ESD3Z SERIES SMD Transient Voltage Suppressor For ESD protection

Surface Mount Uni-Directional TVS For ESD Protection Diode - 3.3V - 12V

Features
- This series is designed for average power 350W approximated ESD protection, different Vbrm, different peak pulse power available.
- Protects one I/O or power line.
- Low clamping voltage.
- Working voltages: 3.3V, 5.0V, 12V
- Low leakage current.
- Lead-free parts meet environmental standards of MIL-STD-19500/228
- Suffix "-H" indicates Halogen-free part, ex. ESD3Z3.3-H.

IEC compatibility
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 24A (8/20µs)

Applications
- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Peripherals
- Pagers

Mechanical data
- Epoxy: UL94-V0 rated flame retardant
- Case: Molded plastic, SOD-323
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Indicated by cathode band
- Mounting Position: Any
- Weight: Approximated 0.005 gram

Maximum ratings (at T_a=25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead solder temperature-maximum</td>
<td>10 second duration</td>
<td>T_s</td>
<td>260</td>
<td>°C</td>
</tr>
<tr>
<td>Operating junction temperature range</td>
<td></td>
<td>T_j</td>
<td>-55 to +150</td>
<td>°C</td>
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<tr>
<td>Operating &amp; Storage Temperature Range</td>
<td></td>
<td>T_{JS}</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical characteristics (at T_a=25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>V_{brm} (V) (Max.)</th>
<th>I_{b} (µA) @V_{brm} (Max.)</th>
<th>V_{brm}(V) @I_{b} (Note 2) (Min.)</th>
<th>I_{p} (mA) @I_{p}=1.0A (Max.)</th>
<th>I_{p} (A) (Max.)</th>
<th>V_{brm}(V) (Note 1) @Max I_{p} (Max.)</th>
<th>P_{ex} (W) (Note 1) (Max.)</th>
<th>C_{j} (pF) (Typ.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD3Z3.3</td>
<td>3.3</td>
<td>10</td>
<td>5.0</td>
<td>1.0</td>
<td>7.5</td>
<td>8.5</td>
<td>10.5</td>
<td>90</td>
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<tr>
<td>ESD3Z5.0</td>
<td>5.0</td>
<td>10</td>
<td>6.2</td>
<td>1.0</td>
<td>9.8</td>
<td>24.0</td>
<td>14.5</td>
<td>350</td>
</tr>
<tr>
<td>ESD3Z12</td>
<td>12</td>
<td>1</td>
<td>13.3</td>
<td>1.0</td>
<td>19.0</td>
<td>14.0</td>
<td>25.0</td>
<td>350</td>
</tr>
</tbody>
</table>

Notes:
1. Surge current waveform per Fig.1
2. V_{brm} is measured with a pulse test current I, at an ambient temperature of 25°C.
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Typical characteristics (at $T_a=25{}^\circ{}C$ unless otherwise noted)

- $V_c$: Clamping voltage @ $I_{pp}$
- $I_{pp}$: Maximum reverse peak pulse current
- $V_{RWM}$: Maximum working peak reverse voltage
- $I_R$: Maximum reverse leakage current @ $V_{RWM}$
- $V_{BR}$: Breakdown voltage @ $I_T$
- $I_T$: Test current
- $C_d$: Max. capacitance @ $V_R = 0V$ and $f = 1MHz$

Rating and characteristic curves (ESD3Z SERIES)

![Fig1. Pulse Waveform](image1)

![Fig2. Power Derating](image2)
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ESD Pulse Waveform (Per IEC 61000-4-2)

Pinning information

<table>
<thead>
<tr>
<th>Pin</th>
<th>Simplified outline</th>
<th>Symbol</th>
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<tbody>
<tr>
<td>Uni-Directional Pin1 cathode Pin2 anode</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
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</table>

Marking

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code</th>
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<tbody>
<tr>
<td>ESD3Z3.3</td>
<td>E2</td>
</tr>
<tr>
<td>ESD3Z5.0</td>
<td>E5</td>
</tr>
<tr>
<td>ESD3Z12</td>
<td>E6</td>
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</table>

Suggested solder pad layout

Dimensions in inches and (millimeters)

<table>
<thead>
<tr>
<th>PACKAGE</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>SOD-323</td>
<td>0.033 (0.83)</td>
<td>0.025 (0.63)</td>
<td>0.063 (1.60)</td>
</tr>
</tbody>
</table>

Note: Specification is subject to change without further notice. For more details and updates, please visit our website.