NEW PRODUCT BRIEF

Bourns® Model CD0201-T2.0LC Bidirectional Ultra-low Capacitance ESD Protection TVS Diode

INTRODUCTION
The Bourns® Model CD0201-T2.0LC is a bidirectional ultra-low capacitance ESD protection TVS diode capable of handling IEC 61000-4-2 ±12 kV contact discharge and ±15 kV air discharge of ESD pulses. It is constructed in a tiny 0201 package (0.6 mm x 0.3 mm x 0.3 mm), minimizing PCB layout space and easing layout routing for impedance matching. Based on these design features, the Model CD0201-T2.0LC is suitable for ultra-high-speed interface protection including USB 3.0, USB 3.1, USB4®, Thunderbolt™, DisplayPort™, and 10 GbE.

The marketplace continues to seek ultra-low-capacitance, high-performance ESD protection in a compact 0201 package for high-speed communication interfaces. The Bourns® Model CD0201-T2.0LC meets designers' needs with its advanced deep snapback design – not only providing the desired ultra-low capacitance, but also enhanced ESD protection with high surge current handling capability.

CIRCUIT DIAGRAM

FEATURES AND BENEFITS
- Bidirectional ESD protection TVS diode
- Ultra-low capacitance: 0.2 pF
- High ESD protection @ IEC 61000-4-2:
  - ±12 kV contact discharge
  - ±15 kV air discharge
- 0201 footprint package
- RoHS compliant*
- Halogen free**

APPLICATIONS
Bourns® Model CD0201-T2.0LC offers enhanced protection performance with its ultra-low capacitance and high surge current capability in its compact 0201 footprint. These features meet the electrical and physical ESD protection requirements of ultra-high-speed data interface protocols including USB 3.0, USB 3.1, USB4®, Thunderbolt™, DisplayPort™, and 10GbE. It is important to note, however, that Model CD0201-T2.0LC is not recommended for use as DC supply line protection. In addition, this new Bourns® ESD protection TVS diode is capable of handling 7 A of surge current (8/20 µs), and provides superior clamping voltage performance as low as 4 V.

MARKET TRENDS
As advanced semiconductors continue to be susceptible to pulse surges, reliable ESD protection is essential for ultra-high-speed data communication interfaces. Designers of next-generation applications are also further challenged by the need for ever-smaller protection solutions in increasingly complex, space-constrained and densely populated PCB layouts.

HOW TO ORDER

*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.
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ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Standoff Voltage</td>
<td>$V_{RWM}$</td>
<td>@ 1 mA</td>
<td>2 V</td>
<td>V</td>
</tr>
<tr>
<td>Breakdown Voltage</td>
<td>$V_{BR}$</td>
<td>@ 2 V</td>
<td>5.5 to 10 V</td>
<td>V</td>
</tr>
<tr>
<td>Clamping Voltage*</td>
<td>$V_{C}$</td>
<td>@ 1 A (8/20 µs)</td>
<td>4 V</td>
<td>V</td>
</tr>
<tr>
<td>Leakage Current</td>
<td>$I_R$</td>
<td></td>
<td>500 (max.) nA</td>
<td>nA</td>
</tr>
<tr>
<td>Capacitance</td>
<td>$C_J$</td>
<td>$f = 1$ MHz, $V_{RWM} = 2$ V</td>
<td>0.18 (typ.)</td>
<td>nF</td>
</tr>
</tbody>
</table>

*8/20 µs current waveform per IEC 61000-4-5 measured at the peak surge current.

TYPICAL TLP MEASUREMENT

![TLP Measurement Diagram](image-url)