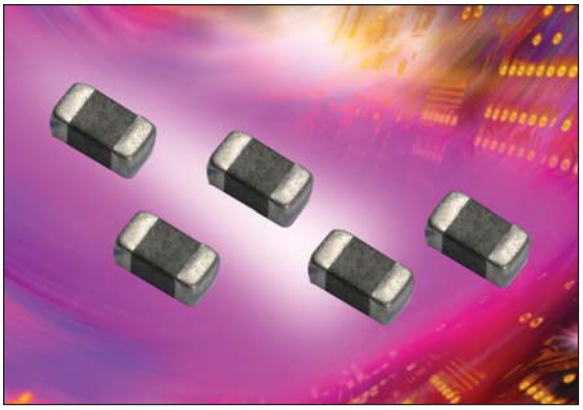


TransGuard® act as an EMI filter, in the "off state" and a transient voltage suppressor in the "on state". They are bidirectional and therefore act as back to back zener diodes, but offer other advantages, for example, fast turn-on time (sub 1ns) and repetitive strike capability. Package options include EIA case sizes 0402, 0603, 0805, 1206, 1210, 1812 and 2220, as well as axial leaded configuration.

DESC drawing Series AA55562

PART NUMBER IDENTIFICATION

Surface Mount Devices

Important: For part number identification only, not for construction of part numbers.
The information below only defines the numerical value of part number digits, and cannot be used to construct a desired set of electrical limits. Please refer to the TransGuard® part number data for the correct electrical ratings.

V	C	1206	05	D	150	R	M

Product Designator
V = Varistor

Case Style
C = Chip

Case Size Designator

Size	Length	Width
0402	1.00±0.10mm (0.040"±0.004")	0.5±0.10mm (0.020"±0.004")
0603	1.60±0.15mm (0.063"±0.006")	0.8±0.15mm (0.032"±0.006")
0805	2.01±0.2mm (0.079"±0.008")	1.25±0.2mm (0.049"±0.008")
1206	3.20±0.2mm (0.126"±0.008")	1.60±0.2mm (0.063"±0.008")
1210	3.20±0.2mm (0.126"±0.008")	2.49±0.2mm (0.098"±0.008")

Working Voltage
03 = 3.3 VDC
05 = 5.6 VDC
09 = 9.0 VDC
12 = 12.0 VDC
14 = 14.0 VDC
18 = 18.0 VDC
26 = 26.0 VDC
30 = 30.0 VDC
48 = 48.0 VDC
60 = 60.0 VDC

Energy
A = 0.1J
B = 0.2J
C = 0.3J
D = 0.4J
E = 0.5J
F = 0.7J
G = 0.9J
H = 1.2J
J = 1.5J
K = 0.6J
L = 0.8J
M = 1.0J
N = 1.1J
P = 3.0J
Q = 1.3J
R = 1.7J
S = 1.9-2.0J
T = 0.01J
U = 4.0-5.0J
V = 0.02J
W = 6.0J
X = 0.05J
Y = 12.0J
Z = 25.0J

Clamping* Voltage
100 = 12V
150 = 18V
200 = 22V
250 = 27V
300 = 32V
390 = 42V
400 = 42V
500 = 50V
560 = 60V
580 = 60V
620 = 67V
650 = 67V
101 = 100V
121 = 120V

Packaging (Pcs/Reel)

Style	"D"	"R"	"T"	"W"
VC0402	N/A	N/A	N/A	10,000
VC0603	1,000	4,000	10,000	N/A
VC0805	1,000	4,000	10,000	N/A
VC1206	1,000	4,000	10,000	N/A
VC1210	1,000	2,000	10,000	N/A

Termination Finish
M = Ni/Sn Pb (Plated)

Marking
All standard surface mount TransGuard® chips will **not** be marked.

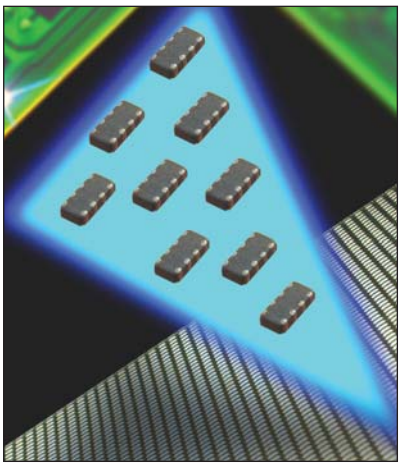
ELECTRICAL CHARACTERISTICS RANGE

Range	Working Voltage (DC)	Breakdown Voltage	Clamping Voltage	Test Current For V_c	Maximum Leakage Current	Transient Energy Rating	Peak Current Rating	Typical Cap
Lowest Value	3.3	5.0±20%	12	1	100	0.05	20	65
Highest Value	65	82.0±10%	135	10	10	4.80	800	5000

* Please check the AVX website for actual clamping to working voltage available on these devices.

MultiGuard TVS Array

AVX Multilayer Ceramic Transient Voltage Suppression Arrays – ESD Protection for CMOS and Bi Polar Systems



AVX's Transient Voltage Suppression (TVS) Arrays address six trends in today's electronic circuits: (1) mandatory ESD protection, (2) mandatory EMI control, (3) signal integrity improvement, (4) PCB downsizing, (5) reduced component placement costs, and (6) protection from induced slow speed transient voltages and currents.

AVX's MultiGuard products offer numerous advantages, which include a faster turn-on-time (<1nS), repetitive strike capability, and space savings. In some cases, MultiGuard consumes less than 75% of the PCB real estate required for the equivalent number of discrete chips. This size advantage, coupled with the savings associated with placing only one chip, makes MultiGuard the TVS component of choice for ESD protection of I/O lines in portable equipment and programming ports in cellular phones. Other applications include differential data line protection, ASIC protection and LCD driver protection for portable computing devices.

Where multiple lines require the ESD protection, the 4-element 0612 or 0508 chip is an ideal solution. While the 2-element 0405 MultiGuard is the smallest TVS array, the 4-element 0508 MultiGuard is the smallest 4-element TVS device available in the market today.

Available with standard working voltage of 5.6V up to 18V with low capacitance in the 3 case sizes, AVX MultiGuard arrays offer a very broad range of integrated TVS solutions to the design community.

HOW TO ORDER

MG	04	2	L	14	A	300	T	P
MultiGuard	**Case Size** 04 = 0405 05 = 0508 06 = 0612	**Configuration** 2 = 2 Elements 4 = 4 Elements	**Style** S = Standard Construction L = Low Capacitance	**Working Voltage** 05 = 5.6VDC 09 = 9.0VDC 14 = 14.0VDC 18 = 18.0VDC	**Energy Rating** A = 0.10 Joules V = 0.02 Joules X = 0.05 Joules	**Clamping Voltage** 150 = 18V 200 = 22V 300 = 32V 400 = 42V 500 = 50V	**Packaging** (PCS/REEL) D = 1,000 R = 4,000 T = 10,000	**Termination Finish** P = Ni/Sn Alloy (Plated) M = Ni/Sn Pb (Plated)

ELECTRICAL CHARACTERISTICS PER ELEMENT

	AVX Part Number	Working Voltage (DC)	Working Voltage (AC)	Breakdown Voltage	Clamping Voltage	Test Current For V_C	Maximum Leakage Current	Transient Energy Rating	Peak Current Rating	Typical Cap
2 Element 0405 Chip	MG042S05X150 _ _	5.6	4.0	8.5±20%	18	1	35	0.05	15	300
	MG042L14V400 _ _	14.0	10.0	18.5±12%	32	1	15	0.02	15	45
	MG042L18V500 _ _	18.0	14.0	N/A	50	1	10	0.02	15	40
2 Element 0508 Chip	MG052S05A150 _ _	5.6	4.0	8.5±20%	18	1	35	0.10	30	825
	MG052S09A200 _ _	9.0	6.4	12.7±15%	22	1	25	0.10	30	550
	MG052S14A300 _ _	14.0	10.0	19.5±12%	32	1	15	0.10	30	425
	MG052S18A400 _ _	18.0	14.0	25.5±10%	42	1	10	0.10	30	225
	MG052L18X500 _ _	≤18.0	≤14.0	N/A	50	1	10	0.10	20	50
4 Element 0508 Chip	MG054S05X150 _ _	5.6	4.0	8.5±20%	18	1	35	0.05	15	400
	MG054S09X200 _ _	9.0	6.4	12.7±15%	22	1	25	0.05	15	300
	MG054S14X300 _ _	14.0	10.0	19.5±12%	32	1	15	0.05	15	150
	MG054S18X400 _ _	18.0	14.0	25.5±10%	42	1	10	0.05	15	120
	MG054L18V500 _ _	≤18.0	≤14.0	N/A	50	1	10	0.02	15	50
4 Element 0612 Chip	MG064S05A150 _ _	5.6	4.0	8.5±20%	18	1	35	0.10	30	825
	MG064S09A200 _ _	9.0	6.4	12.7±15%	22	1	25	0.10	30	550
	MG064S14A300 _ _	14.0	10.0	19.5±12%	32	1	15	0.10	30	425
	MG064S18A400 _ _	18.0	14.0	25.5±10%	42	1	10	0.05	15	120
	MG064L18X500 _ _	≤18.0	≤14.0	N/A	50	1	10	0.10	20	75

Termination Finish Code

Packaging Code

V_W (DC)	DC Working Voltage (V)
V_W (AC)	AC Working Voltage (V)
V_B	Typical Breakdown Voltage (V @ 1mA$_{DC}$)
V_B Tol	V_B Tolerance is ± from Typical Value
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	Typical Capacitance (pF) @ 1MHz and 0.5 V_{RMS}

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