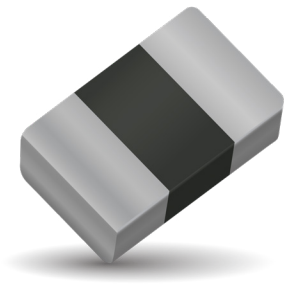
Antenna PowerGuard

AVX Low Capacitance Varistors
ESD Protection for Circuits Sensitive to Capacitance



GENERAL DESCRIPTION

AVX Antenna PowerGuard 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 Antenna PowerGuard 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 Antenna PowerGuard 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-Q200Qualified
- 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

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

VC AS 06 AP 18 1R5 D A T 1 A

Varistor Chip

Series
AS = Automotive

Case Size
04 = 0402
06 = 0603

Type

Working Voltage
18 = 18Vdc
24 = 24Vdc
30 = 30Vdc
60 = 60Vdc
70 = 70Vdc

Capacitance
1R5 = 1.5pF
1R5 = 1.55pF (Y tol)
2R0 = 2pF
3R0 = 3pF
120 = 12pF

Non-Std'Cap Tol
D = ±0.5pF
L = ±1.0pF
K = ±0.15pF
Y = ±0.13pF

N/A

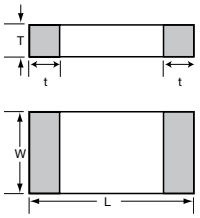
Termination
T = Ni/Sn Plated

Reel Size
1 = 7" reel*
3 = 13" reel*
W = 7" reel**
* for 0603
** for 0402

Reel Quantity
A = 4K or 10K pcs
(i.e.: 1A = 4,000
3A = 10,000
WA = 10,000)

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)



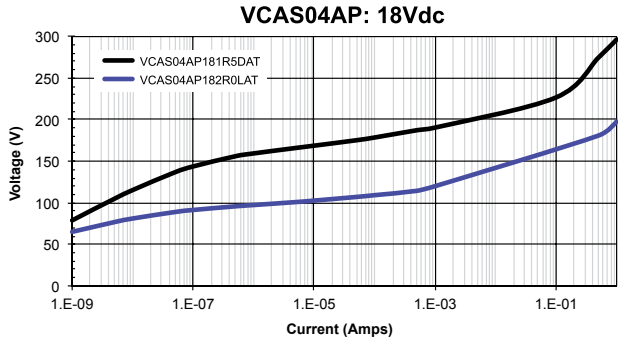
RoHS COMPLIANT

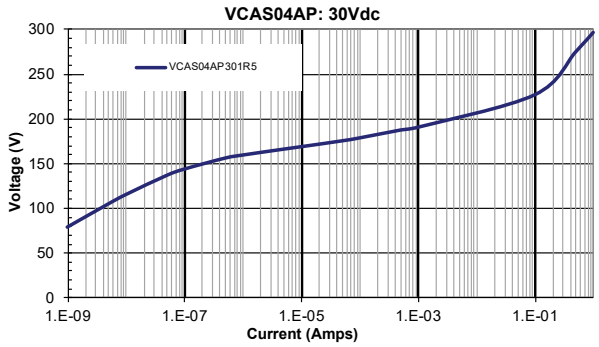
ELECTRIAL CHARACTERISTICS

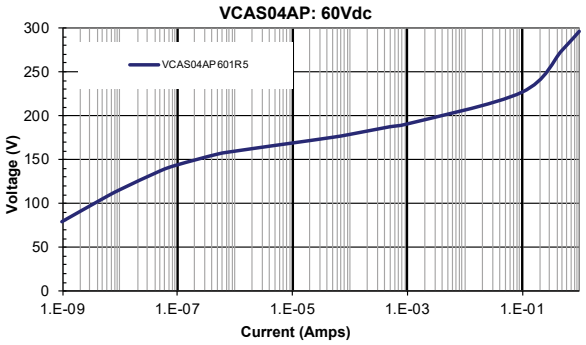
AVX Part Number	V_W (DC)	V_W (AC)	V_B	V_C	I_L	E_T	I_P	Cap	Cap Tolerance	V_{Jump}	Case Size
VCAS04AP181R5KAT	18	14	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP181R5DAT	18	14	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP181R5YAT	18	14	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS04AP182R0LAT	18	14	80-140	300	0.1	0.02	1	2.0	±1.0pF	48	0402
VCAS06AP181R5DAT	18	14	150-200	375	0.1	0.02	1	1.5	±0.5pF	48	0603
VCAS06AP182R0LAT	18	14	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS06AP243R3LAT	24	17	90-150	240	0.1	0.04	3	3.3	±1.0pF	48	0603
VCAS04AP301R5KAT	30	21	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP301R5DAT	30	21	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP301R5YAT	30	21	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS06AP302R0LAT	30	21	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS06AP303R3LAT	30	21	90-150	240	0.1	0.04	3	3.3	±1.0pF	48	0603
VCAS04AP601R5DAT	60	42	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS06AP602R0LAT	60	42	150-200	350	0.1	0.03	2	2.0	±1.0pF	48	0603
VCAS04AP701R5KAT	70	52	150-210	350	0.1	0.02	1	1.5	±0.15pF	48	0402
VCAS04AP701R5DAT	70	52	150-210	350	0.1	0.02	1	1.5	±0.5pF	48	0402
VCAS04AP701R5YAT	70	52	150-210	350	0.1	0.02	1	1.55	±0.13pF	48	0402
VCAS04AP704R7LAT	70	52	90-110	190	1	0.03	1	4.7	±1pF	48	0402

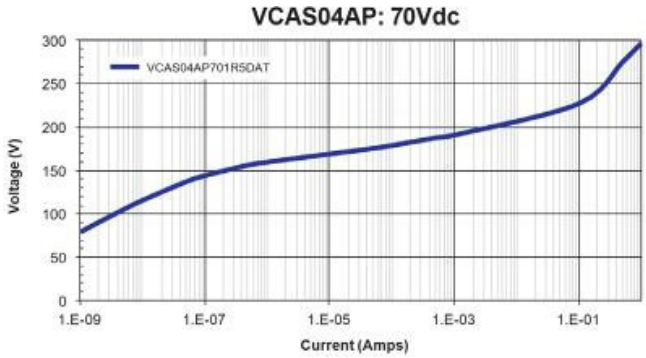
V_W (DC)	DC Working Voltage [V] VB	E_T	Transient Energy Rating [J, 10x1000µS]
V_W (AC)	AC Working Voltage [V]	I_P	Peak Current Rating [A, 8x20µS]
V_B	Breakdown Votage [V @ 1mA$_{DC}$]	Cap	Capacitance [pF] @ 1MHz specified and 0.5VRMS
V_C	Clamping Votage [V @ 1A]	Cap Tol	Capacitance tolerance (pF) from Typ value
I_L	Maximum leakage current at the working voltage [µA]	V_{Jump}	Jump Start (V, 5min)

V/I CHARACTERISTICS

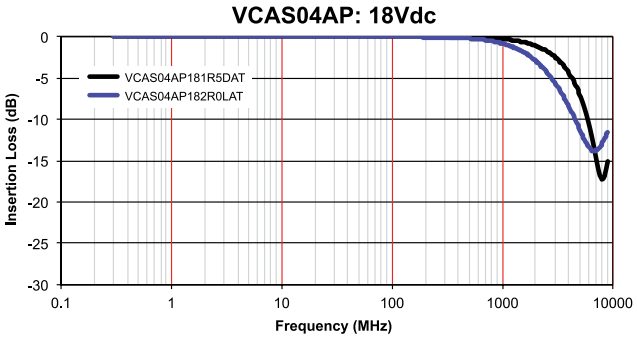


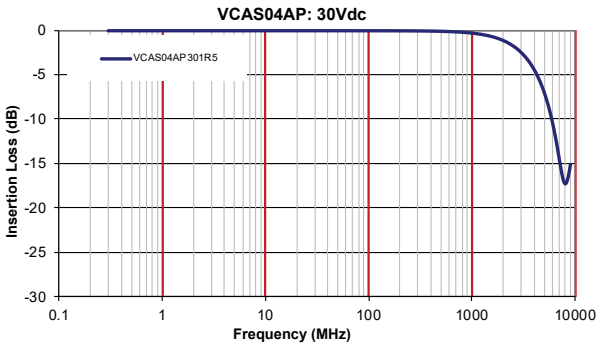


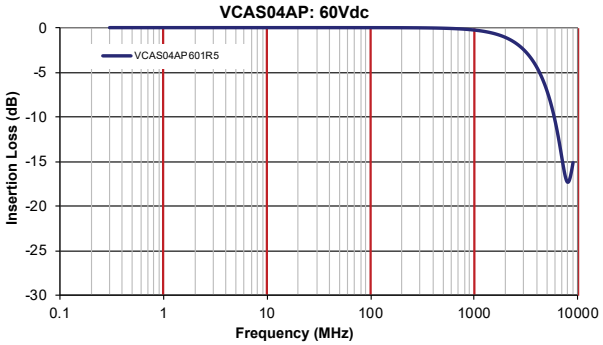


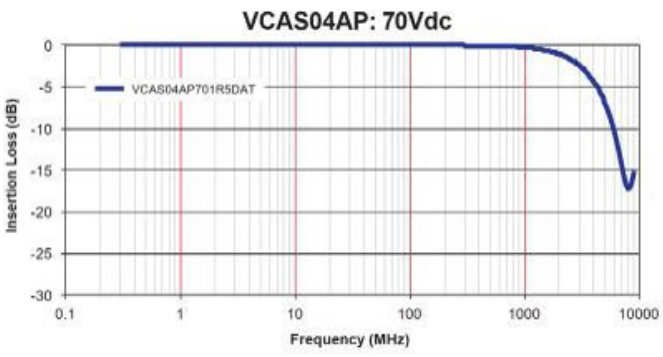


S21 CHARACTERISTICS

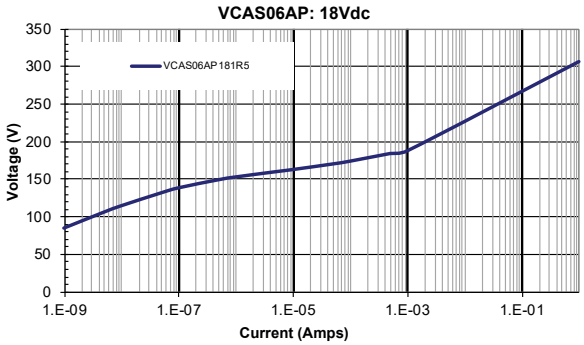


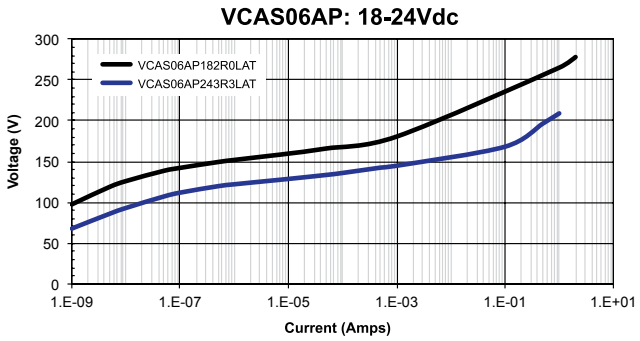


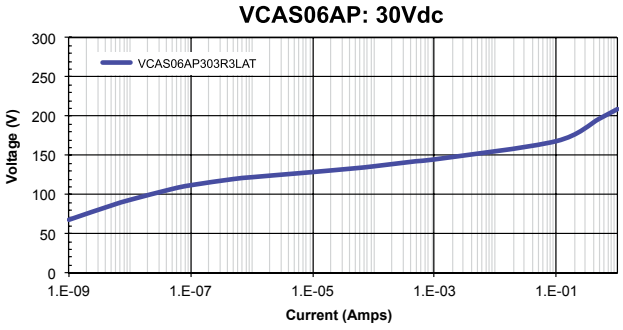


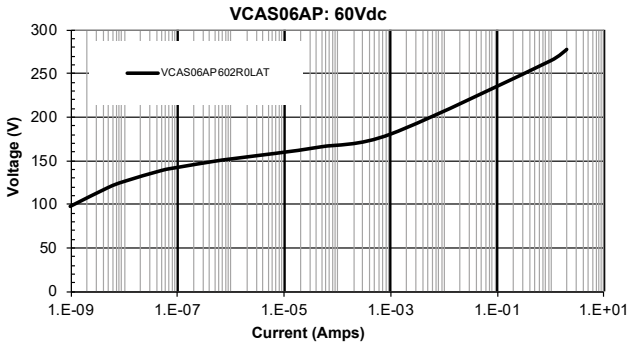


V/I CHARACTERISTICS

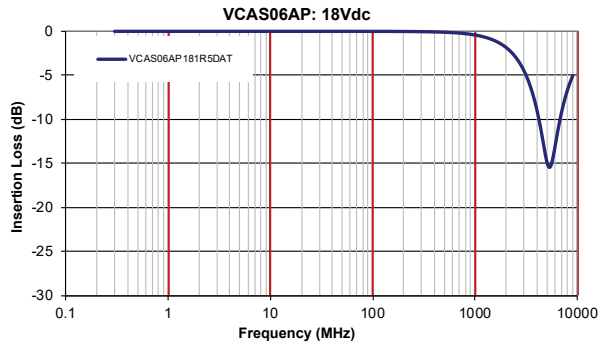


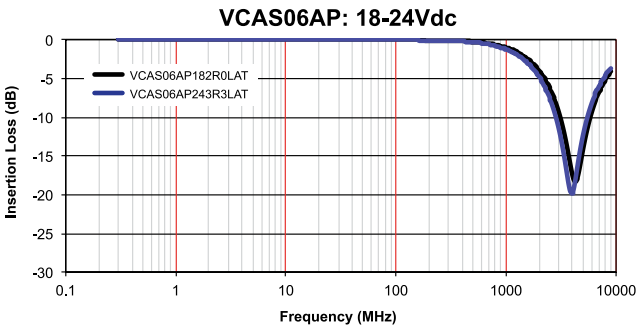


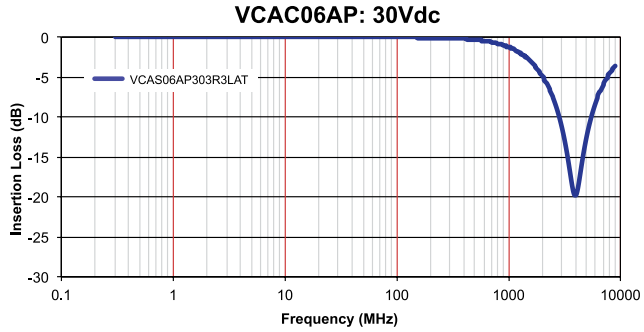


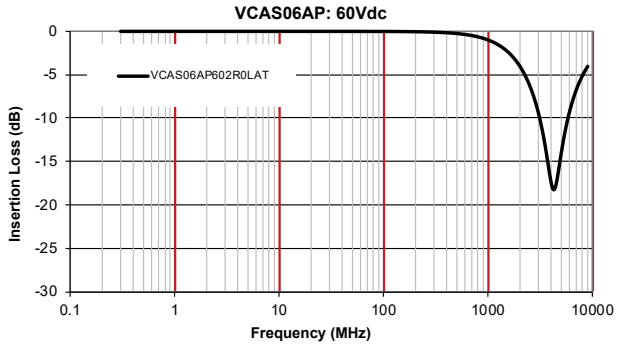


S21 CHARACTERISTICS



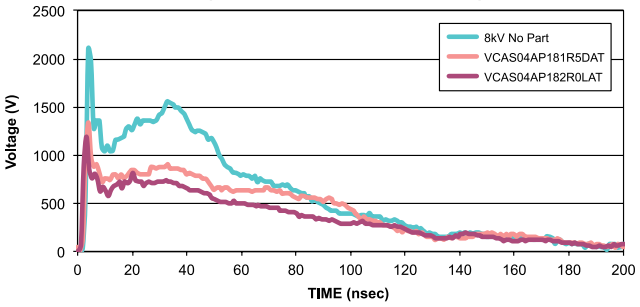




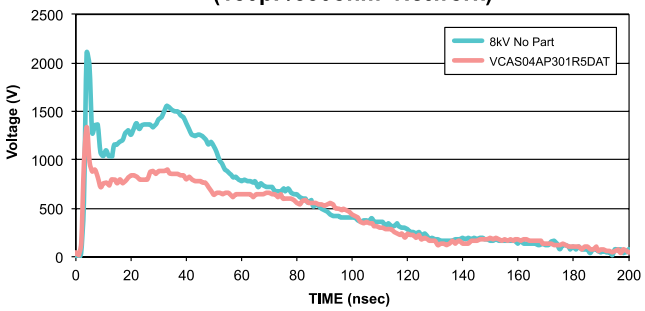


ESD CHARACTERISTIC

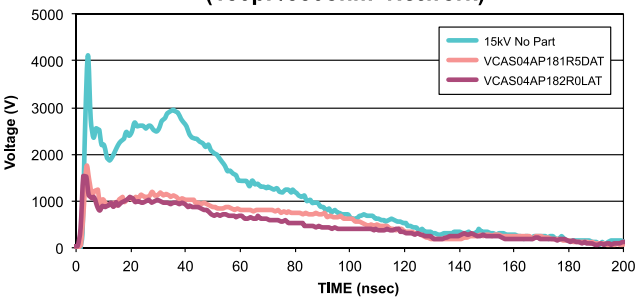
8kV ESD Vc Wave Capture
(150pF/330ohm Network)



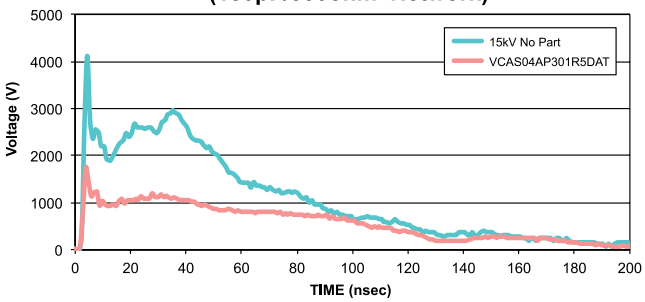
8kV ESD Vc Wave Capture
(150pF/330ohm Network)



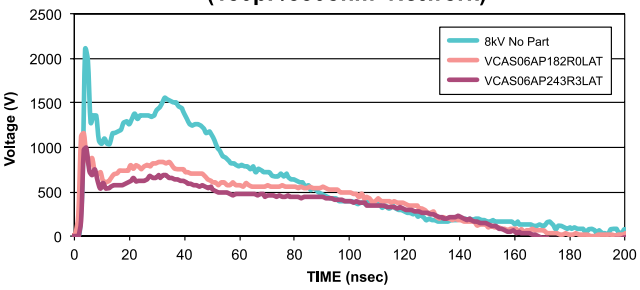
15kV ESD Vc Wave Capture
(150pF/330ohm Network)



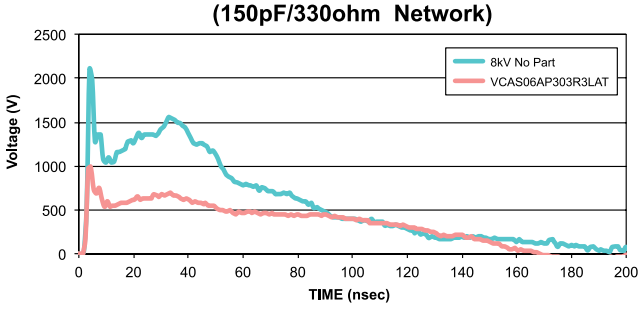
15kV ESD Vc Wave Capture
(150pF/330ohm Network)



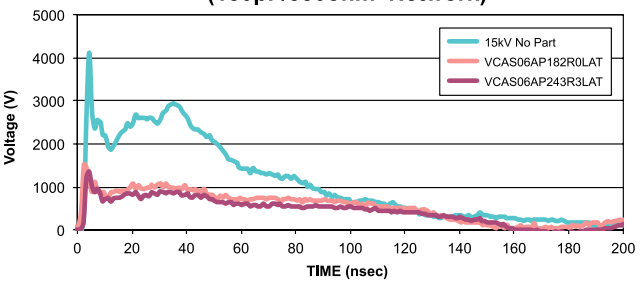
8kV ESD Vc Wave Capture
(150pF/330ohm Network)



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



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



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