

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

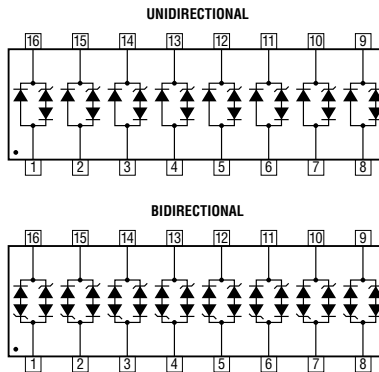
CDNBS16-T03~T36C – TVS Diode Array Series

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:



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WARNING
Cancer and Reproductive Harm
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.

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 @ $I_P = 1\text{ A}$ ¹ | V_C | 8.0 | 9.8 | 13.4 | 19.0 | 25.5 | 40.0 | 53.0 | | | | | | | | V |
| Typ. Clamping Voltage @ 8/20 μs V_C @ I_{PP} ¹ | 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 | | | | | | | | μA |
| 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 ($t_p = 8/20\ \mu\text{s}$) ² | P_{PP} | 500 | | | | | | | | | | | | | | W |
| Forward Voltage @ 100 mA, 300 μs - Square Wave ³ | 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

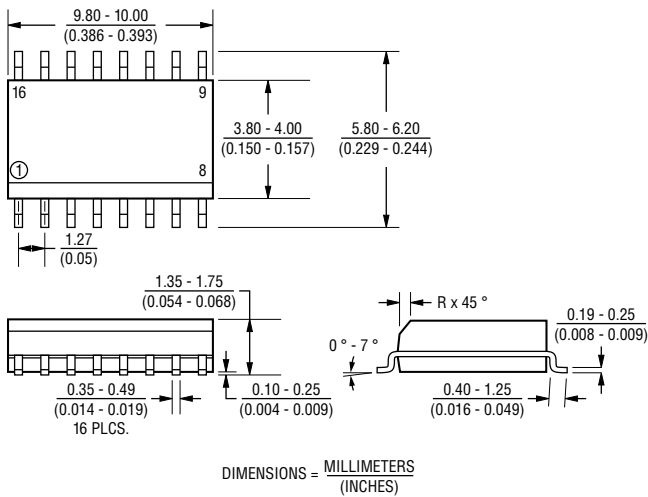
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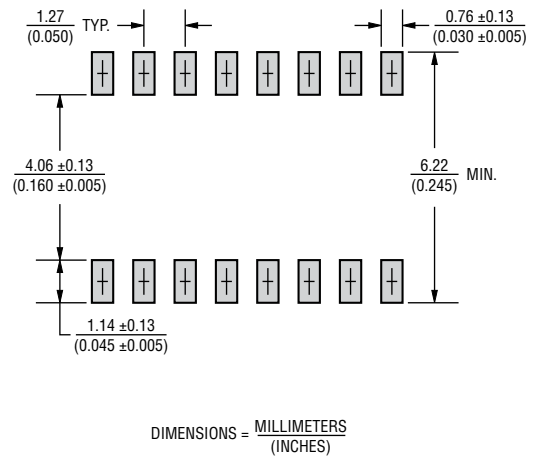
Mechanical Characteristics

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 _{RWM} (Volts) |
| Suffix | C = Bidirectional Diode |

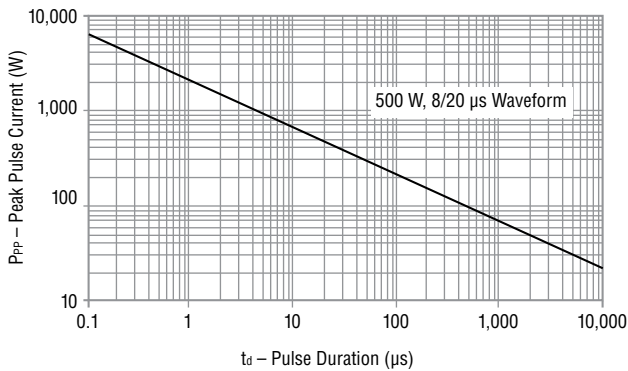
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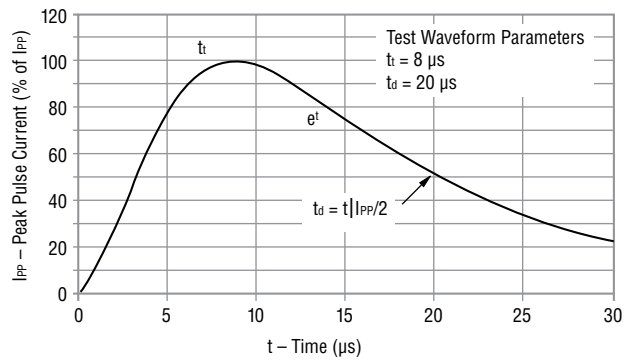
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Performance Graphs

Peak Pulse Power vs Pulse Time

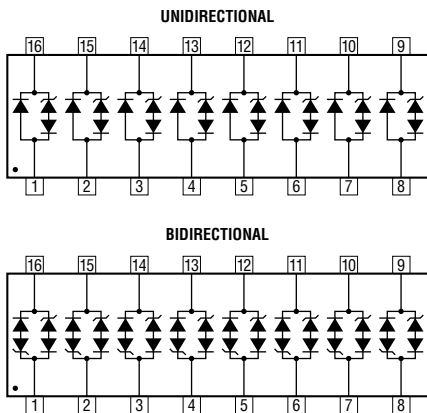


Pulse Wave Form

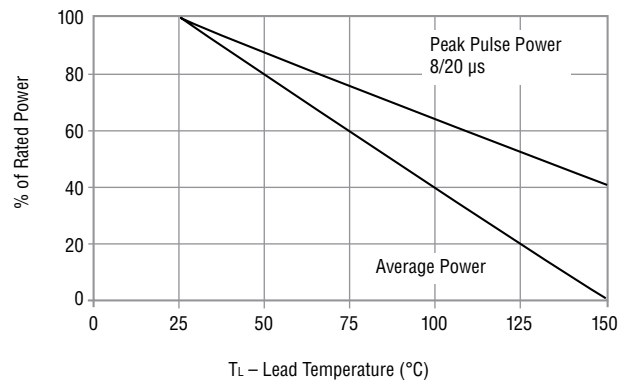


Block Diagram

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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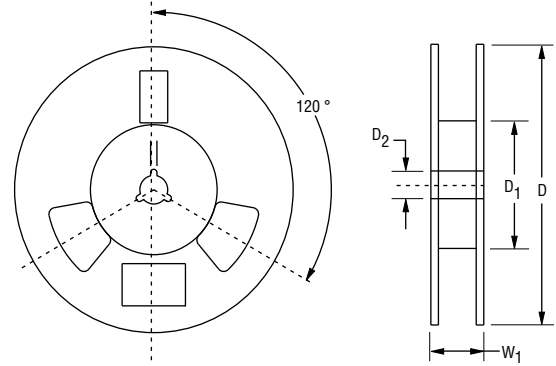
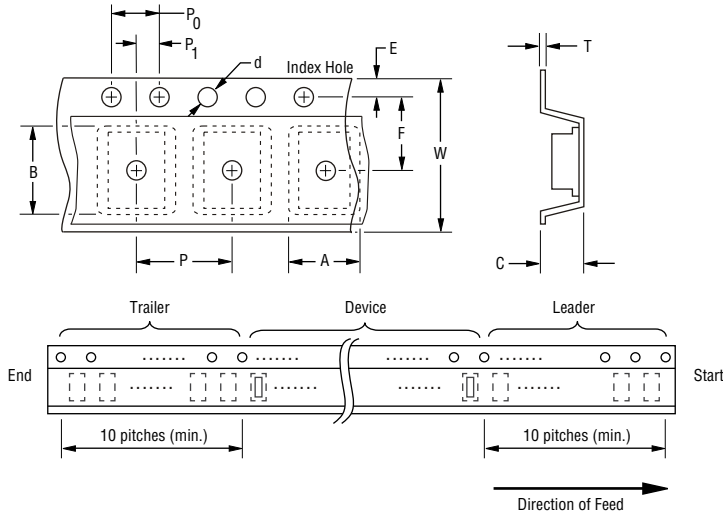
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Packaging Information

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 ₁ | $\frac{80.0}{(3.150)}$ Min. |
| Feed Hole Diameter | D ₂ | $\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$ |
| 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 ₀ | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$ |
| Embossment Center | P ₁ | $\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$ |
| 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 ₁ | $\frac{18.4}{(0.724)}$ Max. |
| Quantity per Reel | — | 2,500 |

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REV. 07/11

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