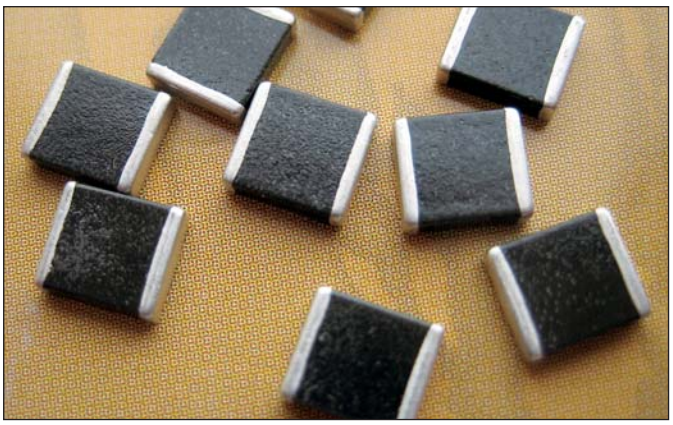
Glass Encapsulated TransGuard®

Automotive Series



GENERAL DESCRIPTION

The Glass Encapsulated TransGuard® Automotive Series are zinc oxide (ZnO) based ceramic semiconductor devices with non-linear, bi-directional voltage-current 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.

These large case size parts extend TransGuard range into high energy applications. In addition the glass encapsulation provides enhanced resistance against harsh environment or process such as acidic environment, salts or chlorite flux.

GENERAL CHARACTERISTICS

Operating Temperature:
-55ºC to 125ºC

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
- AEC Q200 Qualified

APPLICATIONS

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

HOW TO ORDER

V	G	AS	1812	16	P	400	R	P
Varistor	**Glass Encapsulate Chip**	**Automotive Series**	**Chip Size** 1210 1812 2220	**Working Voltage** 16 = 16Vdc 34 = 34Vdc 65 = 65Vdc	**Engergy Rating** S = 2.0J P = 2.9J U = 5.0J Y = 7.2-12J	**Clamping Voltage** 400 = 42V 770 = 77V 131 = 135V	**Package** D = 7" reel R = 7" reel T = 13" reel	**Termination** 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.)

ELECTRIAL CHARACTERISTICS

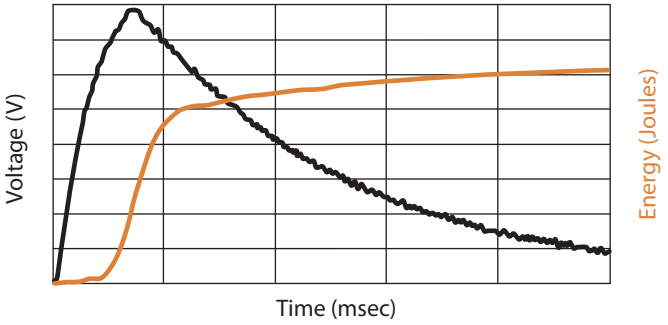
AVX PN	V_W (DC)	V_W (AC)	V_B	V_C	I_{VC}	I_L	E_T	E_{LD}	I_P	Cap	Freq	V_{Jump}	$P_{Diss, MAX}$
VGAS181216P400	16	11	24.5±10%	42	5	10	2.9	10	1000	5000	K	27.5	0.07
VGAS222016Y400	16	11	24.5±10%	42	10	10	7.2	25	1500	13000	K	25.5	0.1
VGAS121034S770	34	30	47.0±10%	77	2.5	15	2	3	400	1000	K	48	0.04
VGAS181234U770	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]
V_W(AC) AC Working Voltage [V]
V_B Typical Breakdown Votage [V @ 1mA$_{DC}$, 25°C]
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, 25°C [µA]
E_T Transient Energy Rating [J, 10x1000µS]
E_{LD} Load Dump Energy (x10) [J]
I_P Peak Current Rating [A, 8x20µS]
Cap Typical capacitance [pF] @ frequency specified and 0.5V_{RMS}, 25°C, M = 1MHz, K = 1kHz
V_{Jump} Jump Start [V, 5 min]
P_{DISS} 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