**Features**

- RoHS compliant*
- Protects one or two lines
- Unidirectional and bidirectional configurations
- ESD protection 30 kV max.

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**General Information**

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Array diodes for surge and ESD protection applications, in compact chip package SOT23 size format. The Transient Voltage Suppressor Array series offers a choice of voltage types ranging from 3 V to 36 V. Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away.

The Bourns device will meet IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.

---

**Thermal Characteristics (@ T_A = 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>Operating Temperature</td>
<td>T_J</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_STG</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

---

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>CDSOT23-</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Breakdown Voltage @ 1 mA</td>
<td>V_BR</td>
<td>T03 T03C T05 T05C T08 T08C T12 T12C T15 T15C T24 T24C T36 T36C</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Working Peak Voltage</td>
<td>V_WM</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Clamping Voltage V_C @ I_P = 1 A (1)</td>
<td>V_F</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Clamping Voltage @ 8/20 μs V_C = I_PP (1)</td>
<td>V_F</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Leakage Current @ V_WM</td>
<td>I_D</td>
<td>-</td>
<td>μA</td>
</tr>
<tr>
<td>Typical Capacitance - Unidirectional @ 0 V, 1 MHz</td>
<td>C_(SD)</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>Typical Capacitance - Bidirectional @ 0 V, 1 MHz</td>
<td>C_(SD)</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>ESD Protection (per IEC 61000-4-2) Contact - Min. Contact - Max. Air - Min. Air - Max.</td>
<td>ESD</td>
<td>-</td>
<td>kV</td>
</tr>
<tr>
<td>Peak Pulse Power @ 8/20 μs (2)</td>
<td>P_PP</td>
<td>-</td>
<td>W</td>
</tr>
<tr>
<td>Forward Voltage @ 100 mA, 300 μs - Square Wave (3)</td>
<td>V_F</td>
<td>-</td>
<td>V</td>
</tr>
</tbody>
</table>

**Notes:**

1. See Pulse Wave Form.
2. See Peak Pulse Power vs. Pulse Time.
3. Only applies to unidirectional devices.
4. Part numbers with a “C” suffix are bidirectional devices, i.e., CDSOT23-T03C.

---

**WARNING**

Cancer and Reproductive Harm

[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)


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Applications

- RS-232, RS-422 and RS-423 data lines
- Portable electronics
- Wireless bus protection
- Control and monitoring systems

CDSOT23-T03-T36C - TVS Diode Array Series

Product Dimensions

This is a molded JEDEC SOT-323 package with 100 % Matte Sn plating on the lead frame. It weighs approximately 0.6 g and has a flammability rating of UL 94V-0.

Recommended Footprint

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.80 - 3.00 (0.110 - 0.118)</td>
<td>0.95 (0.037)</td>
<td>1.20 - 1.40 (0.047 - 0.055)</td>
<td>2.10 - 2.49 (0.083 - 0.098)</td>
<td>1.90 (0.075)</td>
<td>0.30 - 0.50 (0.012 - 0.019)</td>
<td>0.89 - 1.17 (0.035 - 0.046)</td>
<td>0.05 - 0.015 (0.002 - 0.006)</td>
<td>0.25 (0.010)</td>
<td>0.46 - 0.64 (0.018 - 0.025)</td>
<td>0.40 - 0.58 (0.016 - 0.023)</td>
<td>0.08 - 0.20 (0.003 - 0.008)</td>
</tr>
</tbody>
</table>

Typical Part Marking

2-DIGIT PRODUCT CODE:

- E1 = CDSOT23-T03
- E2 = CDSOT23-T05
- E3 = CDSOT23-T08
- E4 = CDSOT23-T12
- E5 = CDSOT23-T15
- E6 = CDSOT23-T24
- E7 = CDSOT23-T36

G1 = CDSOT23-T03C
G2 = CDSOT23-T05C
G3 = CDSOT23-T08C
G4 = CDSOT23-T12C
G5 = CDSOT23-T15C
G6 = CDSOT23-T24C
G7 = CDSOT23-T36C

MANUFACTURING DATE CODE:

- Y = YEAR
- WW = WEEK
- L = LOT CODE

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Performance Graphs

Peak Pulse Power vs. Pulse Time

![Peak Pulse Power vs. Pulse Time Graph]

Pulse Waveform

![Pulse Waveform Graph]

Power Derating Curve

![Power Derating Curve Graph]

How to Order

CD SOT23 - T 03 C

Common Code
Chip Diode
Package
- SOT23 = SOT23 Package
Model
T = Transient Voltage Suppressor
Working Peak Voltage
3 = 3 V_RWM (Volts)
Suffix
C = Bidirectional Diode

Block Diagram

The device block diagrams below include the pin names and basic electrical connections associated with each channel.

![Block Diagram]

Environmental Specifications

Moisture Sensitivity Level................................................................. 1
ESD Classification (HBM)...............................................................3B

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Packaging Information

The surface mount product is packaged in an 12 mm x 8 mm tape and reel format per EIA-481 standard.

Devices are packed in accordance with EIA standard RS-481-A.

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>SOT23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier Width</td>
<td>A</td>
<td>2.25 ± 0.10 (0.088 ± 0.004)</td>
</tr>
<tr>
<td>Carrier Length</td>
<td>B</td>
<td>2.34 ± 0.10 (0.092 ± 0.004)</td>
</tr>
<tr>
<td>Carrier Depth</td>
<td>C</td>
<td>1.22 ± 0.10 (0.048 ± 0.004)</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>178 (7.008)</td>
</tr>
<tr>
<td>Reel Inner Diameter</td>
<td>D₁</td>
<td>50.0 MIN. (1.969)</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>4.00 ± 0.10 (0.157 ± 0.004)</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 ± 0.10 (0.008 ± 0.004)</td>
</tr>
<tr>
<td>Tape Width</td>
<td>W</td>
<td>8.00 ± 0.20 (0.315 ± 0.008)</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>3,000</td>
</tr>
</tbody>
</table>
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