



## Features

- RoHS compliant\*
- Telcordia GR1089 (Intra-Building)
- Protects 2 lines
- ESD protection >40 kV
- Low capacitance 8 pF

## Applications

- T1/E1 line cards
- ISDN U-Interface and S/T Interface
- xDSL
- Ethernet – 10/100 Base T

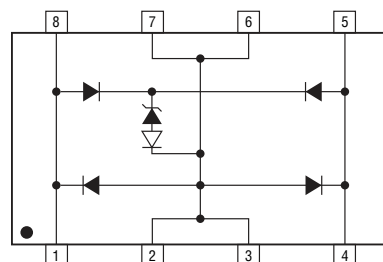
## CDNBS08-PLC03-3.3 Steering Diode/TVS Array Combo

### 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 eight 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 (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter                                                                                           | Symbol      | Min.                | Nom. | Max. | Unit          |
|-----------------------------------------------------------------------------------------------------|-------------|---------------------|------|------|---------------|
| Capacitance @ 0 V 1 MHz <sup>1</sup>                                                                | $C_{j(SD)}$ |                     | 20   | 25   | pF            |
| Capacitance @ 0 V 1 MHz <sup>2</sup>                                                                | $C_{j(SD)}$ |                     | 8    | 12   | pF            |
| Working Peak Voltage                                                                                | $V_{WM}$    |                     |      | 3.0  | V             |
| Min. Breakdown Voltage @ 1 mA                                                                       | $V_{BR}$    | 3.3                 |      |      | V             |
| Clamping Voltage @ 8/20 $\mu\text{s}$ @ IPP = 100 A <sup>3,4</sup>                                  | $V_F$       |                     |      | 18   | V             |
| Clamping Voltage @ 8/20 $\mu\text{s}$ @ IP = 50 A, Line - Ground                                    | $V_F$       |                     |      | 11   | V             |
| Max. Leakage Current @ $V_{WM}$                                                                     | $I_D$       |                     |      | 2    | $\mu\text{A}$ |
| ESD Protection: IEC 61000-4-2<br>Contact Discharge<br>Air Discharge                                 |             | $\pm 8$<br>$\pm 15$ |      |      | kV<br>kV      |
| Peak Pulse Power ( $t_p = 8/20 \mu\text{s}$ ) <sup>5</sup>                                          | $P_{PP}$    |                     |      | 1800 | W             |
| EFT Protection: IEC61000-4-4 @ 5/50 ns                                                              |             | 40                  |      |      | A             |
| Surge Protection: IEC61000-4-5 @ 8/20 $\mu\text{s}$<br>L4 (Line-Gnd)<br>L4 (Line-Line) , L1 (Power) |             | 94<br>48            |      |      | A<br>A        |
| Surge Protection: Telcordia GR1089<br>(Intra-Building) @ 2/10 $\mu\text{s}$                         |             | 100                 |      |      | A             |

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  $\mu\text{s}$  waveform, apply positive pulse to pin 1 to 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 (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter                  | Symbol    | Min. | Nom. | Max. | Unit             |
|----------------------------|-----------|------|------|------|------------------|
| Junction Temperature Range | $T_J$     | -55  | +25  | +150 | $^\circ\text{C}$ |
| Storage Temperature Range  | $T_{STG}$ | -55  | +25  | +150 | $^\circ\text{C}$ |

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

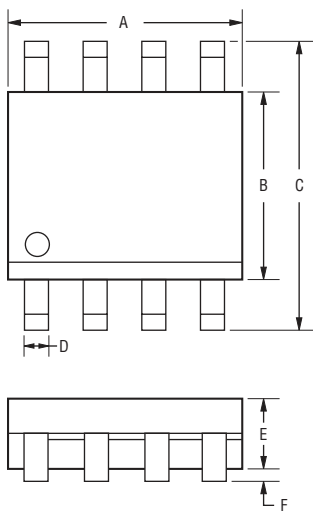
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## Mechanical Characteristics

This is an RoHS compliant molded JEDEC Narrow Body SO-8 package with 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.

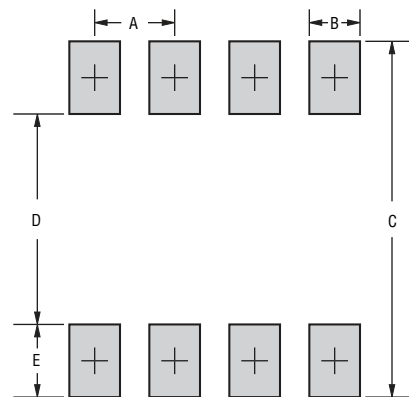
## Product Dimensions



DIMENSIONS =  $\frac{\text{MILLIMETERS}}{\text{(INCHES)}}$

| Dimensions |                                        |
|------------|----------------------------------------|
| A          | $\frac{4.80 - 5.00}{(0.189 - 0.196)}$  |
| B          | $\frac{3.80 - 4.00}{(0.150 - 0.157)}$  |
| C          | $\frac{5.80 - 6.20}{(0.229 - 0.244)}$  |
| D          | $\frac{0.36 - 0.46}{(0.014 - 0.018)}$  |
| E          | $\frac{1.35 - 1.75}{(0.054 - 0.068)}$  |
| F          | $\frac{0.10 - 0.25}{(0.004 - 0.008)}$  |
| G          | $\frac{0.25 - 0.50}{(0.010 - 0.019)}$  |
| H          | $\frac{0.40 - 1.250}{(0.016 - 0.049)}$ |
| I          | $\frac{0.18 - 0.25}{(0.007 - 0.009)}$  |

## Recommended Footprint



| Dimensions |                                         |
|------------|-----------------------------------------|
| A          | $\frac{1.143 - 1.397}{(0.045 - 0.055)}$ |
| B          | $\frac{0.635 - 0.889}{(0.025 - 0.035)}$ |
| C          | $\frac{6.223}{(0.245)} \text{ Min.}$    |
| D          | $\frac{3.937 - 4.191}{(0.155 - 0.165)}$ |
| E          | $\frac{1.016 - 1.27}{(0.040 - 0.050)}$  |

## How To Order

**CD NBS08 - PLC03 - 3.3**

Common Code \_\_\_\_\_  
 CD = Chip Diode  
 Package \_\_\_\_\_  
 NBS08 = Narrow Body SOIC8 Package  
 Model \_\_\_\_\_  
 PLC03 = Model Number  
 Minimum Breakdown Voltage \_\_\_\_\_  
 3.3 = 3.3 V<sub>BR</sub> (Volts)

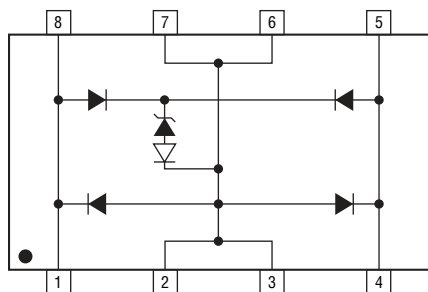
## Typical Part Marking

CDNBS08-PLC03-3.3 ..... **PBC**

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## Block Diagram

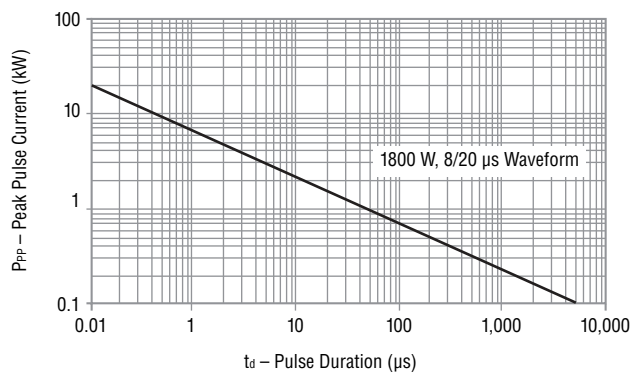


## Device Pinout

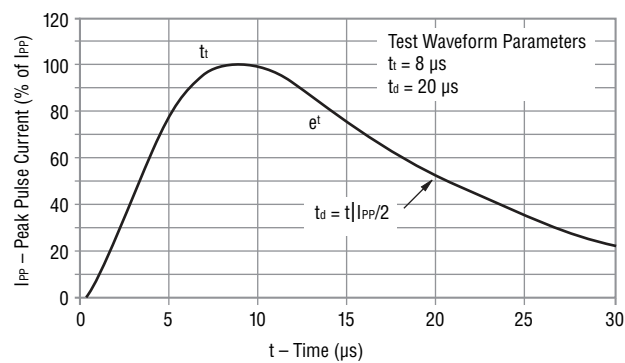
| Pin | Function |
|-----|----------|
| 1   | I/O 1    |
| 2   | GND      |
| 3   | GND      |
| 4   | I/O 2    |
| 5   | I/O 2    |
| 6   | GND      |
| 7   | GND      |
| 8   | I/O 1    |

## Performance Graphs

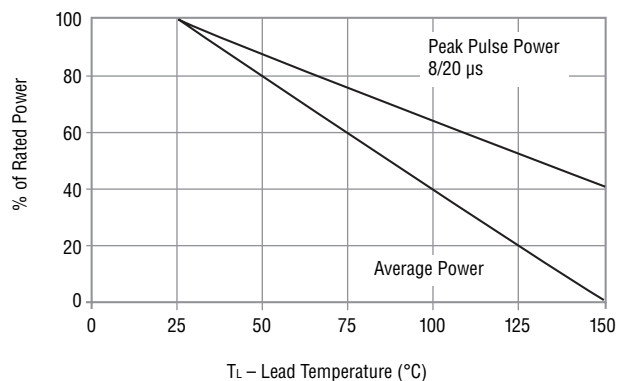
### Peak Pulse Power vs Pulse Time



### Pulse Wave Form



### Power Derating Curve

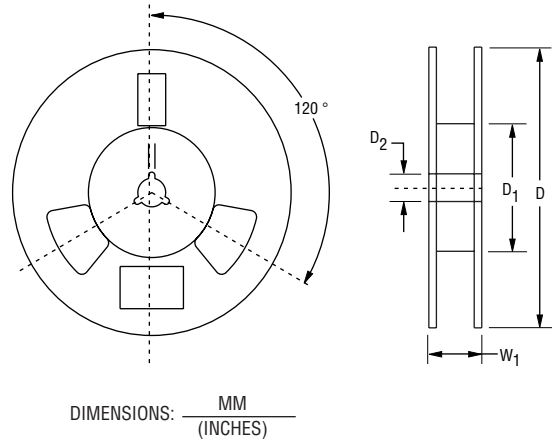
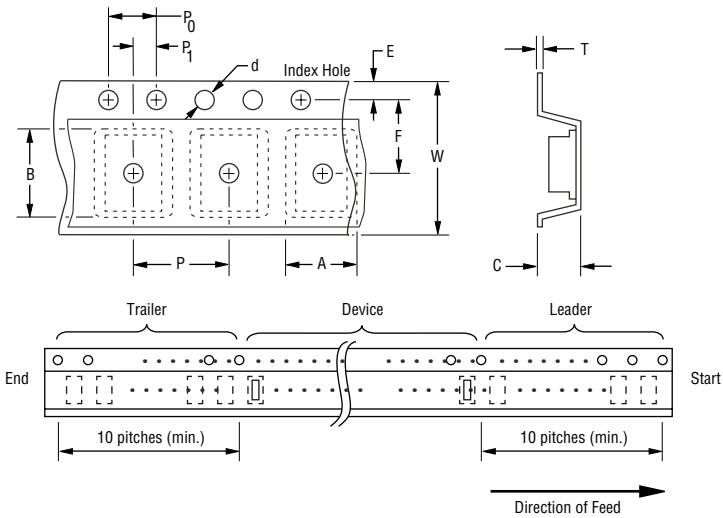


# CDNBS08-PLC03-3.3 Steering Diode/TVS Array Combo

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## Packaging Specifications

The product will be dispensed in Tape and Reel format (see diagram below).



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

| Item                   | Symbol         | NSOIC 8L                                   |
|------------------------|----------------|--------------------------------------------|
| Carrier Width          | A              | $\frac{6.7 \pm 0.10}{(0.264 \pm 0.004)}$   |
| Carrier Length         | B              | $\frac{5.5 \pm 0.10}{0.217 \pm 0.004}$     |
| Carrier Depth          | C              | $\frac{2.10 \pm 0.10}{0.083 \pm 0.004}$    |
| Sprocket Hole          | d              | $\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$  |
| Reel Outside Diameter  | D              | $\frac{330}{(12.992)}$                     |
| Reel Inner Diameter    | D <sub>1</sub> | $\frac{80.0}{(3.1500)} \text{ MIN.}$       |
| Feed Hole Diameter     | D <sub>2</sub> | $\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$  |
| Sprocket Hole Position | E              | $\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$  |
| Punch Hole Position    | F              | $\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$  |
| Punch Hole Pitch       | P              | $\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$  |
| Sprocket Hole Pitch    | P <sub>0</sub> | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$  |
| Embossment Center      | P <sub>1</sub> | $\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$  |
| Overall Tape Thickness | T              | $\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$  |
| Tape Width             | W              | $\frac{12.00 \pm 0.20}{(0.472 \pm 0.008)}$ |
| Reel Width             | W <sub>1</sub> | $\frac{18.4}{(0.724)} \text{ MAX.}$        |
| Quantity per Reel      | -              | 2500                                       |

REV. 06/11

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### Asia-Pacific:

Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

### Europe:

Tel: +41-41 768 5555 • Fax: +41-41 768 5510

### The Americas:

Tel: +1-951 781-5500 • Fax: +1-951 781-5700

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