**Features**

- Bidirectional TVS 3.3 V
- Low capacitance - 13 pF
- ESD protection 15 kV
- 0402 DFN package
- RoHS compliant*

**Applications**

- Computers and peripherals
- Communication systems
- Audio & video equipment
- Portable instrumentation
- Handheld portable devices

**General Information**

The Bourns® Model CDDFN2-T3.3B low capacitance device provides ESD, EFT and surge protection for external ports of electronic devices such as cellular phones, handheld electronics and other portable electronic devices.

The device measures 1.0 mm x 0.60 mm x 0.55 mm and is available in a DFN-2 package intended to be mounted directly onto an FR4 printed circuit board. The device will fit a 0402 footprint.

The device is designed to meet IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC61000-4-5 (Surge) protection requirements.

**Maximum Ratings (@ TA = 25 °C Unless Otherwise Noted)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>TSTG</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>TOPR</td>
<td>-55 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>ESD Protection per IEC 61000-4-2</td>
<td>ESD</td>
<td>15</td>
<td>kV</td>
</tr>
<tr>
<td>Contact Discharge</td>
<td>ESD</td>
<td>15</td>
<td>kV</td>
</tr>
<tr>
<td>Air Discharge</td>
<td>EFT</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>EFT Protection per IEC 61000-4-4</td>
<td>Ipp</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>(5/50 ns)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Pulse Current per IEC 61000-4-5</td>
<td>Ipp</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>(8/20 μs)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Characteristics (@ TA = 25 °C Unless Otherwise Noted)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Peak Voltage</td>
<td>VWM</td>
<td>-3.3</td>
<td>3.3</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Breakdown Voltage @ 1 mA</td>
<td>VBR</td>
<td>4</td>
<td>6.5</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Leakage Current @ 3.3 V</td>
<td>IL</td>
<td>0.1</td>
<td>1.0</td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Capacitance @ 0 V, 1 MHz</td>
<td>CJ</td>
<td>13.5</td>
<td>16.5</td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Clamping Voltage @ Ipp = 5 A, 8/20 μs</td>
<td>VC</td>
<td>6.5</td>
<td>8</td>
<td></td>
<td>V</td>
</tr>
</tbody>
</table>

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Users should verify actual device performance in their specific applications.
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CDDFN2-T3.3B - Surface Mount TVS Diode

Product Dimensions
This is a molded DFN-2 package weighing approximately 0.9 mg.

Recommended PCB Footprint

Typical Part Marking
CDDFN2-T3.3B .........................................................Y

How to Order
CD DFN2 - T 3.3 B

Common Diode
Chip Diode
Package
DFN2 = DFN-2 Package
Model
Transient Voltage Supressor
Working Peak Reverse Voltage
3.3 = 3.3 V_{RWM} (Volts)
Suffix
B = Bidirectional Diode

Block Diagram

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Performance Graphs

Pulse Waveform

![Pulse Waveform Graph]

**Test Waveform Parameters**

- $t_v = 8 \mu s$
- $t_d = 20 \mu s$
- $t_x = t_d / 2$

**Typical Capacitance Variation of $C_{IN}$ vs $V_{IN}$**

![Typical Capacitance Variation Graph]

**Input Capacitance (pF)**

- Pin 1 to Pin 2

**Input Voltage (V)**

- $f = 1 \text{ MHz}$,
- $T = 25 \degree \text{C}$

TLP I-V Plot

![TLP I-V Plot Graph]

**Device Current (A)**

**Device Voltage (V)**

- Pin 1 to Pin 2

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CDDFN2-T3.3B - Surface Mount TVS Diode

Packaging Information

The surface mount product is packaged in an 8 mm x 4 mm tape and reel format per EIA-481 standard.

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<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>DFN-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier Width</td>
<td>A</td>
<td>0.70 ± 0.05 (0.028 ± 0.002)</td>
</tr>
<tr>
<td>Carrier Length</td>
<td>B</td>
<td>1.15 ± 0.05 (0.045 ± 0.002)</td>
</tr>
<tr>
<td>Carrier Depth</td>
<td>C</td>
<td>0.47 ± 0.05 (0.019 ± 0.002)</td>
</tr>
<tr>
<td>Sprocket Hole</td>
<td>d</td>
<td>1.55 ± 0.05 (0.061 ± 0.002)</td>
</tr>
<tr>
<td>Reel Outside Diameter</td>
<td>D</td>
<td>179.0 ± 1.00 (7.05 ± 0.04)</td>
</tr>
<tr>
<td>Punch Hole</td>
<td>d1</td>
<td>0.4± 0.05 (0.016 ± 0.002)</td>
</tr>
<tr>
<td>Reel Inner Diameter</td>
<td>D1</td>
<td>60.0 ± 0.50 (2.362 ± 0.02)</td>
</tr>
<tr>
<td>Feed Hole Diameter</td>
<td>D2</td>
<td>13.0 ± 0.20 (0.512 ± 0.008)</td>
</tr>
<tr>
<td>Sprocket Hole Position</td>
<td>E</td>
<td>1.75 ± 0.10 (0.069 ± 0.004)</td>
</tr>
<tr>
<td>Punch Hole Position</td>
<td>F</td>
<td>3.50 ± 0.05 (0.138 ± 0.002)</td>
</tr>
<tr>
<td>Punch Hole Pitch</td>
<td>P</td>
<td>2.00 ± 0.05 (0.079 ± 0.002)</td>
</tr>
<tr>
<td>Sprocket Hole Pitch</td>
<td>P0</td>
<td>4.00 ± 0.10 (0.157 ± 0.004)</td>
</tr>
<tr>
<td>Embossment Center</td>
<td>P1</td>
<td>2.00 ± 0.05 (0.079 ± 0.002)</td>
</tr>
<tr>
<td>Overall Tape Thickness</td>
<td>T</td>
<td>0.20 ± 0.05 (0.008 ± 0.002)</td>
</tr>
<tr>
<td>Tape Width</td>
<td>W</td>
<td>8.00 ± 0.10 (0.315 ± 0.004)</td>
</tr>
<tr>
<td>Reel Width</td>
<td>W1</td>
<td>14.4 (0.567) MAX.</td>
</tr>
<tr>
<td>Quantity per Reel</td>
<td></td>
<td>12,000</td>
</tr>
</tbody>
</table>

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