

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 T	C T	1206 T	05 T	D T	150 T	R T	M T							
Product Designator	Case Style	Case Size Designator		Working Voltage	Energy	Clamping* Voltage	Packaging (Pcs/Reel)	Termination Finish						
V = Varistor	C = Chip	Size	Length	Width			Style	"D"	"R"	"T"	"W"			
		0402	1.00±0.10mm (0.040"±0.004")	0.5±0.10mm (0.020"±0.004")	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	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	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	VC0402	N/A	N/A	N/A	10,000	M = Ni/Sn Pb (Plated)
		0603	1.60±0.15mm (0.063"±0.006")	0.8±0.15mm (0.032"±0.006")			VC0603	1,000	4,000	10,000	N/A			
		0805	2.01±0.2mm (0.079"±0.008")	1.25±0.2mm (0.049"±0.008")			VC0805	1,000	4,000	10,000	N/A			
		1206	3.20±0.2mm (0.126"±0.008")	1.60±0.2mm (0.063"±0.008")			VC1206	1,000	4,000	10,000	N/A			
		1210	3.20±0.2mm (0.126"±0.008")	2.49±0.2mm (0.098"±0.008")			VC1210	1,000	2,000	10,000	N/A			

Marking

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

ELECTRICAL CHARACTERISTICS RANGE

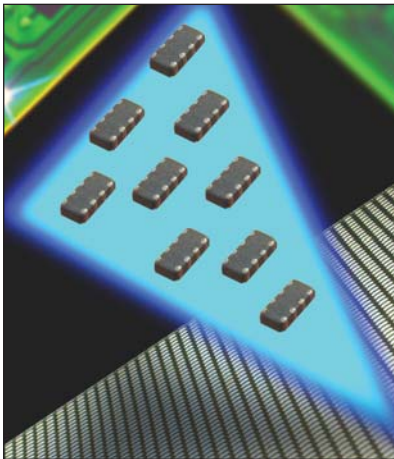
Range	Working Voltage (DC)	Breakdown Voltage	Clamping Voltage	Test Current For V _c	Maximum Leakage Current	Transient Energy Rating	Peak Current Rating	Typical Cap
Lowest Value	3.3	5.0±20%	12	1	100	0.05	20	65
Highest Value	65	82.0±10%	135	10	10	4.80	800	5000

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

