

# PulseGuard® Suppressors

Polymeric ESD Suppressors

NEW

## Ⓟ PGB1 Series Lead-Free 0603 Surface Mount ESD Suppressor

### Product Overview

PulseGuard ESD Suppressors help protect sensitive electronic equipment against electrostatic discharge (ESD). They supplement the on-chip protection of integrated circuitry and are best suited for low-voltage, high-speed applications where low capacitance is important. Data ports utilizing such high-speed protocols as USB 2.0, IEEE1394, HDMI and DVI can benefit from this new technology.

PulseGuard suppressors use polymer composite materials to suppress fast-rising ESD transients (as specified in IEC 61000-4-2 and MIL-STD-883C), while adding virtually no capacitance to the circuit.

### Features

- Lead-Free
- Ultra-low capacitance
- Low leakage current
- Fast response time
- Single line of protection
- Bi-directional
- Withstands multiple ESD strikes
- Standard EIA SOCM-1608 package
- Compatible with pick-and-place processes
- Available in 1,000 and 5,000 piece reels (EIA-RS481)

### Typical Applications

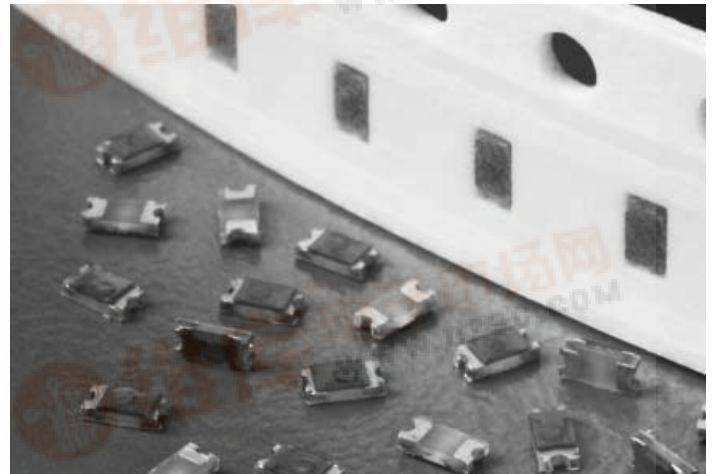
- HDTV Hardware
- Laptop/Desktop Computers
- Network Hardware
- Computer Peripherals
- Digital Cameras
- External Storage
- Set-Top Boxes

### Ordering Information

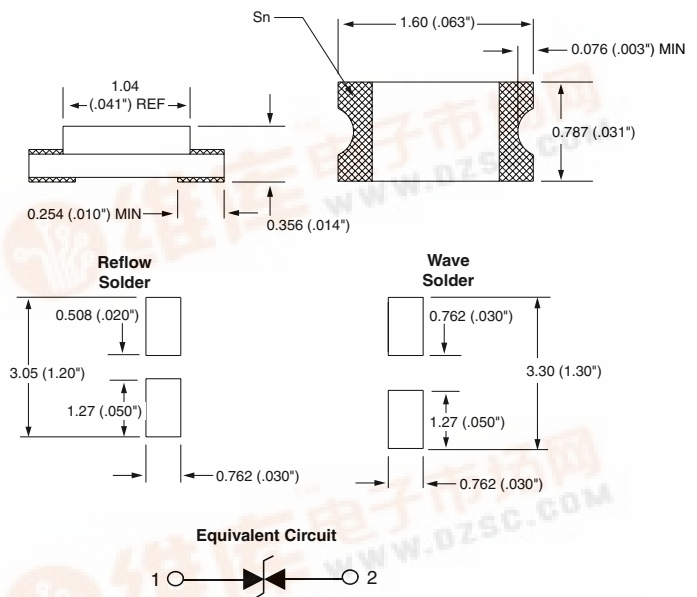
| CATALOG NUMBER | PIECES PER REEL |
|----------------|-----------------|
| PGB1010603MR   | 1,000           |
| PGB1010603NR   | 5,000           |

### Design Consideration

Because of the fast rise-time of the ESD transient, placement of PulseGuard suppressors is a key design consideration. To achieve optimal ESD suppression, the devices should be placed on the circuit board as close to the source of the ESD transient as possible. Install PulseGuard suppressors directly behind the connector so that they are the first board-level circuit component encountered by the ESD transient. They are connected from signal/data line to ground.



Reference Dimensions:



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#### Electrical Characteristics

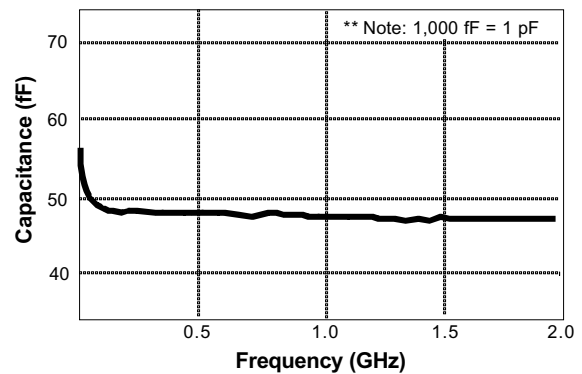
##### ESD Capability

|                                      |                       |
|--------------------------------------|-----------------------|
| IEC 61000-4-2 Direct Discharge ..... | 8kV                   |
| IEC 61000-4-2 Air Discharge .....    | 15kV                  |
| Trigger Voltage <sup>1</sup> .....   | 500V, typical         |
| Clamping Voltage <sup>1</sup> .....  | 150V, typical         |
| Rated Voltage .....                  | 24VDC, max            |
| Capacitance <sup>2</sup> .....       | 0.055 pF              |
| Response Time <sup>1</sup> .....     | < 1 ns                |
| Leakage Current .....                | < 1nA                 |
| ESD Pulse Withstand .....            | 1,000 pulses, minimum |

##### NOTES:

1. 8 kV direct discharge method, per IEC 61000-4-2.
2. Measured at 1 MHz.

#### Capacitance vs. Frequency



#### Environmental Specifications

**Operating Temperature:** -65°C to +125°C.

**Moisture Resistance, steady state:** MIL-STD-833, method 1004.7, 85% RH, 85°C, 1000hrs.

**Thermal Shock:** MIL-STD-202, Method 107G, -65°C to 125°C, 30 min cycle, 10 cycles.

**Vibration:** MIL-STD-202F, Method 201A, (10 to 55 to 10Hz, 1 min. cycle, 2grs each in X-Y-Z)

**Chemical Resistance:** ASTM D-543, 4hrs @ 40°C, 3 solutions (H<sub>2</sub>O, detergent solution, defluxer)

**Solder leach resistance and terminal adhesion:** Per EIA-576 test

#### Physical Specifications

##### Materials:

Body: Glass Epoxy

Terminations: Tin (Sn)

##### Solderability:

MIL-STD-202, Method 208 (95% coverage)

##### Soldering Parameters:

Wave solder - 260°C, 10 seconds maximum

Reflow solder - 260°C, 30 seconds maximum

##### Operating Temperature Range:

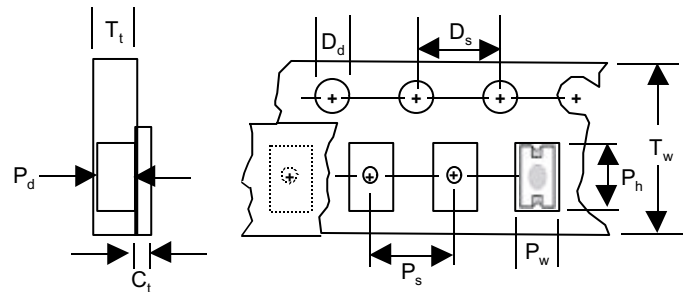
-65°C to +125°C

#### Packaging Specifications

8mm Tape and Reel per EIA-RS481-1 (IEC 286, part3); 1,000 pieces per reel, add packaging suffix, MR; 5,000 per reel, add packaging suffix NR.

#### Carrier Tape Specifications

Parts are delivered on 7" (178mm) reel, paper carrier tape



| DESCRIPTION                             | MEASUREMENT (MM) |
|---|------------------|
| C <sub>t</sub> - Cover tape thickness   | 0.06             |
| D <sub>d</sub> - Drive hole diameter    | 1.50             |
| D <sub>s</sub> - Drive hole spacing     | 4.00             |
| P <sub>d</sub> - Pocket depth           | 0.58             |
| P <sub>h</sub> - Pocket height          | 1.85             |
| P <sub>s</sub> - Pocket spacing         | 4.00             |
| P <sub>w</sub> - Pocket width           | 1.02             |
| T <sub>t</sub> - Carrier tape thickness | 0.65             |
| T <sub>w</sub> - Carrier tape width     | 8.00             |