PulseGuard® Suppressors
Surface Mount Polymeric ESD Suppressors

PGB Series SOT23 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 and InfiniBand™ 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-883E).

Features
• Ultra-low capacitance
• Low leakage current
• Fast response time
• 2-lines of protection
• Bi-directional
• Withstands multiple ESD strikes
• Standard JEDEC SOT23 outline
• Compatible with pick-and-place processes
• Available in 3,000 piece reels

Typical Applications
• Servers
• Laptop/Desktop Computers
• Network Hardware
• Computer Peripherals
• Digital Cameras
• External Storage

Ordering Information

<table>
<thead>
<tr>
<th>CATALOG NUMBER</th>
<th>PIECES PER REEL</th>
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<tbody>
<tr>
<td>PGB002ST23WR</td>
<td>3,000</td>
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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:

![Reference Dimensions Diagram]

Note: For wave solder, increase the spacing in both the horizontal and vertical dimensions by 0.254 (.010”) where denoted by an asterisk (*)

Equivalent Circuit

![Equivalent Circuit Diagram]
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Electrical Characteristics

ESD Capability

- IEC 61000-4-2 Direct Discharge ........................................... 8kV
- IEC 61000-4-2 Air Discharge ............................................. 15kV

Trigger Voltage\(^1\) ................................................................. 1,000V typical

Clamping Voltage\(^1\) ............................................................ 150V typical

Rated Voltage\(^2\) ................................................................. 24VDC max

Capacitance\(^2\) ................................................................. 0.055pF

Response Time\(^1\) ............................................................. <1ns

Leakage Current\(^3\) ............................................................ <1nA

ESD Pulse Withstand\(^4\) ...................................................... 1,000 pulses minimum

Notes:

1. Trigger and clamping voltage measured per IEC 61000-4-2, 8kV direct discharge method.
2. Capacitance measured at 1MHz.
3. Leakage current measured at 6VDC.
4. Pulse Withstand- some shifting in characteristics may occur when tested over multiple pulses at a very rapid rate.

Environmental Specifications

- Operating Temperature: -65°C to +125°C.
- 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 (H2O, detergent solution, defluxer)
- Solder leach resistance and terminal adhesion: Per EIA-576 test

Physical Specifications

- Materials:
  Body: Glass Epoxy
  Terminations: Copper/Nickel/Tin/Lead
- Solderability: MIL-STD-202, Method 208 (95% coverage)
- Soldering Parameters:
  Wave Solder – 260°C, 10 seconds maximum.
  Reflow Solder – 260°C, 30 seconds maximum.

Packaging Specifications

- 8mm Tape and Reel per EIA-RS481-1 (IEC 286, part3); 3,000 pieces per reel, add packaging suffix, WR.

Carrier Tape Specifications

Parts are delivered on 7” (178mm) reel, plastic carrier tape

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<td>C(_t) - Cover tape thickness</td>
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<td>D(_d) - Drive hole diameter</td>
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<td>D(_s) - Drive hole spacing</td>
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<td>P(_d) - Pocket depth</td>
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<tr>
<td>P(_h) - Pocket height</td>
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