# CDNBS08-PLC03-6 Steering Diode/TVS Array Combo

## Features
- Lead free as standard
- RoHS compliant*
- Telcordia GR1089 (Intra-Building)
- Protects two lines
- ESD protection 30 kV max.
- Low capacitance: 6 pF

## Applications
- T1/E1 & T3/E3 line cards
- ISDN U-Interface and S/T interface
- xDSL
- Ethernet - 10/100 Base T

## General Information
The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Steering Diode/Transient Voltage Suppressor Array combination diodes for surge and ESD protection applications in an 8 lead narrow body SOIC package size format.

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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Nom.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacitance @ 0 V 1 MHz</td>
<td>Cj(SD)</td>
<td>16</td>
<td>20</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Capacitance @ 0 V 1 MHz</td>
<td>Cj(SD)</td>
<td>6</td>
<td>8</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Working Peak Voltage</td>
<td>VWM</td>
<td>6</td>
<td>6</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Min. Breakdown Voltage @ 1 mA</td>
<td>VBR</td>
<td>6.8</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Max. Clamping Voltage @ 8/20 μs Vc</td>
<td>Vc</td>
<td></td>
<td>20.0</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Max. Leakage Current @ VWM</td>
<td>Id</td>
<td></td>
<td>25 μA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESD Protection: IEC 61000-4-2 Contact Discharge</td>
<td>ESD</td>
<td>±8</td>
<td>±30</td>
<td>kV</td>
<td></td>
</tr>
<tr>
<td>ESD Protection: IEC 61000-4-2 Air Discharge</td>
<td>ESD</td>
<td>±15</td>
<td>±30</td>
<td>kV</td>
<td></td>
</tr>
<tr>
<td>Peak Pulse Power (tp = 8/20 μs)</td>
<td>Ppp</td>
<td></td>
<td>2000</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>EFT Protection: IEC 61000-4-4 @ 5/50 ns</td>
<td></td>
<td>40</td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Surge Protection: IEC 61000-4-5 @ 8/20 μs L4 (Line-Gnd)</td>
<td></td>
<td>95</td>
<td>48</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Surge Protection: Telcordia GR1089 (Intra-Building) @ 2/10 μs</td>
<td></td>
<td>100</td>
<td></td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Measured between I/O pins and ground (pin 1 or 2).
2. Measured between I/O pins (pins 1 to 4).
3. See Pulse Wave Form. For an 8/20 μs waveform, apply positive pulse from pin 1 or 8 to pin 2 or 3 (ground).
4. Measured between pin 1 or 8 to pin 2 or 3; pin 1 or 8 to pin 4 or 5.
5. See Peak Pulse Power vs. Pulse Time.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Nom.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junction Temperature Range</td>
<td>Tj</td>
<td>-55</td>
<td>+25</td>
<td>+150</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>TSTG</td>
<td>-55</td>
<td>+25</td>
<td>+150</td>
<td>°C</td>
</tr>
</tbody>
</table>

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**WARNING** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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Users should verify actual device performance in their specific applications.
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Product Dimensions
This is a molded JEDEC narrow body SO-8 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.

Recommended Footprint

Recommended Footprint

Typical Part Marking
CDNBS08-PLC03-6.........................................................PBA

How to Order
CD NBS08 - PLC03 - 6

Common Code
Chip Diode
Package
NBS08 = Narrow Body SOIC8 Package
Model
PLC03 = Model Number
Working Peak Voltage
6 = 6 VWM (Volts)

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Performance Graphs

**Peak Pulse Power vs Pulse Time**

![Peak Pulse Power vs Pulse Time Graph](image1)

**Pulse Waveform**

![Pulse Waveform](image2)

**Block Diagram**

![Block Diagram](image3)

**Power Derating Curve**

![Power Derating Curve](image4)

**Device Pinout**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 1</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2</td>
</tr>
<tr>
<td>5</td>
<td>I/O 2</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
</tr>
<tr>
<td>8</td>
<td>I/O 1</td>
</tr>
</tbody>
</table>

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CDNBS08-PLC03-6 Steering Diode/TVS Array Combo

Packaging Information

The product is packaged in tape and reel format per EIA-481 standard.

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>NSOIC 8L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier Width</td>
<td>A</td>
<td>6.7 ± 0.10 (0.264 ± 0.004)</td>
</tr>
<tr>
<td>Carrier Length</td>
<td>B</td>
<td>5.5 ± 0.10 (0.217 ± 0.004)</td>
</tr>
<tr>
<td>Carrier Depth</td>
<td>C</td>
<td>2.10 ± 0.10 (0.083 ± 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>330 (12.992)</td>
</tr>
<tr>
<td>Reel Inner Diameter</td>
<td>D₁</td>
<td>80.0 MIN. (3.1500)</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>8.00 ± 0.10 (0.315 ± 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>12.00 ± 0.20 (0.472 ± 0.008)</td>
</tr>
<tr>
<td>Reel Width</td>
<td>W₁</td>
<td>18.4 MAX. (0.724)</td>
</tr>
<tr>
<td>Quantity per Reel</td>
<td>--</td>
<td>2500</td>
</tr>
</tbody>
</table>

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