Features
■ Bidirectional ESD protection
■ Low clamping voltage
■ Ultra-small SMD package
■ RoHS compliant*

Applications
■ Portable electronics
■ Cellular handsets and accessories
■ Audio & video equipment
■ Communication systems
■ Computers and peripherals

CD0201-T20C - Surface Mount TVS Diode

General Information
The Bourns® Model CD0201-T20C device provides signal and power line ESD protection for electronic devices such as cellular phones, handheld electronics and other portable electronic applications.

The device is available in a compact industry-standard 0201 sized chip package (0603 metric measuring 0.6 mm x 0.3 mm). It is intended to be mounted directly onto a printed circuit board.

The device is designed to meet IEC 61000-4-2 (ESD) protection requirements. The combination of its small size and high ESD surge capability makes the Model CD0201-T20C well-suited for use in protecting sensitive electronics from damage or latch-up due to ESD in portable applications.

The Model CD0201-T20C TVS diode has a working peak voltage of 20 V.

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>Maximum Working Peak Reverse Voltage</td>
<td>V_RWM</td>
<td>±20</td>
<td>V</td>
</tr>
<tr>
<td>ESD Protection per IEC 61000-4-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Discharge</td>
<td></td>
<td>±20</td>
<td>kV</td>
</tr>
<tr>
<td>Air Discharge</td>
<td></td>
<td>±20</td>
<td>kV</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>TOPR</td>
<td>-55 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>TSTG</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage</td>
<td>VBR</td>
<td>I_BR = 1 mA</td>
<td>22.8</td>
<td>27.3</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Leakage Current</td>
<td>I_R</td>
<td>V_RWM = 20 V</td>
<td>0.1</td>
<td></td>
<td>μA</td>
<td></td>
</tr>
<tr>
<td>ESD Clamping Voltage (Note 1)</td>
<td>V_C</td>
<td>IEC 61000-4-2 +8 kV</td>
<td>34</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>(Note 1)</td>
<td></td>
<td>(ITLP = 16 A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junction Capacitance</td>
<td>C_J</td>
<td>V_R = 0 V, f = 1 MHz</td>
<td>6.5</td>
<td></td>
<td>10</td>
<td>pF</td>
</tr>
</tbody>
</table>

Note 1: ESD Clamping Voltage was measured by a Transmission Line Pulsing (TLP) System. TLP conditions:
Z_0 = 50 Ω, t_0 = 100 ns, t_r = 1 ns.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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WARNING  Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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**Performance Graphs**

**Transmission Line Pulsing**

![Transmission Line Pulsing Graph](image)

**Capacitance**

![Capacitance Graph](image)

**Typical Part Marking**

![Typical Part Marking](image)

**How to Order**

CD 0201 - T 20 C

- **Common Code**: Chip Diode
- **Package**: 0201 = 0201 Package
- **Series**: T = TVS Diode
- **Maximum Reverse Working Peak Voltage**: 20 V
- **Suffix**: C = Bidirectional Diode

**Product Dimensions**

**TOP VIEW**

![TOP VIEW](image)

**BOTTOM VIEW**

![BOTTOM VIEW](image)

<table>
<thead>
<tr>
<th>Dim.</th>
<th>0201 Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.6 ± 0.05</td>
</tr>
<tr>
<td></td>
<td>(0.024 ± 0.002)</td>
</tr>
<tr>
<td>B</td>
<td>0.3 ± 0.05</td>
</tr>
<tr>
<td></td>
<td>(0.012 ± 0.002)</td>
</tr>
<tr>
<td>C</td>
<td>0.3 ± 0.02</td>
</tr>
<tr>
<td></td>
<td>(0.012 ± 0.001)</td>
</tr>
<tr>
<td>C1</td>
<td>0.025 ± 0.025</td>
</tr>
<tr>
<td></td>
<td>(0.001 ± 0.001)</td>
</tr>
<tr>
<td>D1</td>
<td>0.18 ± 0.05</td>
</tr>
<tr>
<td></td>
<td>(0.007 ± 0.002)</td>
</tr>
<tr>
<td>D2</td>
<td>0.19 ± 0.05</td>
</tr>
<tr>
<td></td>
<td>(0.007 ± 0.002)</td>
</tr>
<tr>
<td>E1 / E2</td>
<td>0.25 ± 0.05</td>
</tr>
<tr>
<td></td>
<td>(0.01 ± 0.002)</td>
</tr>
<tr>
<td>F</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
</tbody>
</table>

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**CD0201-T20C - Surface Mount TVS Diode**

### Recommended PCB Footprint

- **Carrier Width (A):** 0.36 ± 0.03 (0.014 ± 0.001)
- **Carrier Length (B):** 0.66 ± 0.03 (0.026 ± 0.001)
- **Carrier Depth (C):** 0.33 ± 0.03 (0.013 ± 0.001)
- **Sprocket Hole (d):** 1.5 +0.0/0 (0.059 +0.004/0)
- **Reel Outside Diameter (D):** 180 ± 2 (7.087 ± 0.079)
- **Reel Inner Diameter (D1):** 50 (1.969) MIN.
- **Feed Hole Diameter (D2):** 13 +0.5/-0.2 (0.512 +0.02/-0.008)
- **Sprocket Hole Position (E):** 1.75 ± 0.10 (0.069 ± 0.004)

### Packaging Information

- **Punch Hole Position (F):** 3.5 ± 0.05 (0.138 ± 0.002)
- **Punch Hole Pitch (P):** 2.0 ± 0.10 (0.079 ± 0.004)
- **Sprocket Hole Pitch (P0):** 4.0 ± 0.10 (0.157 ± 0.004)
- **Embossment Center (P1):** 2.0 ± 0.05 (0.079 ± 0.002)
- **Overall Tape Thickness (T):** 0.23 ± 0.02 (0.009 ± 0.001)
- **Tape Width (W):** 8.0 ± 0.10 (0.315 ± 0.004)
- **Reel Width (W1):** 14.4 (0.567) MAX.
- **Quantity per Reel:** 12,000

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