

CAN BUS Varistor



GENERAL DESCRIPTION

The CAN BUS varistor is a zinc oxide (ZnO) based ceramic semiconductor devices 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

CAN

Style

Controlled
Area
Network
Varistor
Series

0001

Case Size

0001 = 0603 Discrete
0002 = 0405 2-Element
0004 = 0612 4-Element

D

Packaging Code (Reel Size)

D = 7" reel (1,000 pcs)
R = 7" reel (4,000 pcs)
T = 13" reel (10,000 pcs)

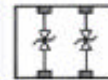
P

Termination

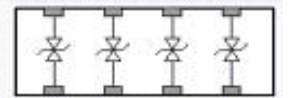
P = Plated (Ni/Sn Alloy)



0603
Discrete



0405
Array

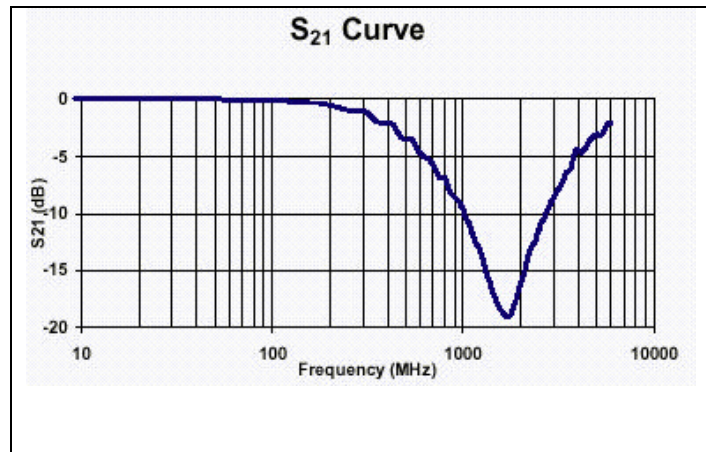


0612
Array



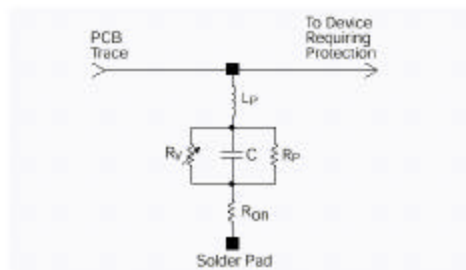
PERFORMANCE CHARACTERISTICS

PARAMETER	
Working Voltage	up to 18V
Breakdown Voltage	65-75 V
Transient Energy	0.015 J (max) @ 10/1000 μ S
Capacitance	22 pF @ 1 kHz
Peak Current	4A @ 8/20 μ S
Turn On Time	≤ 600 pS



EQUIVALENT CIRCUIT MODEL

Discrete MLV Model



Where: R_V = Voltage Variable resistance
(per VI curve)

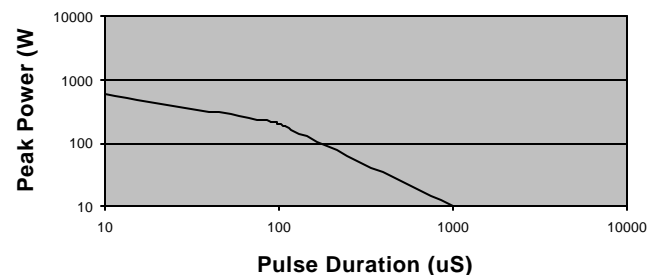
$R_P \geq 10^{12} \Omega$

C = defined by voltage rating and energy level

R_{ON} = turn on resistance

L_P = parallel body inductance

Typical Pulse Rating Curve



CAN BUS Varistor

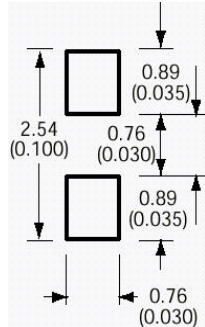


PHYSICAL DIMENSIONS

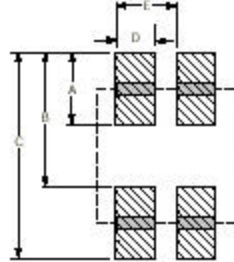
mm (inches)

	0603 Discrete	0405 Array	0612 Array
Length	1.6 ± 0.15 (0.063 \pm 0.006)	1.00 ± 0.15 (0.039 \pm 0.006)	3.20 ± 0.2 (0.126 \pm 0.008)
Width	0.8 ± 0.15 (0.032 \pm 0.006)	1.37 ± 0.15 (0.054 \pm 0.006)	1.6 ± 0.2 (0.063 \pm 0.008)
Thickness	0.9 MAX (0.035 MAX)	0.66 MAX (0.026 MAX)	1.22 MAX (0.048 MAX)
Term Band Width	0.35 ± 0.15 (0.014 \pm 0.006)	0.36 ± 0.10 (0.014 \pm 0.004)	0.41 ± 0.10 (0.016 \pm 0.010)
Term Separation	0.7 (0.028)	0.32 ± 0.10 (0.013 \pm 0.004)	0.38 ± 0.10 (0.015 \pm 0.004)

SOLDER PAD DIMENSIONS mm (inches)

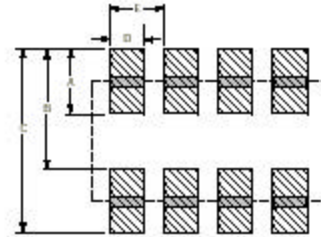


0603 Discrete



0405 Array

A	B	C	D	E
0.46 (0.018)	0.74 (0.029)	1.2 (0.047)	0.38 (0.015)	0.64 (0.025)



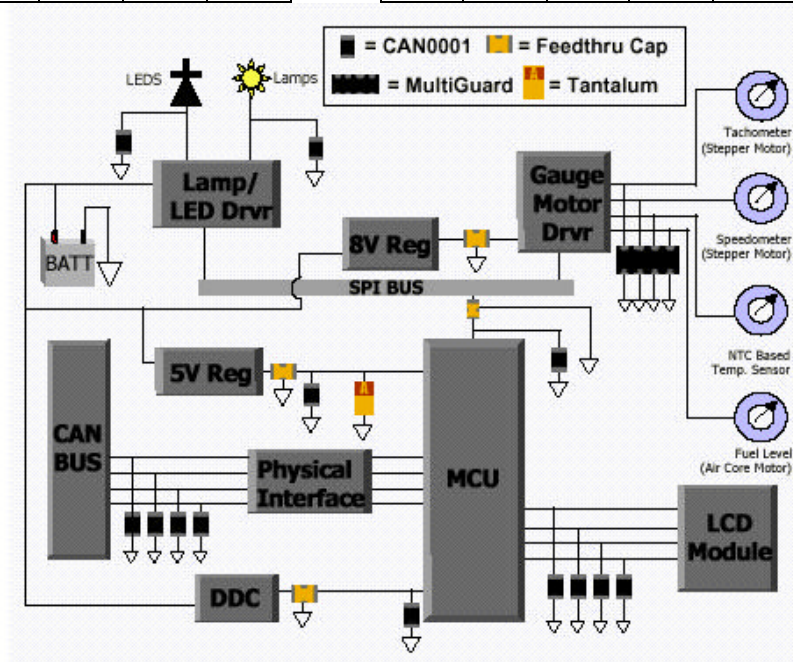
0612 Array

A	B	C	D	E
0.89 (0.035)	1.65 (0.065)	2.54 (0.100)	0.46 (0.018)	0.79 (0.030)

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 μ S
- FIT rate ≤ 0.1 failures (per billion hours)



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