

## Features

- RoHS compliant\*
- Protects four lines
- Unidirectional and bidirectional configurations
- ESD protection: 30 kV max.

## Applications

- Audio/video inputs
- RS-232, RS-422 and RS-423 data lines
- Portable electronics
- Medical sensors

**BOURNS®**

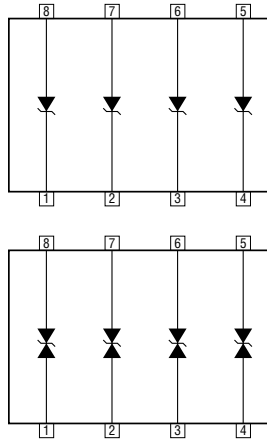
## CDNBS08-T03~T36C - TVS Diode Array Series

### 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 diodes for surge and ESD protection applications in an eight lead narrow body SOIC package size format. The Transient Voltage Suppressor Array series offer a choice of voltage types ranging from 3 V to 36 V in unidirectional and bidirectional configurations. 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.



### Additional Information

Click these links for more information:



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

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

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### 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

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

Parameter	Symbol	CDNBS08-												Unit		
		Uni-T03	Bi-T03C	Uni-T05	Bi-T05C	Uni-T08	Bi-T08C	Uni-T12	Bi-T12C	Uni-T15	Bi-T15C	Uni-T24	Bi-T24C		Uni-T36	Bi-T36C
Min. Breakdown Voltage @ 1 mA	V <sub>BR</sub>	3.3		6.0		8.5		13.3		16.7		26.7		40.0		V
Working Peak Voltage	V <sub>WM</sub>	3.0		5.0		8.0		12.0		15.0		24.0		36.0		V
Max. Clamping Voltage V <sub>C</sub> @ I <sub>P</sub> = 1 A <sup>1</sup>	V <sub>C</sub>	8.0		9.8		13.4		19.0		24.0		43.0		51.0		V
Typ. Clamping Voltage @ 8/20 μs V <sub>C</sub> @ I <sub>PP</sub> <sup>1</sup>	V <sub>C</sub>	10.9 V @ 43 A		13.5 V @ 42 A		16.9 V @ 34 A		25.9 V @ 21 A		30.0 V @ 17 A		49.0 V @ 12 A		76.8 V @ 9 A		V
Max. Leakage Current @ V <sub>WM</sub>	I <sub>D</sub>	125		20		10		1		1		1		1		μA
Max. Cap. Bidirectional @ 0 V, 1 MHz	C <sub>J(SD)</sub>	450		308		300		105		80		50		45		pF
ESD Protection per IEC 61000-4-2 Contact - Min. Contact - Max. Air - Min. Air - Max.	ESD													±8 ±30 ±15 ±30	kV	
Peak Pulse Power (t <sub>p</sub> = 8/20 μs) <sup>2</sup>	P <sub>PP</sub>													500	W	
Forward Voltage @ 100 mA, 300 μs - Square Wave <sup>3</sup>	V <sub>F</sub>													1.5	V	

Notes:

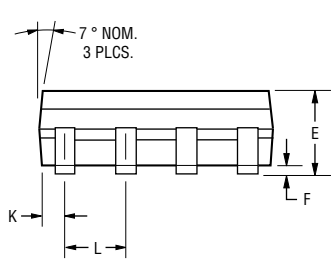
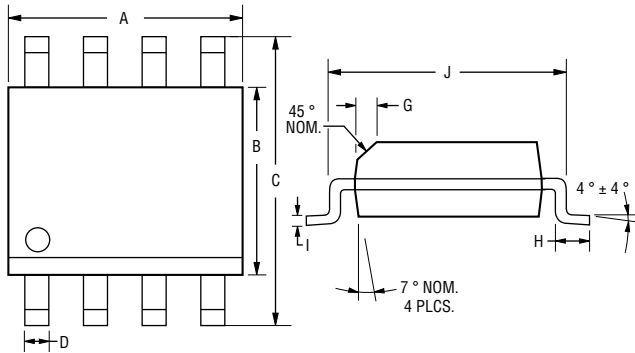
1. See Pulse Wave Form.
2. See Peak Pulse Power vs. Pulse Time.
3. Only applies to unidirectional devices.
4. Part numbers with a "C" suffix are bidirectional devices, i.e. CDNBS08-T03C.

# CDNBS08-T03~T36C - TVS Diode Array Series



## Product Dimensions

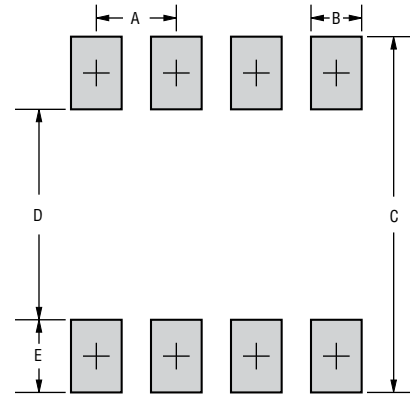
This is an RoHS compliant molded JEDEC narrow body SO-8 package with 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.



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

Dimensions	
A	$\frac{4.80 - 5.00}{(0.189 - 0.197)}$
B	$\frac{3.81 - 4.00}{(0.150 - 0.157)}$
C	$\frac{5.80 - 6.20}{(0.228 \pm 0.244)}$
D	$\frac{0.36 - 0.51}{(0.014 - 0.020)}$
E	$\frac{1.35 - 1.75}{(0.053 - 0.069)}$
F	$\frac{0.102 - 0.203}{(0.004 - 0.008)}$
G	$\frac{0.25 - 0.50}{(0.010 - 0.020)}$
H	$\frac{0.51 - 1.12}{(0.020 - 0.044)}$
I	$\frac{0.190 - 0.229}{(0.0075 - 0.0090)}$
J	$\frac{4.60 - 5.21}{(0.181 - 0.205)}$
K	$\frac{0.28 - 0.79}{(0.011 - 0.031)}$
L	$\frac{1.27}{(0.050)}$

## Recommended Footprint



Dimensions	
A	$\frac{1.143 - 1.397}{(0.045 - 0.065)}$
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	$\frac{1.016 - 1.27}{(0.040 - 0.050)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Typical Part Marking

CDNBS08-T03.....SDL	CDNBS08-T12C.....SDD
CDNBS08-T03C.....SDM	CDNBS08-T15.....SDE
CDNBS08-T05.....SDA	CDNBS08-T15C.....SDF
CDNBS08-T05C.....SDB	CDNBS08-T24.....SDG
CDNBS08-T08.....SDJ	CDNBS08-T24C.....SDH
CDNBS08-T08C.....SDK	CDNBS08-T36.....SDN
CDNBS08-T12.....SDC	CDNBS08-T36C.....SDP

## How to Order

Common Code	_____	CD	NBS08	-	T	03	C
Chip Diode	_____						
Package	_____						
NBS08 = Narrow Body SOIC8 Package							
Model	_____						
T = Transient Voltage Suppressor							
Working Peak Voltage	_____						
03 = 3 V <sub>RWM</sub> (Volts)							
Suffix	_____						
C = Bidirectional Diode							

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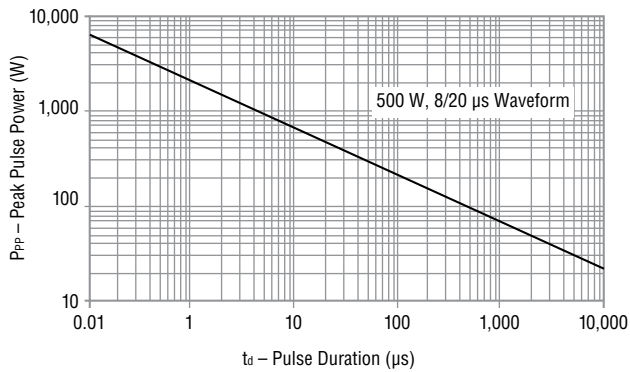
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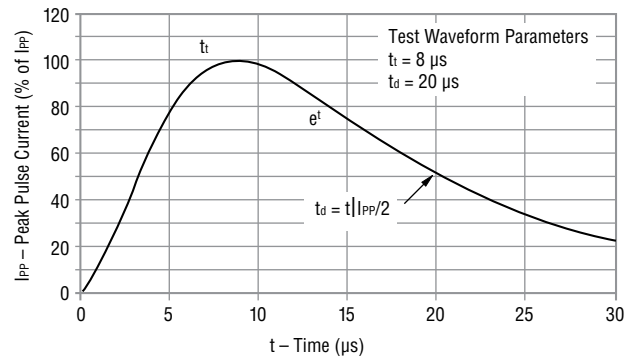


## Performance Graphs

### Peak Pulse Power vs Pulse Time

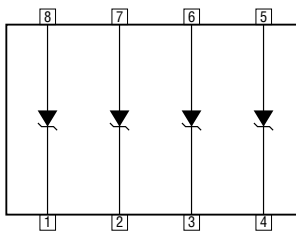


### Pulse Waveform

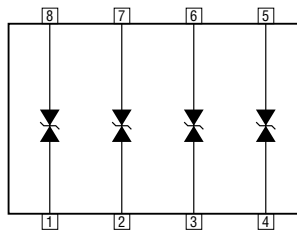


### Block Diagram

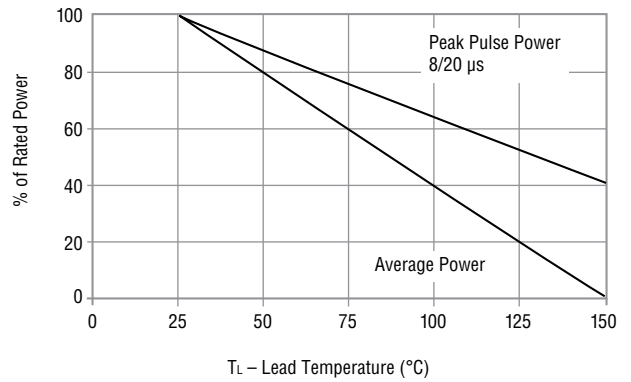
#### Unidirectional



#### Bidirectional



### Power Derating Curve



### Device Pinout

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

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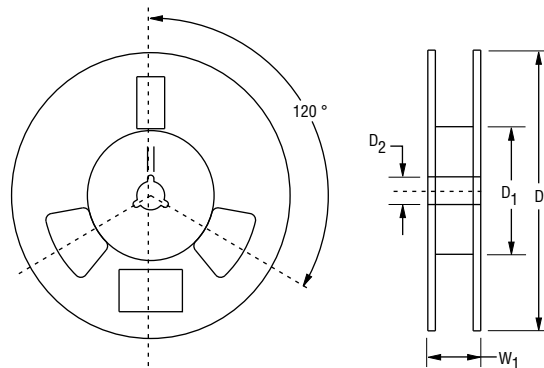
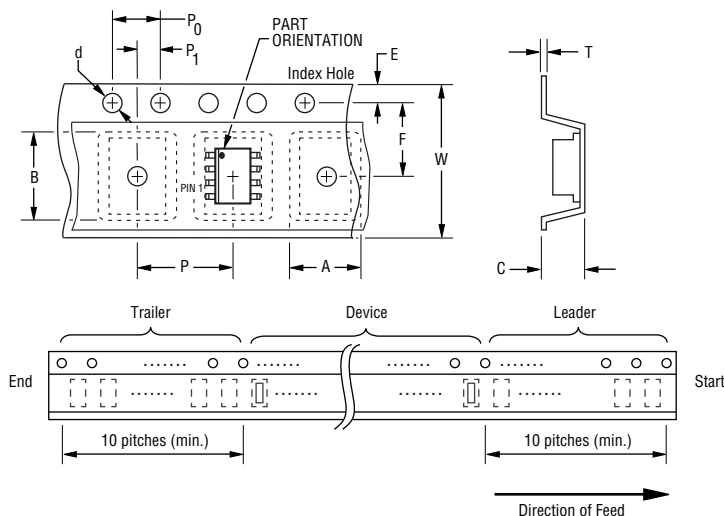
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## Packaging Information

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



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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>	$\frac{80.0}{(3.1500)}$ 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>	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	2500

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REV. 08/19

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