

Glass Encapsulated Automotive TransGuard®



GENERAL DESCRIPTION

The Glass Encapsulated Automotive TransGuard multilayer varistors are zinc oxide (ZnO) based ceramic semiconductor devices with non-linear, bi-directional V-I characteristics.

They have the advantage of offering bi-directional overvoltage protection as well as EMI/RFI attenuation in a single SMT package. The Automotive Series high current and high energy handling capability make them well suited for protection against automotive related transients.

The additional glass encapsulation is designed for specific customer requirements for enhanced acid-resistance against harsh environment or process such as acidic environment, salts or chlorite flux process.

GENERAL CHARACTERISTICS

Operating Temperature: -55°C to 125°C

FEATURES

- High Reliability
- High Energy Absorption (Load Dump)
- High Current Handling
- Bi-Directional protection
- EMI/RFI attenuation in off-state
- Multi-strike capability
- Sub 1nS response to ESD strike
- Glass Encapsulated
- AEC Q200 Qualified

APPLICATIONS

- Various Automotive Applications where Glass Encapsulation is needed for Harsh Environment / Acid-Resistance
- Various Automotive Applications
- Internal Combustion Engine (ICE) Vehicles
- Hybrid Electric Vehicles (HEV)
- Plug-in Hybrid Electric Vehicles (PHEV)
- Commercial Vehicles
- Sensors
- LIN BUS
- ECU
- DC Motor
- Relays
- and more

HOW TO ORDER

V	G	AS	1812	16	P	400	R	P
Varistor	Glass Encapsulated Chip	Automotive Series	Case Size	Working Voltage	Energy Rating	Clamping Voltage	Package	Termination
			1210 1812 2220	16 = 16Vdc 34 = 34Vdc 65 = 65Vdc	S = 2.0J P = 2.7-3.0J U = 4.0-5.0J Y = 7.2-12J	400 = 42V 770 = 77V 131 = 135V	D = 7" reel R = 7" reel T = 13" reel	P = Ni/Sn plated

PHYSICAL DIMENSIONS: mm (inches)

Size (EIA)	Length (L)	Width (W)	Max Thickness (T)	Land Length (t)
1210	3.20±0.20 (0.126±0.008)	2.49±0.20 (0.098±0.008)	1.70 (0.067)	0.14 max. (0.045 max.)
1812	4.50±0.30 (0.177±0.012)	3.20±0.30 (0.126±0.012)	2.00 (0.079)	1.00 max. (0.040 max.)
2220	5.70±0.40 (0.224±0.016)	5.00±0.40 (0.197±0.016)	2.50 (0.098)	1.00 max. (0.040 max.)



ELECTRICAL CHARACTERISTICS

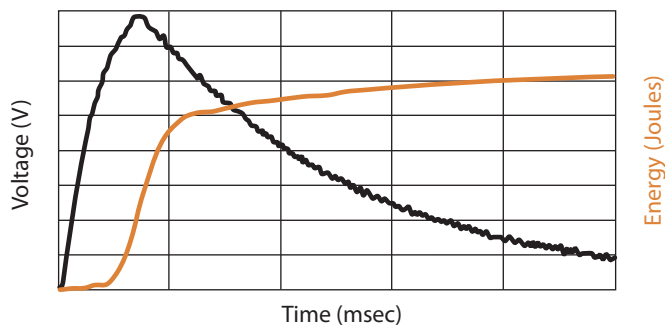
PN	V _{W DC}	V _{W AC}	V _B	V _C	I _{VC}	I _L	E _T	E _{LD}	I _P	Cap	Freq	V _{jump}	P diss
VGAS181216P400	16	11	24.5±10%	42	5	10	2.9	10	1000	5000	K	27.5	0.07
VGAS222016Y400	16	11	24.5±10%	42	10	10	7.2	25	1500	13000	K	25.5	0.1
VGAS121034S770	34	30	47.0±10%	77	2,5	15	2	3	400	1000	K	48	0.04
VGAS181234U770	34	30	47.0±10%	77	5	15	5	6.1	800	1500	K	48	0.08
VGAS222034Y770	34	30	47.0±10%	77	10	15	12	25	2000	6300	K	48	0.24
VGAS121065P131	65	50	82.0±10%	135	2,5	15	2.7	-	350	600	K	48	0.05

V _W (DC)	DC Working Voltage [V]	E _T	Transient Energy Rating [J, 10x1000µs]
V _W (AC)	AC Working Voltage [V]	E _{LD}	Load Dump Energy (x10) [J]
V _B	Typical Breakdown Voltage [V @ 1mA _{DC} , 25°C]	I _P	Peak Current Rating [A, 8x20µs]
V _C	Clamping Voltage [V @ I _{VC}]	Cap	Typical capacitance [pF] @ frequency specified and 0.5V _{RMS} , 25°C, M = 1MHz, K = 1kHz
I _{VC}	Test Current for V _C [A, 8x20µs]	V _{jump}	Jump Start [V, 5min]
I _L	Maximum leakage current at the working voltage, 25°C [µA]	P _{DISS MAX}	Max Power Dissipation [W]

AUTOMOTIVE SERIES – LOAD DUMP TEST

According to ISO DP7637 rev 2 Pulse 5

Automotive Load Dump Pulse (According to ISO 7637 Pulse 5)



When using the test method indicated below, the amount of Energy dissipated by the varistor must not exceed the Load Dump Energy value specified in the product table.

12V SYSTEMS

VGAS181216P400	0.5Ω	1Ω	4Ω
100ms	46	52	72
200ms	37	41	59
400ms	32	35	51
VGAS222016Y400	0.5Ω	1Ω	4Ω
100ms	53	60	77
200ms	50	55	73
400ms	47	50	66

Mouser Electronics

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[VGAS181234U770DP](#)