



Features

- Lead free as standard
- RoHS compliant*
- Protects 4 lines
- Unidirectional & bidirectional configurations
- ESD protection > 40 KV

Applications

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

CDNBS08-T03~T36C – TVS Diode Array Series

General Information

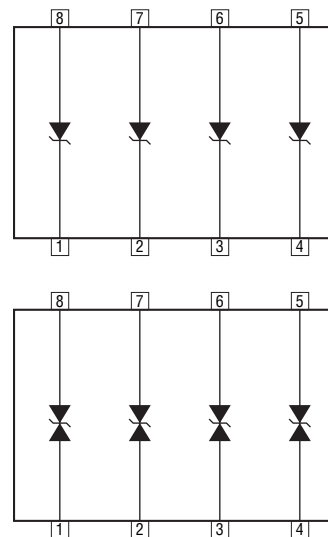
The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Array diodes for surge and ESD protection applications, in 8 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.

Thermal Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

| Parameter | Symbol | Max. | Unit |
|-----------------------|------------------|-------------|------|
| Operating Temperature | T _J | -55 to +150 | °C |
| Storage Temperature | T _{STG} | -55 to +150 | °C |



Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

| Parameter | Symbol | CDNBS08- | | | | | | | | | | | | | | Unit |
|--|--------------------|---------------|------|---------------|------|---------------|------|---------------|------|---------------|------|---------------|------|--------------|------|------|
| | | Uni- | Bi- | Uni- | Bi- | Uni- | Bi- | Uni- | Bi- | Uni- | Bi- | Uni- | Bi- | Uni- | Bi- | |
| | | T03 | T03C | T05 | T05C | T08 | T08C | T12 | T12C | T15 | T15C | T24 | T24C | T36 | T36C | |
| Breakdown Voltage @ 1 mA | V _{BR} | 3.3 | | 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 |
| Maximum Clamping Voltage V _C @ I _p ¹ | V _C | 8.0 | | 9.8 | | 13.4 | | 19.0 | | 24.0 | | 43.0 | | 51.0 | | V |
| Maximum Clamping Voltage @ 8/20 μs V _C @ I _{pp} ¹ | V _C | 10.9 V @ 43 A | | 13.5 V @ 42 A | | 16.9 V @ 34 A | | 25.9 V @ 27 A | | 30.0 V @ 17 A | | 49.0 V @ 12 A | | 76.8 V @ 9 A | | V |
| Maximum Leakage Current @ V _{WM} | I _D | 125 | | 20 | | 10 | | 1 | | 1 | | 1 | | 1 | | μA |
| Maximum Cap Unidirectional @ 0 V, 1 MHz | C _{j(SD)} | 800 | | 550 | | 500 | | 185 | | 140 | | 88 | | 80 | | pF |
| Maximum Cap Bidirectional @ 0 V, 1 MHz | C _{j(SD)} | 450 | | 308 | | 300 | | 105 | | 80 | | 50 | | 45 | | pF |
| Peak Pulse Power (t _p = 8/20 μs) 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. CDNBS08-T03C.

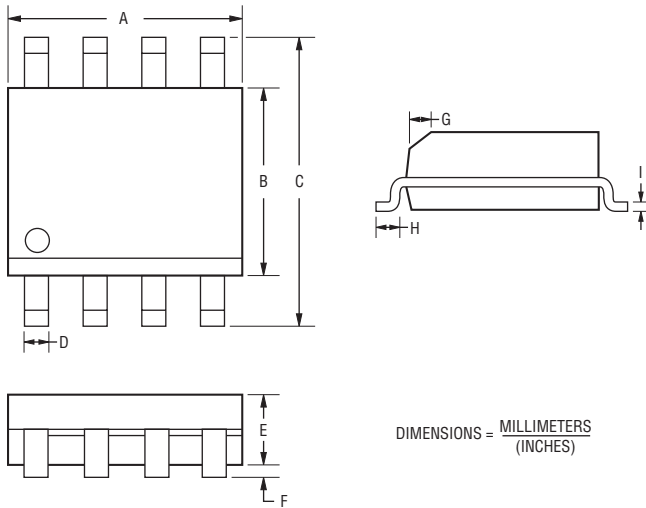
*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex. Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

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Product Dimensions

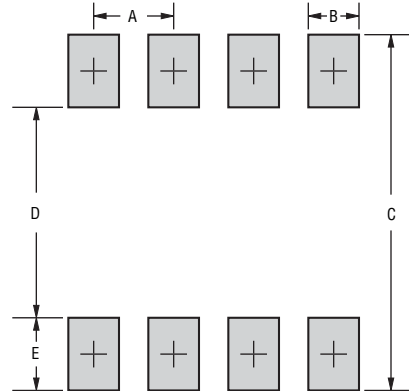
This is a molded JEDEC narrow body SO-8 package with lead free 100 % Sn plating on the lead frame. It weighs approximately 15 mg and has a flammability rating of UL 94V-0.



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

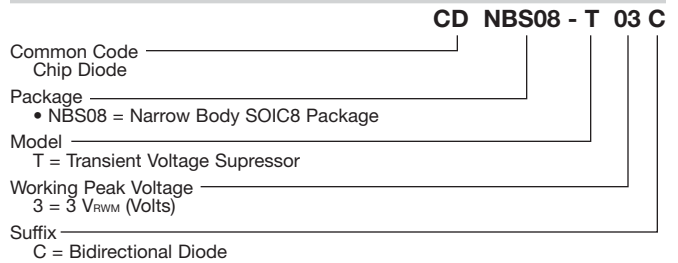
| Dimensions | |
|------------|--|
| A | $\frac{4.80 - 5.00}{(0.189 - 0.196)}$ |
| B | $\frac{3.80 - 4.00}{(0.150 - 0.157)}$ |
| C | $\frac{5.80 - 6.20}{(0.229 - 0.244)}$ |
| D | $\frac{0.36 - 0.46}{(0.014 - 0.018)}$ |
| E | $\frac{1.35 - 1.75}{(0.054 - 0.068)}$ |
| F | $\frac{0.10 - 0.25}{(0.004 - 0.008)}$ |
| G | $\frac{0.25 - 0.50}{(0.010 - 0.019)}$ |
| H | $\frac{0.40 - 1.250}{(0.016 - 0.049)}$ |
| I | $\frac{0.18 - 0.25}{(0.007 - 0.009)}$ |

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



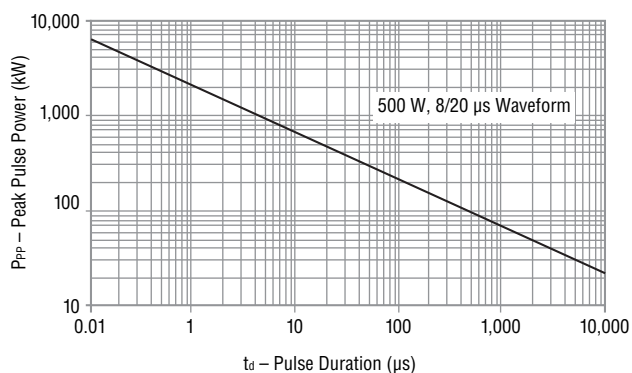
Typical Part Marking

| | | | |
|--------------------|-----|--------------------|-----|
| 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 |

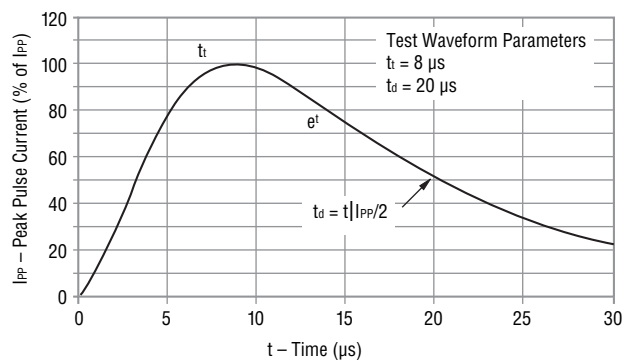
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Performance Graphs

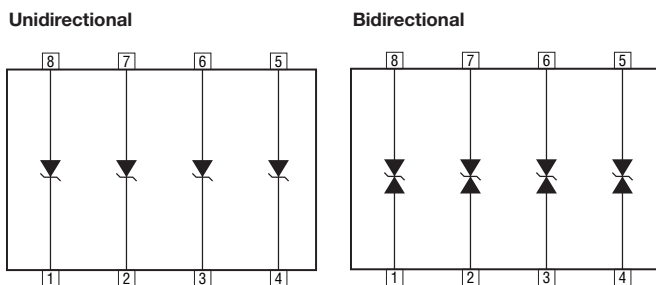
Peak Pulse Power vs Pulse Time



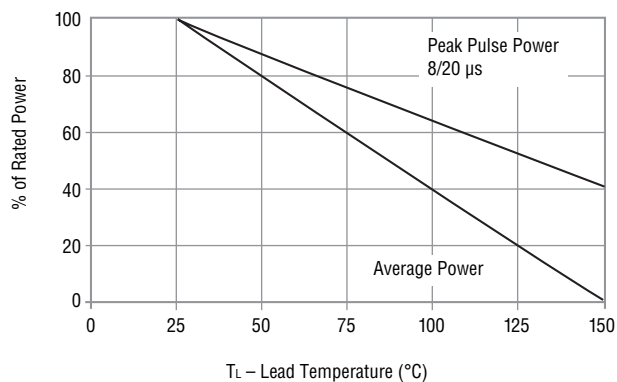
Pulse Wave Form



Block Diagram



Power Derating Curve



Device Pinout

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

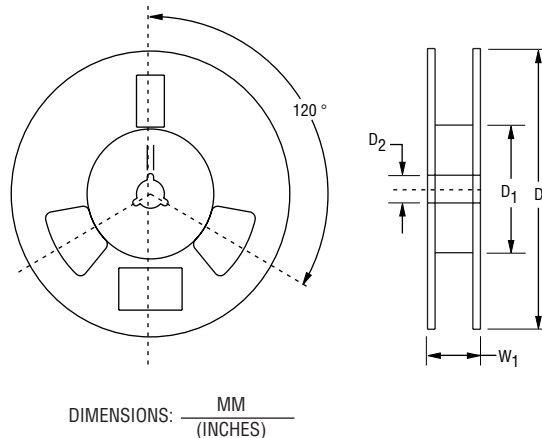
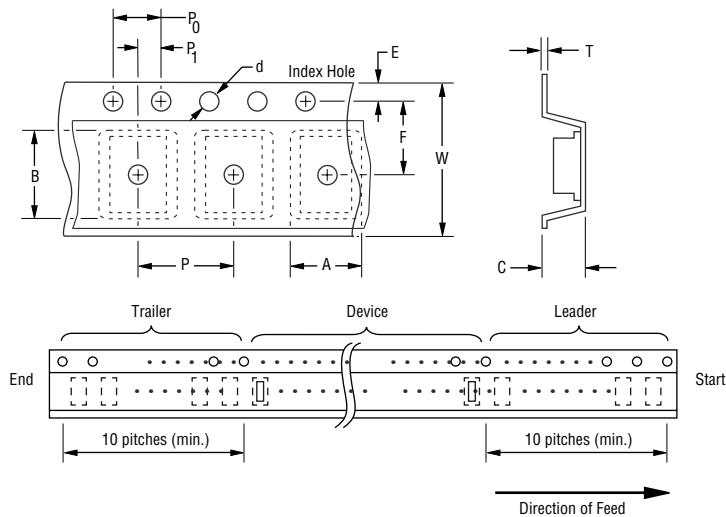
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BOURNS®

Packaging Specifications

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



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

| 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 ₁ | $\frac{80.0}{(3.1500)}$ 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 | $\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$ |
| 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 | $\frac{12.00 \pm 0.20}{(0.472 \pm 0.008)}$ |
| Reel Width | W ₁ | $\frac{18.4}{(0.724)}$ MAX. |
| Quantity per Reel | - | 2500 |

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REV. 03/11

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