**0402ESDA-MLP**

**ESD suppressor**

**Product features**

- Ultra-low capacitance (0.05 pF typ.) ideal for high-speed data applications
- Provides ESD protection with fast response time (<1 ns) allowing equipment to pass IEC 61000-4-2 level 4 test
- Single-line, bi-directional device for placement flexibility
- Low profile 0402/1005 design for board space savings
- Low leakage current (<0.1 nA typ.) reduces power consumption

**Applications**

- ESD port protection for mobile/smart phones
- Game console ESD port protection
- High speed ESD data port protection
- Set-top-box
- Tablets, netbooks, laptops
- High definition television (HDTV)
- Media players
- Digital cameras
- Medical equipment
- Computers and peripherals ESD port protection
- Consumer electronics

**Ordering Information**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>0402ESDA-MLP7</td>
<td>10,000 pieces in paper tape on</td>
</tr>
<tr>
<td></td>
<td>7&quot; (178mm) reel</td>
</tr>
<tr>
<td>0402ESDA-MLP8</td>
<td>2,500 pieces in paper tape on</td>
</tr>
<tr>
<td></td>
<td>7&quot; (178mm) reel</td>
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</tbody>
</table>

**Electrical Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>30 VDC maximum</td>
</tr>
<tr>
<td>Clamping Voltage*</td>
<td>35 V typical</td>
</tr>
<tr>
<td>Trigger Voltage†</td>
<td>300 V typical</td>
</tr>
<tr>
<td>Capacitance (@1 MHz)</td>
<td>0.05 pF typ., 0.15 pF max.</td>
</tr>
<tr>
<td>Attenuation Change (0-6 GHz)</td>
<td>-0.2 dB typical</td>
</tr>
<tr>
<td>Leakage Current (@12 VDC)</td>
<td>&lt;0.1 nA typical</td>
</tr>
<tr>
<td>ESD Capability</td>
<td></td>
</tr>
<tr>
<td>IEC61000-4-2 Direct Discharge</td>
<td>8 kV typical</td>
</tr>
<tr>
<td>IEC61000-4-2 Air Discharge</td>
<td>15 kV typical</td>
</tr>
<tr>
<td>ESD Pulse Withstand†</td>
<td>&gt;1000 typical</td>
</tr>
</tbody>
</table>

**Notes:**

1. Per IEC61000-4-2, Level 4 waveform (8 kV direct, 30 A) measured 30ns after initiation of pulse.
2. Trigger measurement made using Transmission Line Pulse (TLP) method.
3. Minor shifting in characteristics may be observed over multiple ESD pulses at very rapid rate.
Design Considerations

The location in the circuit for the MLP family has to be carefully determined. For better performance, the device should be placed as close to the signal input as possible and ahead of any other component. Due to the high current associated with an ESD event, it is recommended to use a “0-stub” pad design (pad directly on the signal/data line and second pad directly on common ground).

Environmental Specifications:

- Load Humidity: 12VDC per EIA/IS-772 Para. 4.4.2, +85°C, 85% RH for 1000 hours.
- Thermal Shock: EIA/IS-722 Para 4.6, Air to Air -55°C to +125°C, 5 cycles
- Mechanical Shock: EIA/IS-722 Para. 4.9
- Vibration: EIA/IS-722 Para. 4.10
- Resistance to Solvent: EIA/IS-722 Para. 4.11
- Operating & Storage Temperature Range: -55°C to +125°C

Soldering Recommendations:

- Compatible with lead and lead-free solder reflow processes
- Peak reflow temperatures and durations:
  - IR Reflow = 260°C max for 10 sec. max.
  - Wave Solder = 260°C max. for 30 sec. max.
- Recommended IR Reflow Profile:

Discontinued effective June 1, 2010 or until inventory is depleated. Recommended replacement is 0402ESDA-MLP1 data sheet #4367