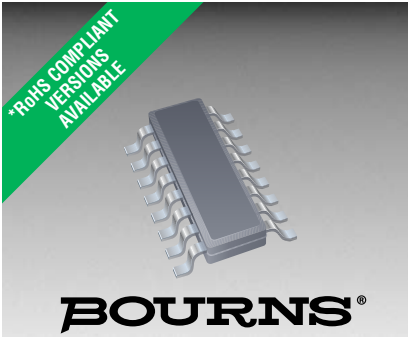




**THE DATASHEET OF  
CDNBS16-T03**





## Features

- Lead free device (RoHS Compliant\*)
- Protects 8 lines
- Unidirectional & bidirectional configurations
- ESD protection

## Applications

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

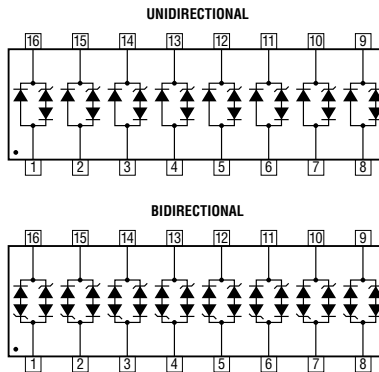
# CDNBS16-T03~T36C – TVS Diode Array Series

### General Information

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

Bourns offers Transient Voltage Suppressor Array diodes for surge and ESD protection applications, in 16 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:



[PRODUCT SELECTOR](#) [TECHNICAL LIBRARY](#) [INVENTORY](#) [SAMPLES](#) [CONTACT](#)



**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. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

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

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

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

Parameter	Symbol	CDNBS16-														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	$V_{BR}$	4.5	6.0	8.5	13.3	16.7	26.7	40.0							V	
Working Peak Voltage	$V_{WM}$	3.0	5.0	8.0	12.0	15.0	24.0	36.0							V	
Max. Clamping Voltage $V_C$ @ $I_P = 1\text{ A}$ <sup>1</sup>	$V_C$	8.0	9.8	13.4	19.0	25.5	40.0	53.0							V	
Typ. Clamping Voltage @ 8/20 $\mu\text{s}$ $V_C$ @ $I_{PP}$ <sup>1</sup>	$V_C$	23 V @ 43 A	24 V @ 42 A	26 V @ 30 A	33 V @ 21 A	39 V @ 15 A	57 V @ 10 A	72 V @ 7 A							V	
Max. Leakage Current @ $V_{WM}$	$I_D$	125	20	10	2	2	2	2							$\mu\text{A}$	
Maximum Capacitance @ 0 V, 1 MHz	$C_{J(SD)}$	15														pF
Temperature Coefficient of $V_{BR}$		-3	3	9	16	17	26	36							mv/°C	
Peak Pulse Power ( $t_p = 8/20\ \mu\text{s}$ ) <sup>2</sup>	$P_{PP}$	500														W
Forward Voltage @ 100 mA, 300 $\mu\text{s}$ - Square Wave <sup>3</sup>	$V_F$	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. CDNBS16-T03C

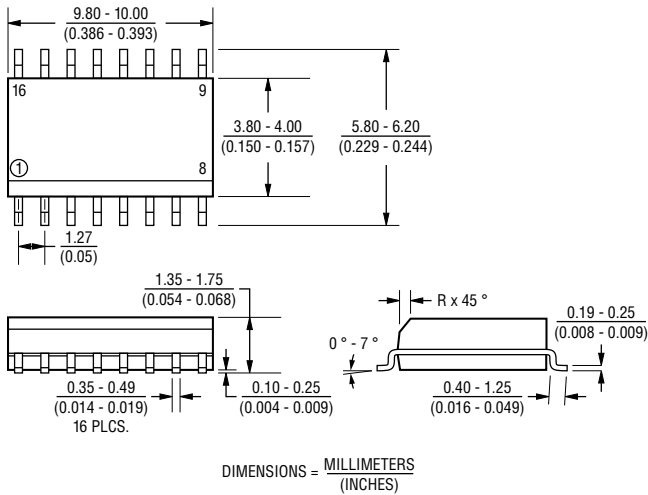
# CDNBS16-T03~T36C – TVS Diode Array Series



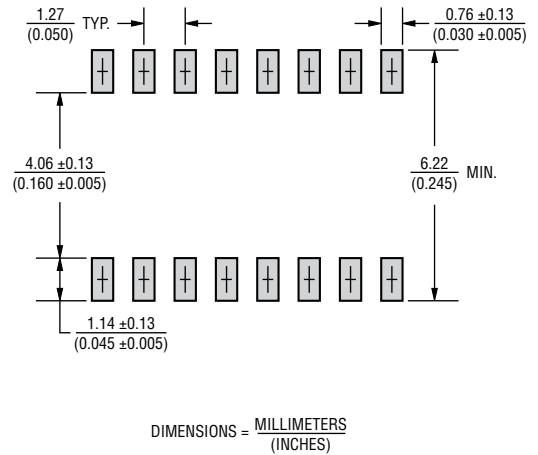
## Mechanical Characteristics

This is a molded JEDEC Narrow Body SO-16 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 30 mg and has a flammability rating of UL 94V-0.

### Product Dimensions



### Recommended Footprint



### Typical Part Marking

CDNBS16-T03.....	CDNBS16-T03
CDNBS16-T05.....	CDNBS16-T05
CDNBS16-T08.....	CDNBS16-T08
CDNBS16-T12.....	CDNBS16-T12
CDNBS16-T15.....	CDNBS16-T15
CDNBS16-T24.....	CDNBS16-T24
CDNBS16-T36.....	CDNBS16-T36
CDNBS16-T03C.....	CDNBS16-T03C
CDNBS16-T05C.....	CDNBS16-T05C
CDNBS16-T08C.....	CDNBS16-T08C
CDNBS16-T12C.....	CDNBS16-T12C
CDNBS16-T15C.....	CDNBS16-T15C
CDNBS16-T24C.....	CDNBS16-T24C
CDNBS16-T36C.....	CDNBS16-T36C

### How to Order

Common Code	CD NBS16 - T 03 C
Package	NBS16 = 16L NSOIC Package
Model	T = Transient Voltage Suppressor
Working Peak Reverse Voltage	03 = 3 V <sub>RWM</sub> (Volts)
Suffix	C = Bidirectional Diode

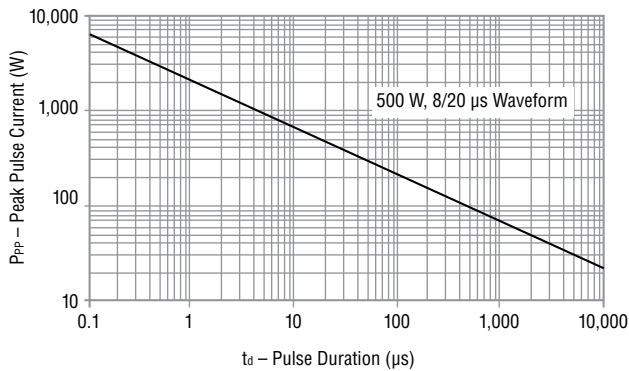
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

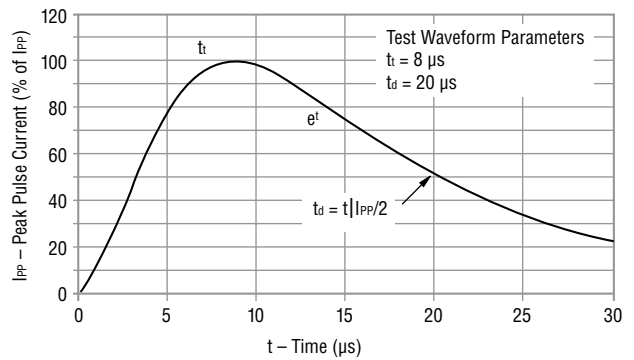
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## Performance Graphs

### Peak Pulse Power vs Pulse Time

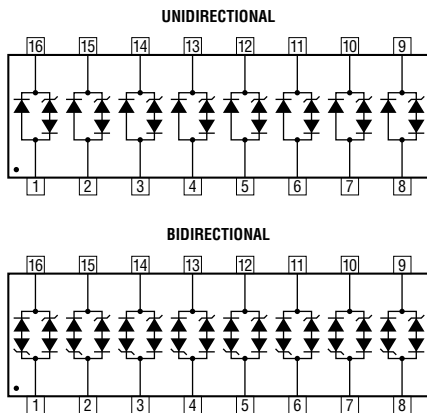


### Pulse Wave Form

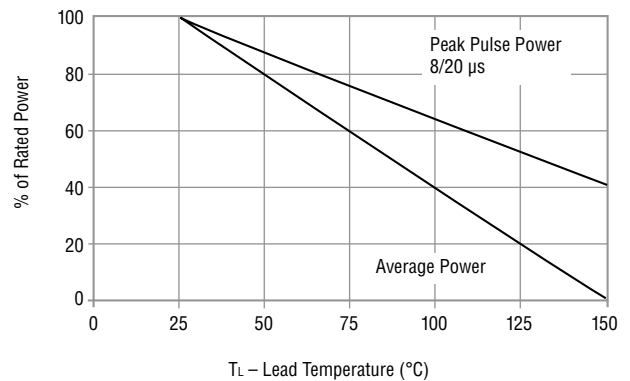


### Block Diagram

The device block diagrams below include the pin names and basic electrical connections associated with each channel.



### Power Derating Curve



### Device Pinout

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

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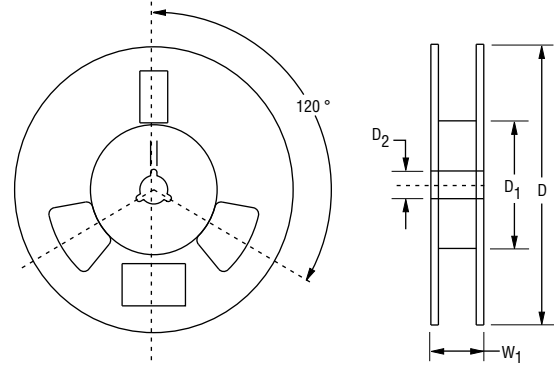
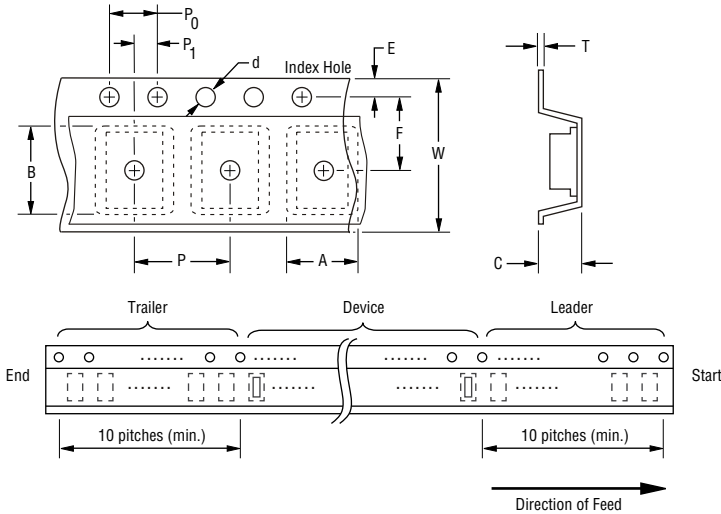
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# CDNBS16-T03~T36C – TVS Diode Array Series

**BOURNS®**

## Packaging Information

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



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

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

Item	Symbol	NSOIC 16L
Carrier Width	A	$\frac{6.7 \pm 0.10}{(0.264 \pm 0.004)}$
Carrier Length	B	$\frac{10.5 \pm 0.10}{(0.413 \pm 0.004)}$
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>	$\frac{80.0}{(3.150)}$ 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	$\frac{8.00 \pm 0.10}{(0.314 \pm 0.004)}$
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	$\frac{16.00 \pm 0.20}{(0.630 \pm 0.008)}$
Reel Width	W <sub>1</sub>	$\frac{18.4}{(0.724)}$ Max.
Quantity per Reel	—	2,500

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