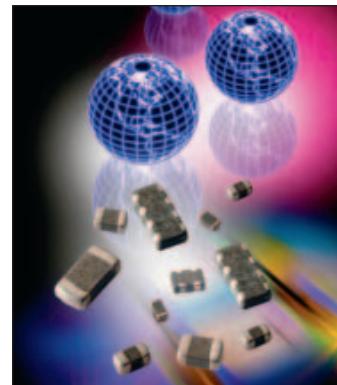


# CAN BUS Varistor



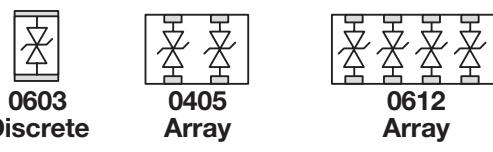
## GENERAL DESCRIPTION

The CAN BUS varistor is a zinc oxide (ZnO) based ceramic semiconductor device with non-linear voltage-current characteristics (bi-directional) similar to back-to-back Zener diodes and an EMC capacitor in parallel (see equivalent circuit model). They have the added advantage of greater current and energy handling capabilities as well as EMI/RFI attenuation. Devices are fabricated by a ceramic sintering process that yields a structure of conductive ZnO grains surrounded by electrically insulating barriers, creating varistor like behavior.



## HOW TO ORDER

<b>CAN</b>	<b>0001</b>	<b>D</b>	<b>P</b>
<b>Style</b>	<b>Case Size</b>	<b>Packaging Code (Reel Size)</b>	<b>Termination</b>
Controlled Area	0001 = 0603 Discrete	D = 7" reel (1,000 pcs.)	P = Ni/Sn Alloy (Plated)
Network Varistor Series	0002 = 0405 2-Element	R = 7" reel (4,000 pcs.)	M = Ni/Sn Pb (Plated)
	0004 = 0612 4-Element	T = 13" reel (10,000 pcs.)	



## PERFORMANCE CHARACTERISTICS

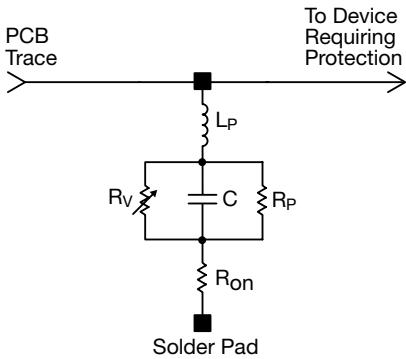
AVX Part No.	V <sub>W</sub> (DC)	V <sub>W</sub> (AC)	V <sub>B</sub>	I <sub>L</sub>	E <sub>T</sub>	I <sub>P</sub>	Cap.	Case Size	Elements
CAN0001_	≤18	≤14	120	2	0.015	4	22	0603	1
CAN0002_	≤18	≤14	70	2	0.015	4	22	0405	2
CAN0004	≤18	≤14	100	2	0.015	4	22	0612	4

Termination Finish Code  
Packaging Code

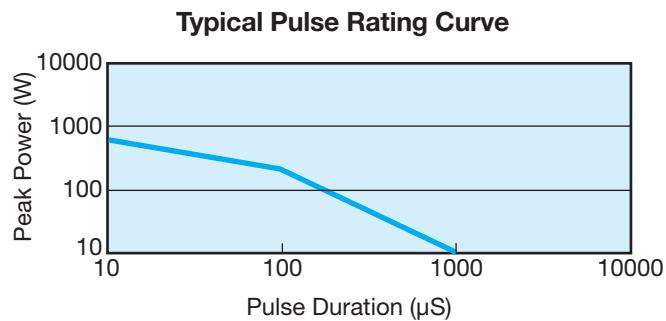
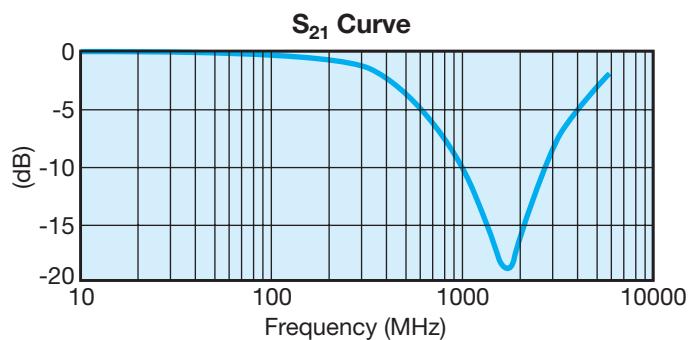
$V_W(\text{DC})$	DC Working Voltage (V)
$V_W(\text{AC})$	AC Working Voltage (V)
$V_B$	Typical Breakdown Voltage (V @ 1mA <sub>DC</sub> )
$V_C$	Clamping Voltage (V @ $I_{VC}$ )
$I_{VC}$	Test Current for $V_C$ (A, 8x20μS)
$I_L$	Maximum Leakage Current at the Working Voltage (μA)
$E_T$	Transient Energy Rating (J, 10x1000μS)
$I_P$	Peak Current Rating (A, 8x20μS)
Cap	Maximum Capacitance (pF) @ 1 MHz and 0.5Vrms

## EQUIVALENT CIRCUIT MODEL

## Discrete MLV Model



Where:  $R_v$  = Voltage Variable resistance (per VI curve)  
 $R_p \geq 10^{12} \Omega$   
 $C$  = defined by voltage rating and energy level  
 $R_{on}$  = turn on resistance  
 $L_p$  = parallel body inductance



# CAN BUS Varistor



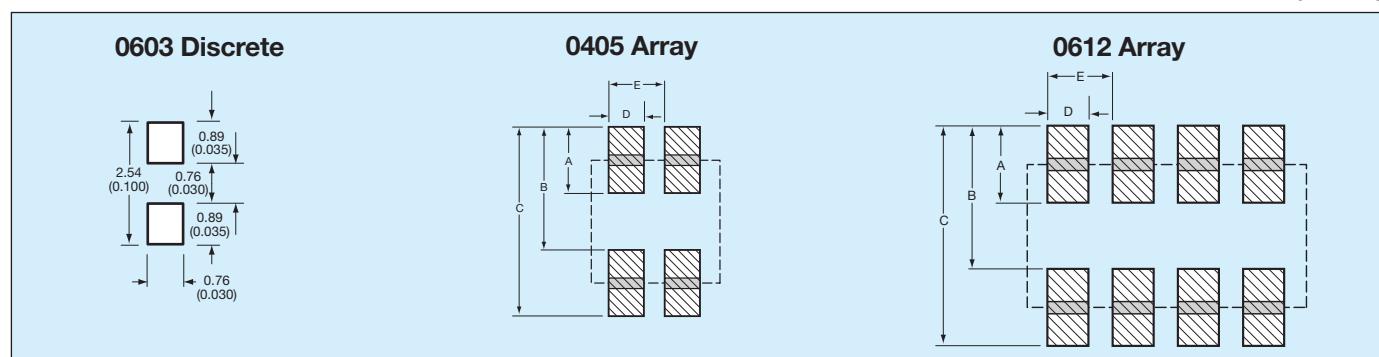
## PHYSICAL DIMENSIONS

mm (inches)

	0603 Discrete	0405 Array	0612 Array
Length	1.60 $\pm$ 0.15 (0.063 $\pm$ 0.006)	1.00 $\pm$ 0.15 (0.039 $\pm$ 0.006)	1.60 $\pm$ 0.20 (0.063 $\pm$ 0.008)
Width	0.80 $\pm$ 0.15 (0.032 $\pm$ 0.006)	1.37 $\pm$ 0.15 (0.054 $\pm$ 0.006)	3.20 $\pm$ 0.20 (0.126 $\pm$ 0.008)
Thickness	0.90 Max. (0.035 Max.)	0.66 Max. (0.026 Max.)	1.22 Max. (0.048 Max.)
Term Band Width	0.35 $\pm$ 0.15 (0.014 $\pm$ 0.006)	0.36 $\pm$ 0.10 (0.014 $\pm$ 0.004)	0.41 $\pm$ 0.10 (0.016 $\pm$ 0.010)

## SOLDER PAD DIMENSIONS

mm (inches)



## APPLICATION

AVX CAN BUS varistors offer significant advantages in general areas of a typical CAN network as shown on the right. Some of the advantages over diodes include:

- space savings
- higher ESD capability @ 25kV contact
- higher in rush current (4A) 8 x 20 $\mu$ s
- FIT rate  $\leq$ 0.1 failures (per billion hours)

