



## Features

- Lead free as standard
- RoHS compliant\*
- Protects 2 I/O ports
- ESD protection > 40 KV
- Low capacitance: 15 pF

## Applications

- Ethernet – 10/100 Base T
- Computer I/O ports – SCSI, FireWire & USB
- Set-top box protection
- Video cards

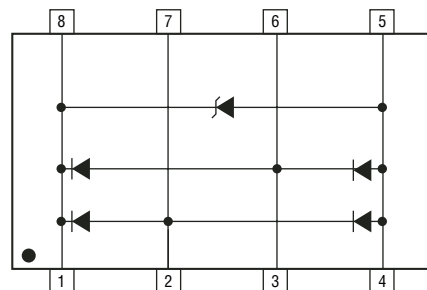
## CDNBS08-USBxB Series - Steering Diode/TVS Array Combo

### 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 8 lead narrow body SOIC package size format. 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.



### Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CDNBS08-		Unit
		USB3B	USB6B	
Breakdown Voltage @ 1 mA	V <sub>BR</sub>	4.0	6.0	V
Working Peak Voltage	V <sub>WM</sub>	3.3	5.25	V
Maximum Clamping Voltage V <sub>C</sub> @ I <sub>p</sub> <sup>1</sup>	V <sub>F</sub>	6.0	7.0	V
Maximum Clamping Voltage @ 8/20 μs V <sub>C</sub> @ I <sub>PP</sub> <sup>1</sup>	V <sub>F</sub>	12.9 V @ 37 A	13.2 V @ 35 A	V
Maximum Leakage Current @ V <sub>WM</sub>	I <sub>D</sub>	125	10	μA
Maximum Cap Bidirectional @ 0 V, 1 MHz	C <sub>J(SD)</sub>	15		pF
Peak Pulse Power (t <sub>p</sub> = 8/20 μs) <sup>2</sup>	P <sub>PP</sub>	500		W

Notes:

1. See Pulse Wave Form.
2. See Peak Pulse Power vs. Pulse Time.
3. Electrical specifications refer to Pins 1 to 4 or Pin 5 to Pin 8.

### Thermal Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Max.	Unit
Operating Temperature	T <sub>J</sub>	-55 to +150	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C

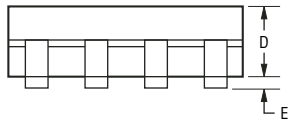
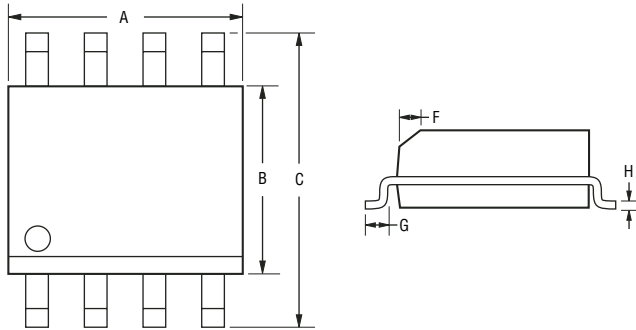
\*RoHS Directive 2002/95/EC Jan 27 2003 including Annex  
 Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

# CDNBS08-USBxB Series - Steering Diode/TVS Array Combo



## Product Dimensions

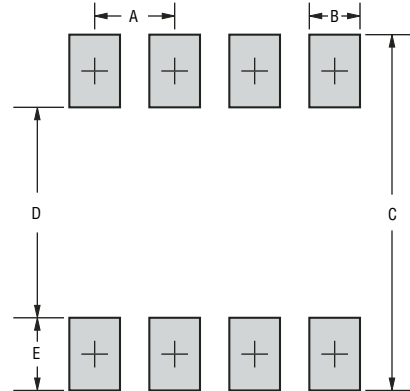
This is a molded JEDEC narrow body SO-8 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.



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	$\frac{1.35 - 1.75}{(0.054 - 0.068)}$
E	$\frac{0.10 - 0.25}{(0.004 - 0.008)}$
F	$\frac{0.25 - 0.50}{(0.010 - 0.019)}$
G	$\frac{0.40 - 1.250}{(0.016 - 0.049)}$
H	$\frac{0.18 - 0.25}{(0.007 - 0.009)}$

## Recommended Footprint



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

## How To Order

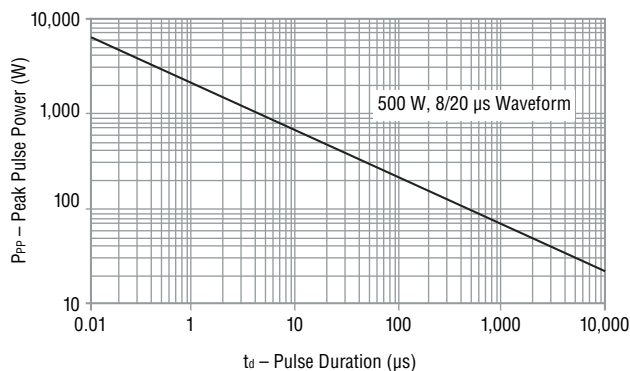
**CD NBS08 - USB 3 B**

Common Code \_\_\_\_\_  
 Chip Diode \_\_\_\_\_  
 Package \_\_\_\_\_  
 • NBS08 = Narrow Body SOIC8 Package  
 Model \_\_\_\_\_  
 USB = Specific USB Port Device  
 Minimum Breakdown Voltage \_\_\_\_\_  
 3 = 3.0 V<sub>BR</sub> (Volts)  
 Configuration \_\_\_\_\_  
 B = 2 Steering Diodes + 1 TVS Diode

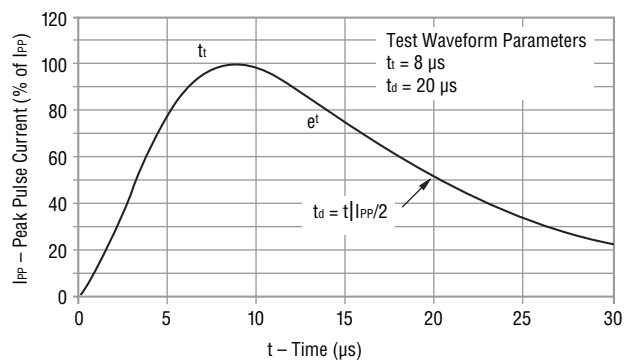
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**Performance Graphs**

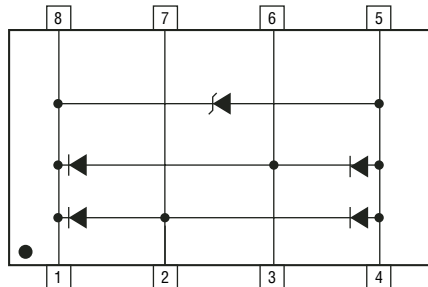
**Peak Pulse Power vs Pulse Time**



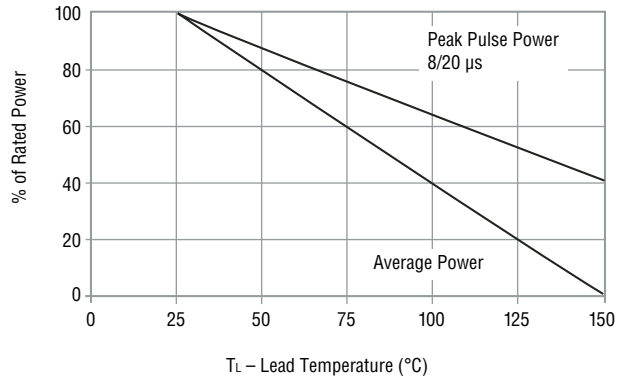
**Pulse Wave Form**



**Block Diagram**



**Power Derating Curve**



**Device Pinout**

Pin	Function
1	V <sub>CC</sub>
2	I/O 1
3	I/O 2
4	GND
5	V <sub>CC</sub>
6	I/O 1
7	I/O 2
8	GND

**Typical Part Marking**

CDNBS08-USB3B .....PRQ  
 CDNBS08-USB6B .....PRR

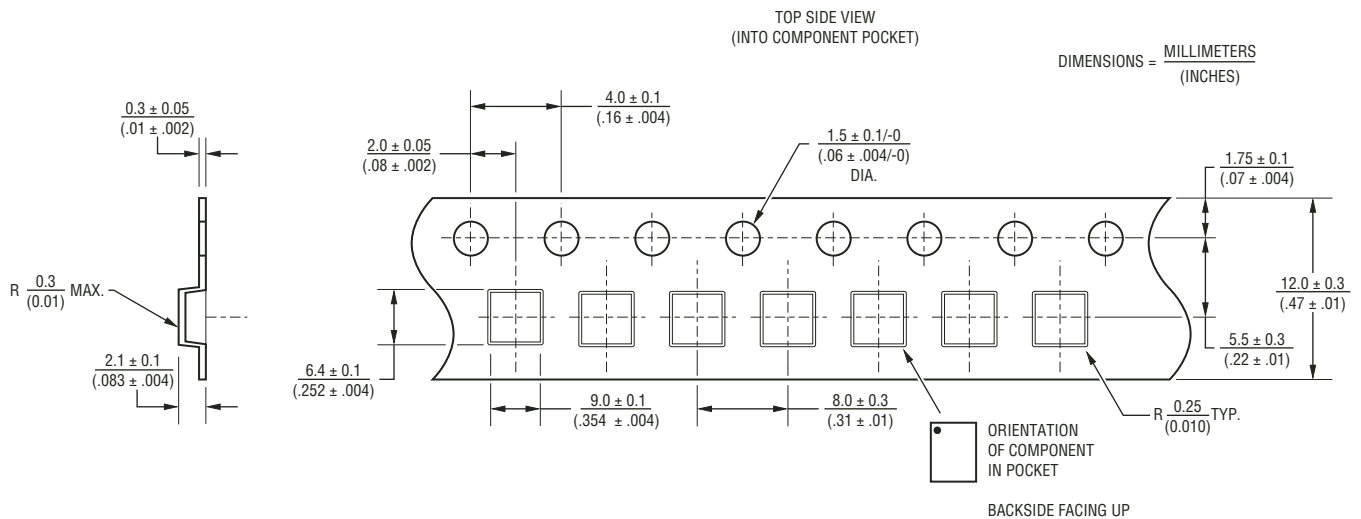
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**BOURNS®**

## Packaging

The surface mount product is packaged in a 12 mm x 8 mm Tape and Reel format per EIA-481 standard.



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