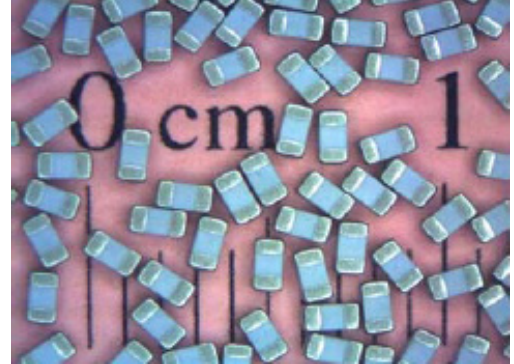


AEM GcDiode™ ESD Suppressors

Part Number: ES0603V014BT, ES0402V014BT

Features:

- Glass ceramic monolithic structure
- Ultra low capacitance (0.25pF typical)
- Low leakage current (<0.1nA)
- Fast response time (<1ns)
- Bi-directional flip-chip design
- Low clamping voltage
- Silver termination with nickel
- Durability of withstanding 8kV strikes exceeding 5000 times
- 100% lead-free and RoHS compliant



Electrical Characteristics:

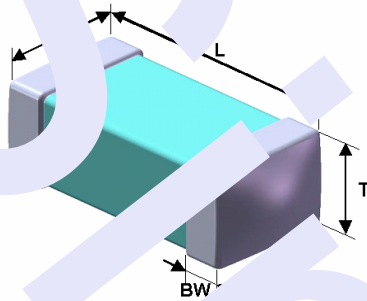
Characteristic	Value
IEC61000-4-2 Direct Discharge IEC61000-4-2 Air Discharge	Level 4 – 8kV Level 4 – 15kV
Trigger Voltage	500V (typical) (measured per IEC61000-4-2, Level 4, 8kV)
Clamping Voltage	50V (typical) (measured per IEC61000-4-2, Level 4, 8kV)
Response Time	Less than 1ns
Capacitance (1GHz)	0.25pF (typical)
Leakage Current	Less than 0.1nA (typical) (measured at 14VDC)
Rated Voltage	14VDC (max.)

AEM GcDiode™ ESD Suppressors

Operating Temperature Range: -55°C ~ +125°C

Typical Applications: USB, IEEE1394, HDMI, DisplayPort, DVI, Antennas, UDI, E-SATA, LCD TV, Set Top Box, DVD, LCD Monitor, Notebook, Mobile Phone, Netbook, MID

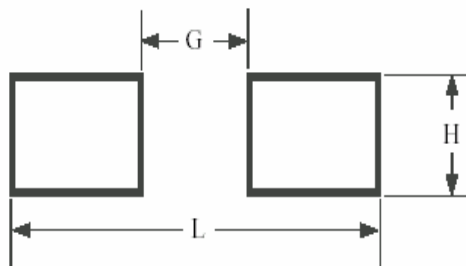
Shape and Dimensions:



Inch (mm)

Size	L	W	T	BW
0603 (1608)	0.063±0.006 (1.60±0.15)	0.031±0.006 (0.80±0.15)	0.031±0.006 (0.80±0.15)	0.014±0.006 (0.36±0.15)
0402 (1005)	0.039±0.004 (1.00±0.10)	0.020±0.004 (0.51±0.10)	0.020±0.004 (0.51±0.10)	0.010±0.004 (0.25±0.10)

Recommended PC Board Land Pattern:



Inch (mm)

Chip Size	L	G	H
0603 (1608)	0.110 (2.80)	0.024 (0.60)	0.039 (1.00)
0402 (1005)	0.063 (1.60)	0.016 (0.40)	0.028 (0.70)

AEM GcDiode™ ESD Suppressors

Product Identification:

ES 0603 V014 B I
 (1) (2) (3) (4) (5)

- (1) Category code
- (2) Dimension code: L x W (inch)
 The first two digits - L (length)
 The last two digits - W (width)
- (3) Rated voltage code: V014 -14 VDC
- (4) Series code
- (5) Package code:
 T - Tape & Reel
 B - Bulk

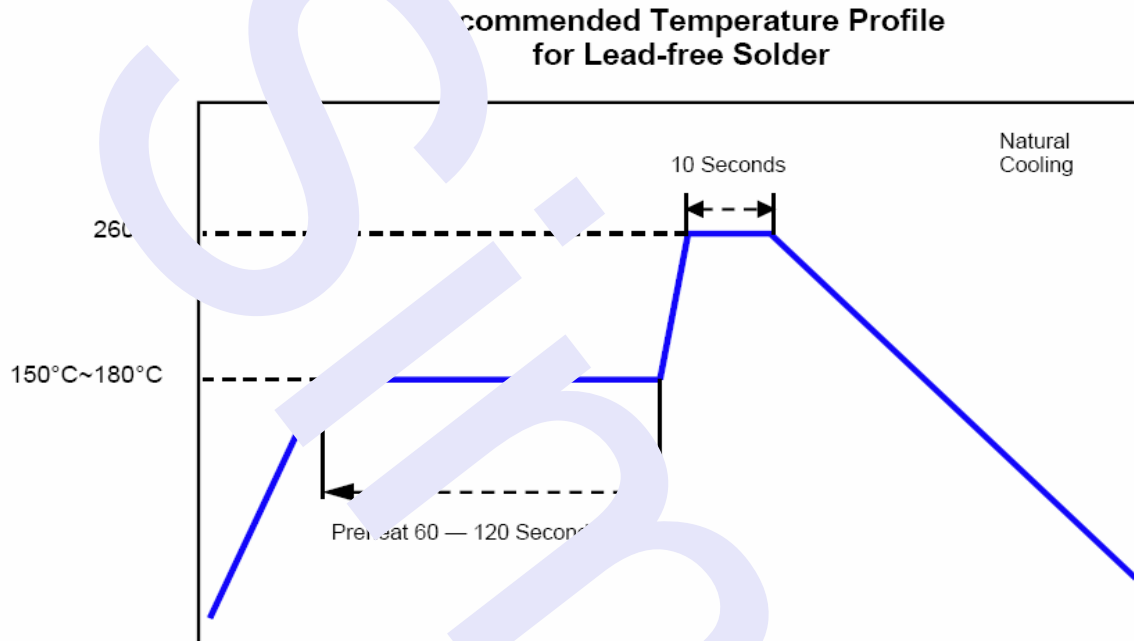
Representative test waveform per IEC61000-4-2 Level 4, 8kV:



AEM GcDiode™ ESD Suppressors

Recommended Temperature Profiles for Soldering:

AEM's ESD suppressors can be soldered on PCB using wave or reflow soldering processes.



Recommended conditions for hand soldering:

1. Appropriate temperature (max.) of soldering iron tip/soldering time (max.): 280°C / 10s or 350°C / 3s.
2. Using hot air rework station with tip that can melt the solder on both terminations at the same time is strongly recommended. Do not directly contact the chip termination with the tip of soldering iron.

AEM GcDiode™ ESD Suppressors

Reliability Tests:

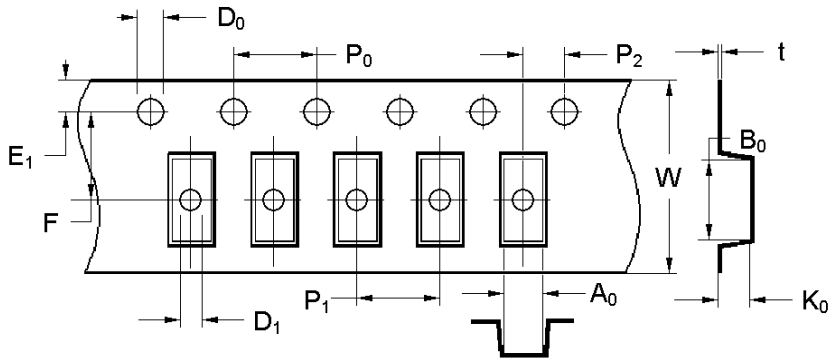
Reliability Test	Test Conditions and Requirements
Flexure Strength	2 mm bend, meet triggering voltage and clamping voltage requirements while being bent, and meet leakage current requirement after bending.
Solderability	255°C, 5 seconds 90% coverage min.
Soldering Heat Resistance	260°C, 10 seconds, No mechanical damage Pass ESD test.
Life	100 direct contact discharge level 4, 8kV No open or short Pass ESD test (Except leakage current $\leq 10\mu\text{A}$)
Thermal Shock	100 cycles between -65°C and $+125^{\circ}\text{C}$ No mechanical damage Pass ESD test
Mechanical Vibration	0.4"D.A. or 30G between 5-3000Hz No mechanical damage Pass ESD test
Mechanical Shock	1500G, 0.5ms, half-sine shocks No mechanical damage Pass ESD test
Salt Spray	48 hour exposure No excessive corrosion Pass ESD test
Moisture Resistance	10 cycles No excessive corrosion Pass ESD test
Endurance	85°C, 1000 hours, rated voltage Leakage current less than 100nA

AEM GcDiode™ ESD Suppressors

Packaging:

Tape Dimensions: Inch (mm)

Surface mount ESD suppressors are provided on tape-and-reel for use in pick-and-place machines or in bulk for special applications. Both tape-and-reel and bulk products are sealed in plastic bags with desiccant. The reel size is 7 inches.



Size	Ao	Bo	Ko	Type
0402 (1005)	0.026±0.004 (0.67±0.10)	0.046±0.004 (1.17±0.10)	0.025±0.004 (0.63±0.10)	Paper
0603 (1608)	0.045±0.004 (1.15±0.10)	0.073±0.004 (1.85±0.10)	0.043±0.004 (0.93±0.10)	Paper

	E1	F	W	P1	P0	P2	D0	D1	t
0603 (1608)	0.069±0.004 (1.75±0.10)	0.138±0.002 (3.50±0.05)	0.318±0.004 (8.00±0.10)	0.157±0.004 (4.00±0.10)	0.157±0.004 (4.00±0.10)	0.079±0.002 (2.00±0.05)	0.059±0.004 (1.50±0.10/-0.00)	N/A	0.009±0.001 (0.23±0.02)
0402 (1005)	0.069±0.004 (1.75±0.10)	0.138±0.002 (3.50±0.05)	0.318±0.004 (8.00±0.10)	0.079±0.004 (2.00±0.10)	0.157±0.004 (4.00±0.10)	0.040±0.002 (1.00±0.05)	0.059±0.004 (1.50±0.10/-0.00)	N/A	0.009±0.001 (0.23±0.02)

Quantity Per Reel:

Chip Size	Parts on 7 inch (178 mm) Reel
0603 (1608)	4,000
0402(1005)	10,000

Other sizes and chip quantities can be provided upon customer's request.

AEM GcDiode™ ESD Suppressors

Storage:

- The maximum ambient temperature shall not exceed 40°C. Storage temperature higher than 40°C could result in the deformation of packaging materials.
- The maximum relative humidity recommended for storage is 70%. High humidity with high temperature could accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components.
- Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use.
- The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.

Specifications and descriptions in this literature are as accurate as known at the time of printing, but are subject to change without notice. For the most updated information, please consult the factory.

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