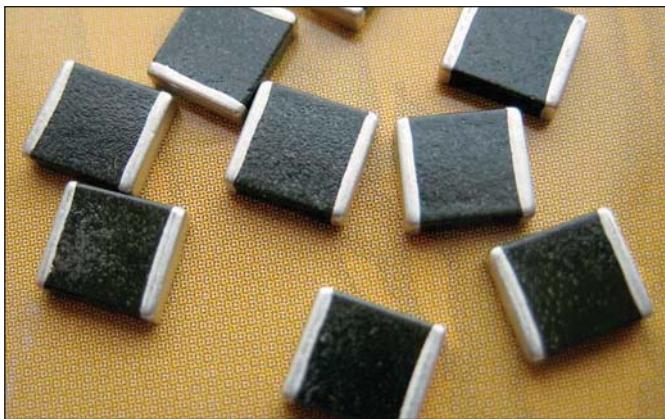


# Glass Encapsulated TransGuard®



## Automotive Series



### 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
- 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
- LIN BUS
- ECU
- DC Motor
- Relays
- 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	1210 1812 2220	Chip Size 1210 1812 2220	Working Voltage 16 = 16Vdc 34 = 34Vdc 65 = 65Vdc Y = 7.2-12J	Energy Rating S = 2.0J P = 2.9J U = 5.0J	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.)

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### ELECTRICAL CHARACTERISTICS

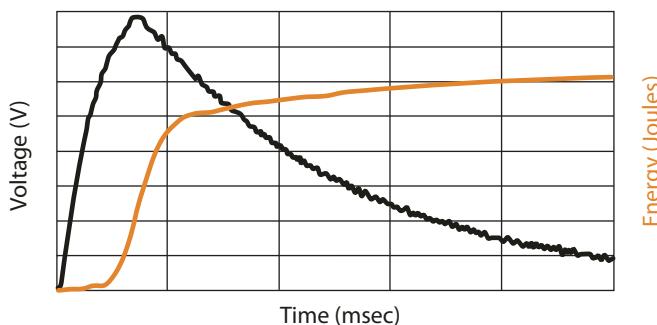
AVX PN	V <sub>W</sub> (DC)	V <sub>W</sub> (AC)	V <sub>B</sub>	V <sub>C</sub>	I <sub>VC</sub>	I <sub>L</sub>	E <sub>T</sub>	E <sub>LD</sub>	I <sub>P</sub>	Cap	Freq	V <sub>Jump</sub>	P <sub>Diss. MAX</sub>
VGAS181216P400	16	11	24.5±10%	42	5	10	2.9	10	1000	5000	K	27.5	0.07
VGAS222016Y400	16	11	24.5±10%	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 <sub>W</sub> (DC)	DC Working Voltage [V]	E <sub>T</sub>	Transient Energy Rating [J, 10x1000μS]
V <sub>W</sub> (AC)	AC Working Voltage [V]	E <sub>LD</sub>	Load Dump Energy (x10) [J]
V <sub>B</sub>	Typical Breakdown Voltage [V @ 1mA <sub>DC</sub> , 25°C]	I <sub>P</sub>	Peak Current Rating [A, 8x20μS]
V <sub>C</sub>	Clamping Voltage [V @ I <sub>VC</sub> ]	Cap	Typical capacitance [pF] @ frequency specified and 0.5V <sub>RMS</sub> , 25°C, M = 1MHz, K = 1kHz
I <sub>VC</sub>	Test Current for V <sub>C</sub> [A, 8x20μs]	V <sub>Jump</sub>	Jump Start [V, 5 min]
I <sub>L</sub>	Maximum leakage current at the working voltage, 25°C [μA]	P <sub>DSS</sub>	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

	0.5Ω	1Ω	4Ω
VGAS181216P400			
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