

# High Temperature +150°C Automotive Series Varistors



## +150°C Glass Encapsulated High Temperature TransGuard®



### GENERAL DESCRIPTION

AVX High Temperature 150°C Multi-Layer Varistors are designed for underhood and other high temperature automotive or industrial applications. Parts are AEC-Q200 qualified.

They offer bi-directional overvoltage protection as well as EMI/RFI attenuation in a single SMT package. This allows designers the ability to combine the circuit protection and EMI/RFI attenuation function into a single highly reliable device. The glass encapsulation provides enhanced resistance against harsh environment or process such as acidic environment, salts or chlorite flux.

Available in 1206 to 3220 case size, 16 - 31Vdc working voltage, energy rating 0.6 -13J, load dump energy 1.5 - 50J, peak current 200 - 1800A and capacitance 700 - 15000pF. Operating temperature range is -55°C to +150°C. Parts offer excellent lead free solderability thanks to Ni Barrier/100% Sn termination.

### GENERAL CHARACTERISTICS

- Operating Temp.: -55 to +150°C
- Working Voltage: 16 to 31Vdc
- Case Size: 1206 to 3220

### FEATURES AND BENEFITS

- AEC-Q200 Qualified
- 150°C High Temp
- EMI/RFI filtering in the off-state

### TYPICAL APPLICATIONS

- Under hood
- Down Hole Drilling
- Any high temperature application

### HOW TO ORDER

**VG**  
Varistor Glass Encapsulated

**AH**  
Automotive High Temp 150°C

**1206**  
Case Size  
1206  
1210  
1812  
2220  
3220

**16**  
Working Voltage  
16 = 16Vdc  
22 = 22Vdc  
26 = 26Vdc  
31 = 31Vdc

**K**  
Energy Rating  
H = 1.2J  
J = 1.5-1.6J  
K = 0.6J  
M = 1.0J  
P = 2.5-3.7J  
R = 1.7J  
S = 1.9-2.0J  
Y = 6.5-12J  
Z = 13J

**390**  
Clamping Voltage  
390 = 40V  
400 = 42V  
490 = 49V  
560 = 60V  
570 = 57V  
650 = 57V

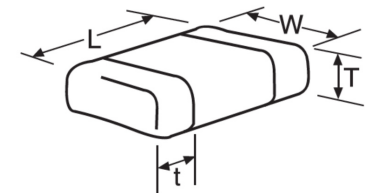
**R**  
Packaging  
D = 7" reel  
R = 7" reel  
T = 13" reel

**P**  
Termination  
P = Ni/Sn plated



### DIMENSIONS mm (inches)

Size (EIA)	Length (L)	Width (W)	Max Thickness (T)	Land Length (t)
1206	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	1.70 max. (0.067 max.)	0.94 max. (0.037 max.)
1210	3.20±0.20 (0.126±0.008)	2.49±0.20 (0.098±0.008)	1.70 max. (0.067 max.)	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 max. (0.079 max.)	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 max. (0.098 max.)	1.00 max. (0.040 max.)
3220	8.20±0.40 (0.323±0.016)	5.00±0.40 (0.197±0.016)	2.50 max. (0.098 max.)	1.30 max. (0.051 max.)



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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	V <sub>Jump</sub>	P <sub>Diss. Max</sub>
	Vdc	Vac	V	V	A	μA	J	J	A	pF	V	W
VGAH120616K390	16	11	24.5±10%	40	1.0	15	0.6	1.5	200	1100	27.5	0.01
VGAH121016J400	16	13	25.5±10%	42	5.0	15	1.6	3.0	500	2300	27.5	0.03
VGAH121016S390	16	14	24.5±10%	40	2.5	15	2.0	5.0	500	3000	27.5	0.01
VGAH181216P390	16	11	24.5±10%	40	5.0	15	2.9	10.0	1000	7000	27.5	0.07
VGAH222016Y400	16	11	24.5±10%	42	10.0	10	7.2	25.0	1500	13000	27.5	0.1
VGAH222022Y490	22	17	30±10%	49	10.0	15	6.8	25.0	1200	12000	27.5	0.03
VGAH121026H560	26	18	34.5±10%	60	5.0	15	1.2	3.0	300	1200	27.5	0.018
VGAH181226P570	26	23	35±10%	57	5.0	15	3.0	8.0	600	3000	30.0	0.015
VGAH222026Y570	26	23	35±10%	57	10.0	15	6.8	20.0	1100	7000	30.0	0.03
VGAH322026Z570	26	23	35±10%	57	10.0	15	13.0	50.0	1800	15000	30.0	0.04
VGAH120631M650	31	25	39±10%	65	1.0	15	1.0	2.5	200	700	30.0	0.03
VGAH121031R650	31	25	39±10%	65	2.5	15	1.7	4.5	300	1200	30.0	0.05
VGAH181231P650	31	25	39±10%	65	5.0	15	3.7	8.0	800	2600	30.0	0.06
VGAH222031Y650	31	25	39±10%	65	10.0	15	9.6	23.0	1200	6100	30.0	0.03

V<sub>w</sub>(DC) DC Working Voltage [V]

V<sub>w</sub>(AC) AC Working Voltage [V]

V<sub>B</sub> Typical Breakdown Voltage [V @ 1mA<sub>DC</sub>]

V<sub>C</sub> Clamping Voltage [V @ I<sub>vc</sub>]

I<sub>vc</sub> Test Current for V<sub>C</sub>

I<sub>L</sub> Maximum leakage current at the working voltage [μA]

E<sub>T</sub> Transient Energy Rating [J, 10x1000μS]

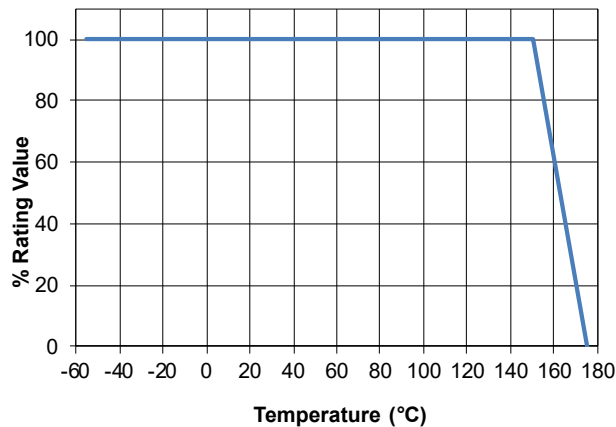
I<sub>p</sub> Peak Current Rating [A, 8x20μS]

Cap Typical capacitance [pF] @ frequency specified and 0.5V<sub>RMS</sub>

V<sub>Jump</sub> Jump Start (V)

P<sub>Diss. Max</sub> Power Dissipation (W)

## POWER DERATING CURVE (CURRENT, ENERGY, POWER)



## OPERATING VOLTAGE DERATING

