



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

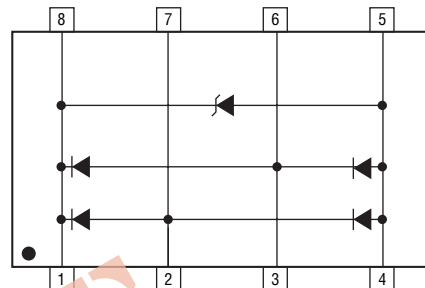
CDNBS08-USBxB Series - Steering Diode/TVS Array Combo

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

Parameter	Symbol	CDNBS08-		Unit
		USB3B	USB6B	
Breakdown Voltage @ 1 mA	V_{BR}	4.0	6.0	V
Working Peak Voltage	V_{WM}	3.3	5.25	V
Maximum Clamping Voltage V_C @ I_P^1	V_F	6.0	7.0	V
Maximum Clamping Voltage @ 8/20 μs V_C @ I_{PP}^1	V_F	12.9 V @ 37 A	13.2 V @ 35 A	V
Maximum Leakage Current @ V_{WM}	I_D	125	10	μA
Maximum Cap Bidirectional @ 0 V, 1 MHz	$C_{J(SD)}$	15		pF
Peak Pulse Power ($t_p = 8/20 \mu\text{s}$) ²	P_{PP}	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 (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

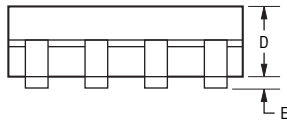
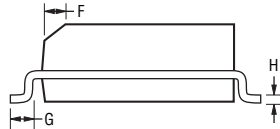
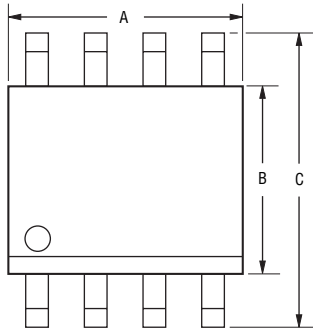
Parameter	Symbol	Max.	Unit
Operating Temperature	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

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Product Dimensions

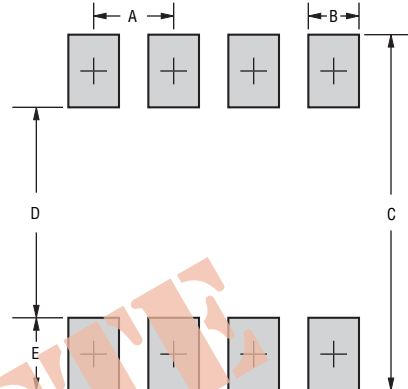
This is a molded JEDEC narrow body SO-8 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.



DIMENSIONS = MILLIMETERS
(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



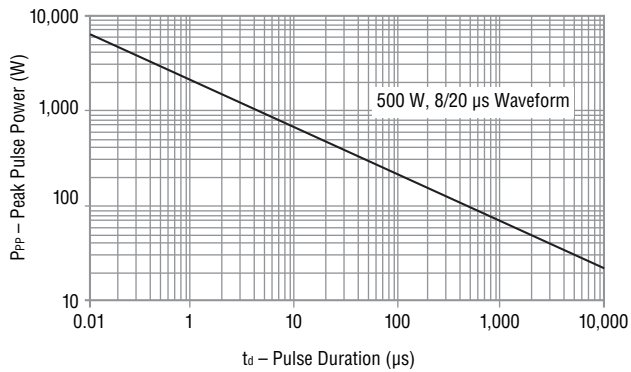
Dimensions	
A	$\frac{1.143 - 1.397}{(0.045 - 0.055)}$
B	$\frac{0.635 - 0.889}{(0.025 - 0.035)}$
C	$\frac{6.223}{(0.245)}$ Min.
D	$\frac{3.937 - 4.191}{(0.155 - 0.165)}$
E	$\frac{1.016 - 1.27}{(0.040 - 0.050)}$

How To Order

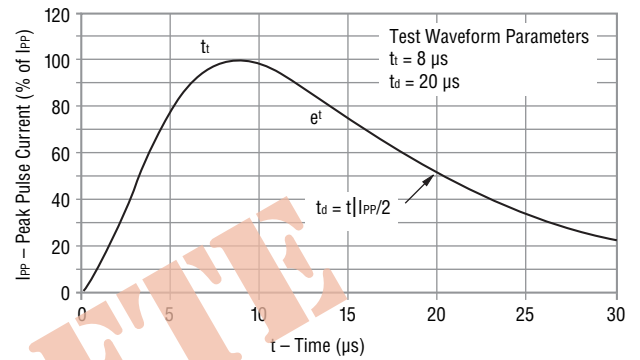
Common Code CD NBS08 - USB 3 B
 Chip Diode
 Package NBS08 = Narrow Body SOIC8 Package
 Model USB = Specific USB Port Device
 Minimum Breakdown Voltage 3 = 3.0 V_{BR} (Volts)
 Configuration B = 2 Steering Diodes + 1 TVS Diode

Performance Graphs

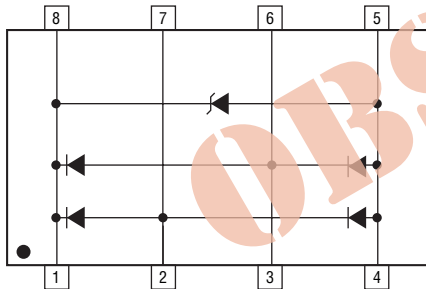
Peak Pulse Power vs Pulse Time



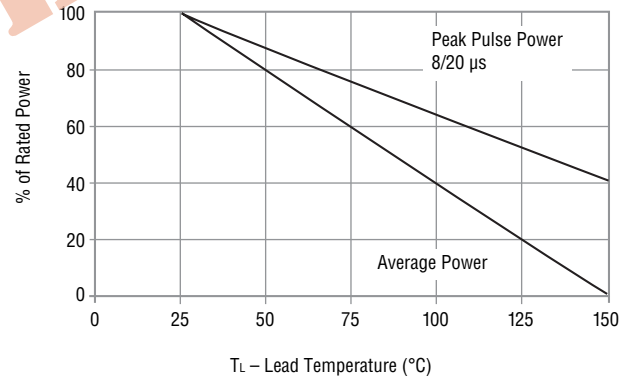
Pulse Wave Form



Block Diagram



Power Derating Curve



Device Pinout

Pin	Function
1	V_{CC}
2	I/O 1
3	I/O 2
4	GND
5	GND
6	I/O 2
7	I/O 1
8	V_{CC}

Typical Part Marking

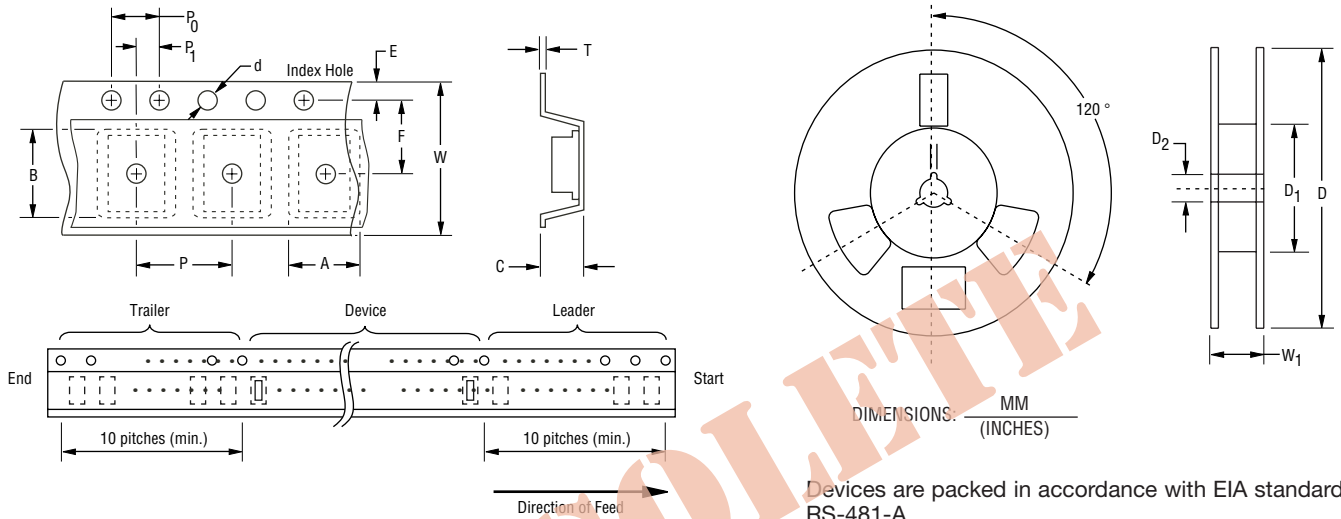
CDNBS08-USB3BPRQ
 CDNBS08-USB6BPRR

CDNBS08-USBxB Series - Steering Diode/TVS Array Combo

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Packaging Specifications

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



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	D1	$\frac{80.0}{(3.1500)} \text{ MIN.}$
Feed Hole Diameter	D2	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
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	P0	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P1	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
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	W1	$\frac{18.4}{(0.724)} \text{ MAX.}$
Quantity per Reel	-	2500

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www.bourns.com

REV. 09/09

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.