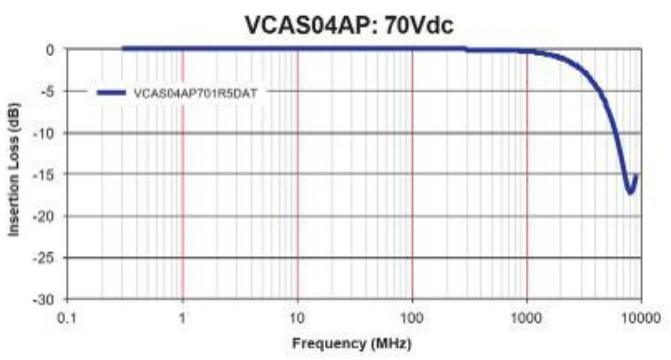
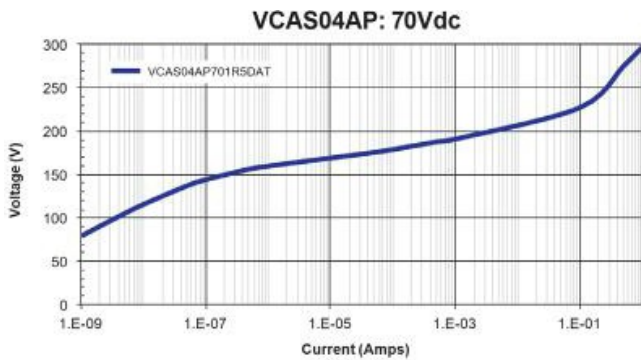
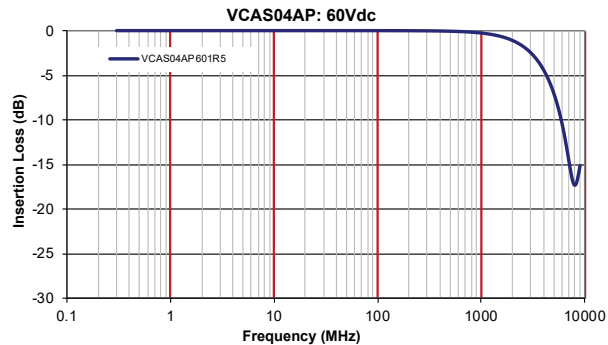
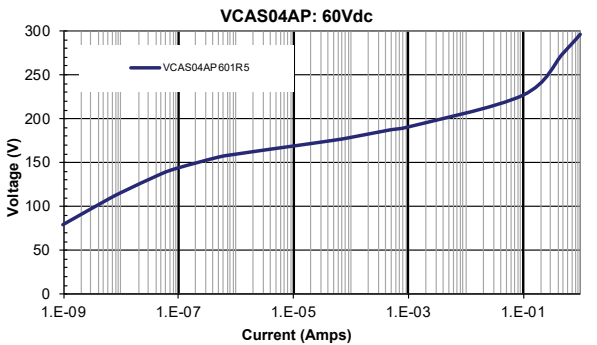
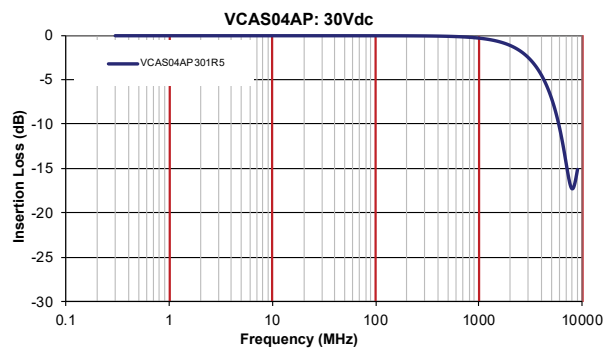
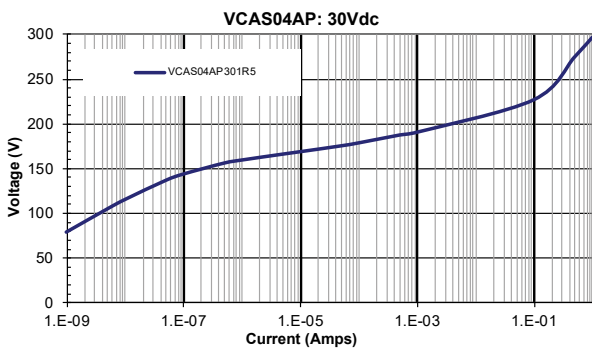
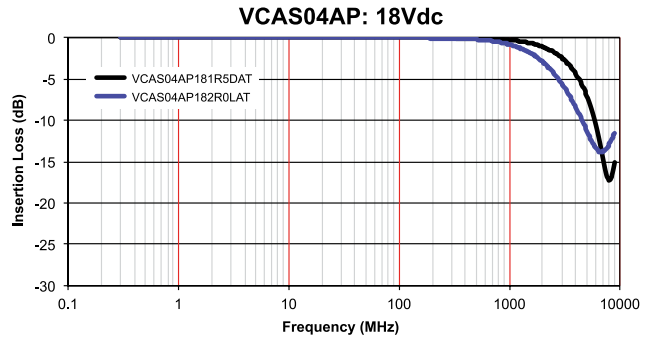
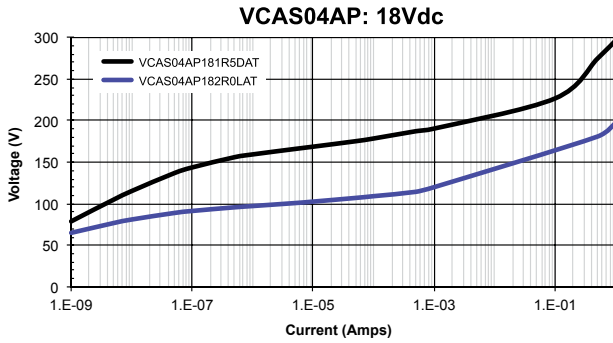
Cap Capacitance [pF] @ 1MHz specified and 0.5VRMS

Cap Tol Capacitance tolerance (pF) from Typ value

V<sub>Jump</sub> Jump Start (V, 5min)

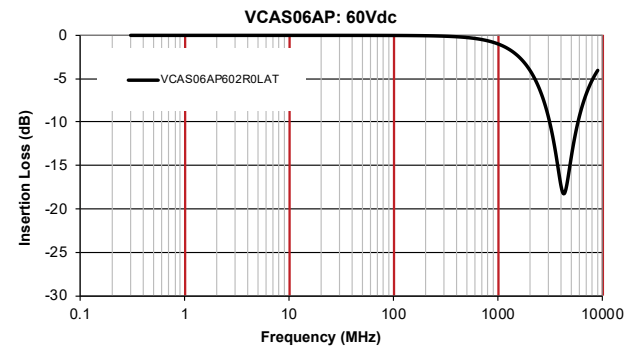
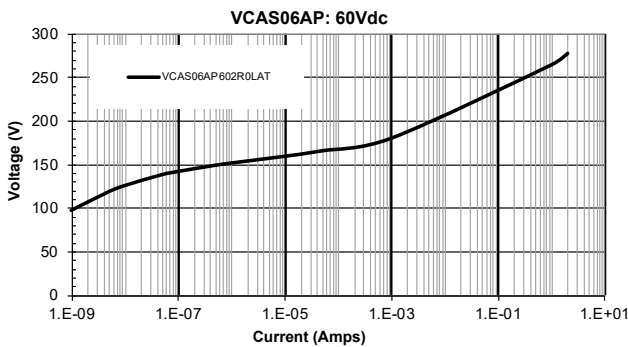
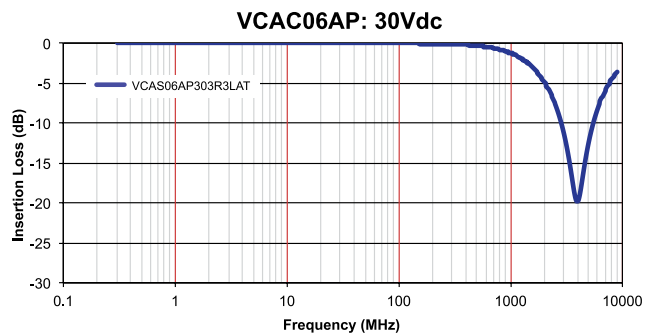
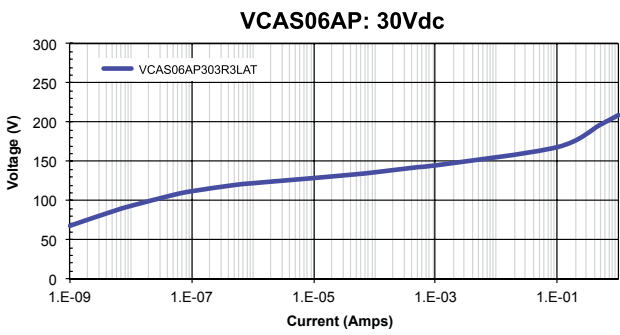
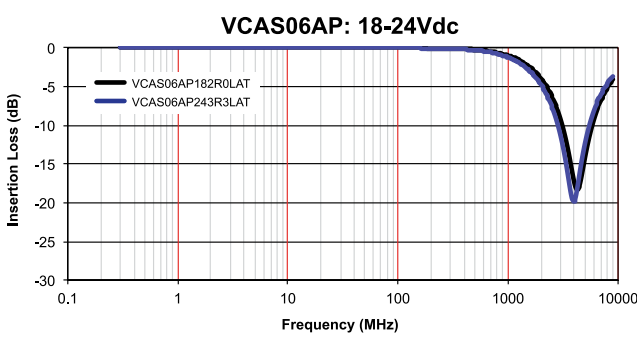
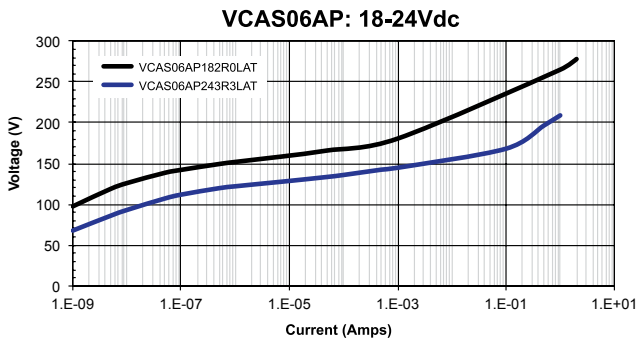
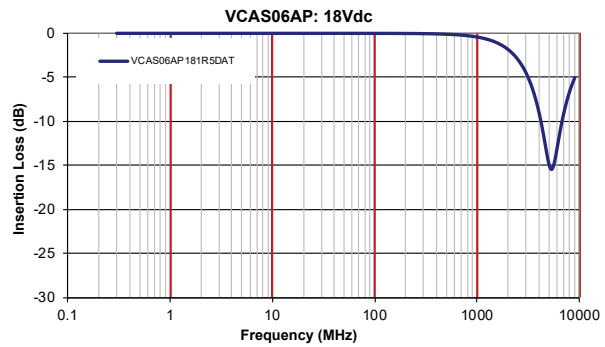
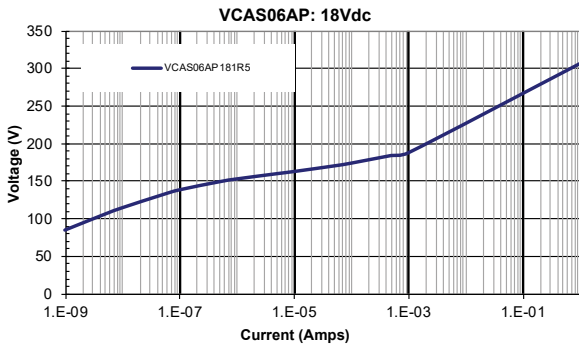
**V/I CHARACTERISTICS**

**S21 CHARACTERISTICS**



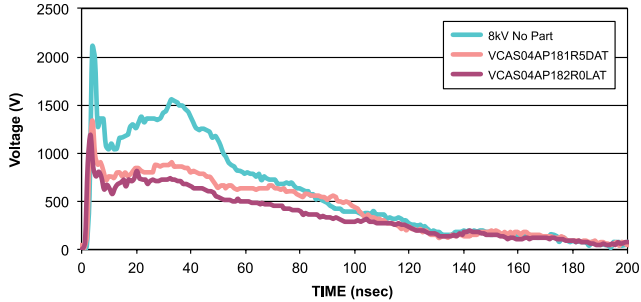
### V/I CHARACTERISTICS

### S21 CHARACTERISTICS

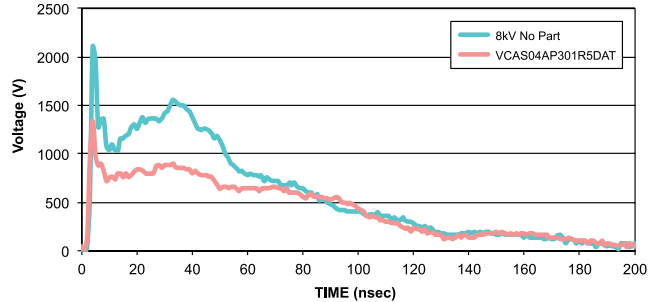


ESD CHARACTERISTIC

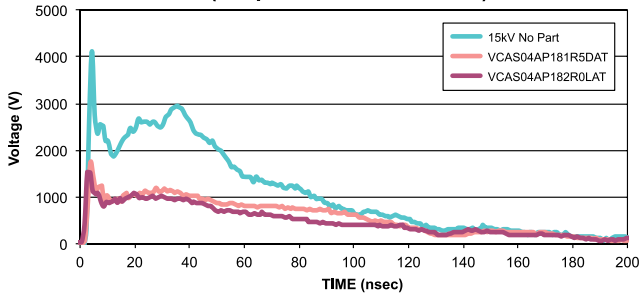
8kV ESD Vc Wave Capture  
(150pF/330ohm Network)



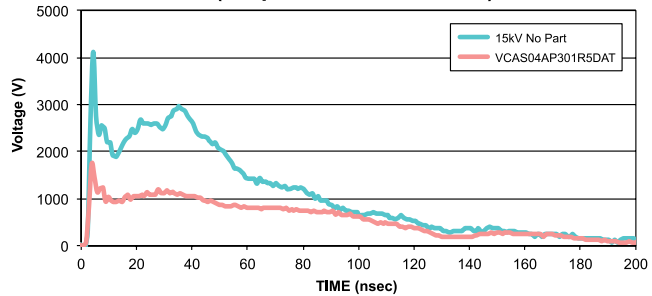
8kV ESD Vc Wave Capture  
(150pF/330ohm Network)



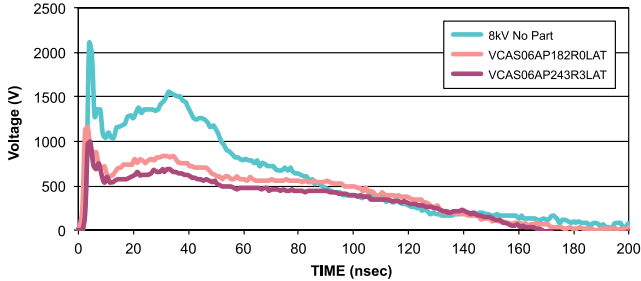
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(150pF/330ohm Network)



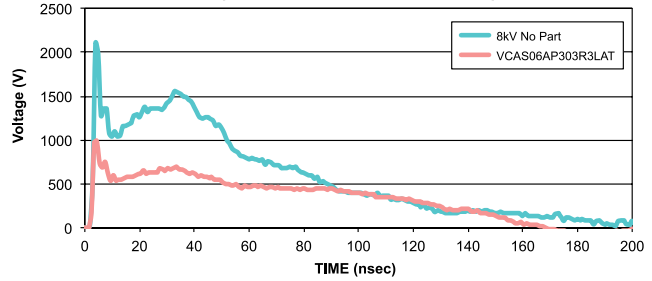
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(150pF/330ohm Network)



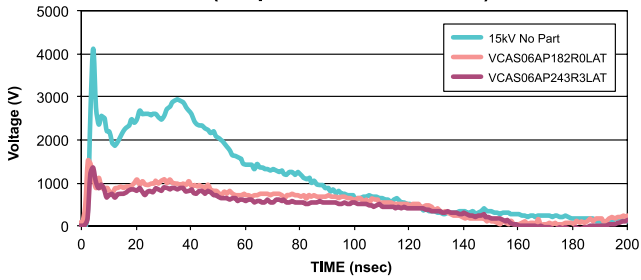
8kV ESD Vc Wave Capture  
(150pF/330ohm Network)



8kV ESD Vc Wave Capture  
(150pF/330ohm Network)



15kV ESD Vc Wave Capture  
(150pF/330ohm Network)



15kV ESD Vc Wave Capture  
(150pF/330ohm Network)

