

## Features

- RoHS compliant\*
- Protects one or two lines
- Unidirectional and bidirectional configurations
- ESD protection 30 kV max.

## Additional Information

Click these links for more information:



# CDSOT23-T03~T36C - TVS Diode Array Series

## General Information

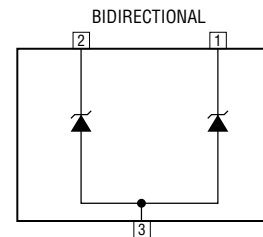
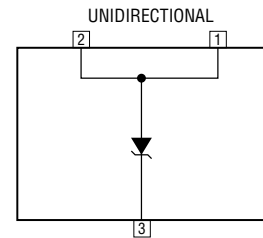
Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Array diodes for surge and ESD protection applications, in compact chip package SOT23 size format. The Transient Voltage Suppressor Array series offers a choice of voltage types ranging from 3 V to 36 V. 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<sub>A</sub> = 25 °C Unless Otherwise Noted)

| Parameter             | Symbol           | Value       | 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             | CDSOT23-         |                  |                  |                  |                  |                  |                         |      |      |      |     |      |      |      | Unit |
|--|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|------|------|------|-----|------|------|------|------|
|  |                    | Uni-             |                  | Bi-              |                  | Uni-             |                  | Bi-                     |      | Uni- |      | Bi- |      | Uni- |      |      |
|  |                    | T03              | T03C             | T05              | T05C             | T08              | T08C             | T12                     | T12C | T15  | T15C | T24 | T24C | T36  | T36C |      |
| Minimum Breakdown Voltage @ 1 mA   | V <sub>BR</sub>    | 4.0              | 6.0              | 8.5              | 13.3             | 16.7             | 26.7             | 40.0                    | V    |      |      |     |      |      |      |      |
| Maximum Working Peak Voltage   | V <sub>WM</sub>    | 3.3              | 5.0              | 8.0              | 12.0             | 15.0             | 24.0             | 36.0                    | V    |      |      |     |      |      |      |      |
| Maximum Clamping Voltage<br>V <sub>C</sub> @ I <sub>P</sub> = 1 A (1)                              | V <sub>F</sub>     | 7.0              | 9.8              | 13.4             | 19.0             | 24.0             | 43.0             | 51.0                    | V    |      |      |     |      |      |      |      |
| Maximum Clamping Voltage<br>@ 8/20 μs V <sub>C</sub> = I <sub>PP</sub> (1)                         | V <sub>F</sub>     | 10.9 V<br>@ 43 A | 13.5 V<br>@ 42 A | 16.9 V<br>@ 34 A | 25.9 V<br>@ 21 A | 30.0 V<br>@ 17 A | 49.0 V<br>@ 12 A | 76.8 V<br>@ 9 A         | V    |      |      |     |      |      |      |      |
| Maximum Leakage Current<br>@ V <sub>WM</sub>   | I <sub>D</sub>     | 125              | 20               | 10               | 2                | 1                | 1                | 1                       | μA   |      |      |     |      |      |      |      |
| Typical Capacitance - Unidirectional<br>@ 0 V, 1 MHz   | C <sub>j(SD)</sub> | 500              | 350              | 250              | 150              | 100              | 88               | 80                      | pF   |      |      |     |      |      |      |      |
| Typical Capacitance - Bidirectional<br>@ 0 V, 1 MHz  | C <sub>j(SD)</sub> | 300              | 210              | 150              | 90               | 60               | 63               | 60                      | pF   |      |      |     |      |      |      |      |
| ESD Protection (per IEC 61000-4-2)<br>Contact - Min.<br>Contact - Max.<br>Air - Min.<br>Air - Max. | ESD                |                  |                  |                  |                  |                  |                  | ±8<br>±30<br>±15<br>±30 |      |      |      |     |      |      | kV   |      |
| Peak Pulse Power (t <sub>p</sub> @ 8/20 μs) (2)  | P <sub>PP</sub>    |                  |                  |                  |                  |                  |                  | 500                     |      |      |      |     |      |      | W    |      |
| Forward Voltage @ 100 mA,<br>300 μs - Square Wave (3)  | 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., CDSOT23-T03C.



**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).

## Applications

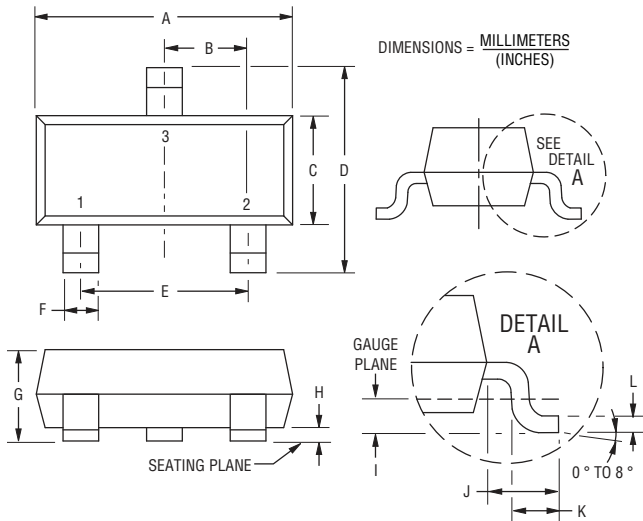
- RS-232, RS-422 and RS-423 data lines
- Portable electronics
- Wireless bus protection
- Control and monitoring systems

## CDSOT23-T03~T36C - TVS Diode Array Series

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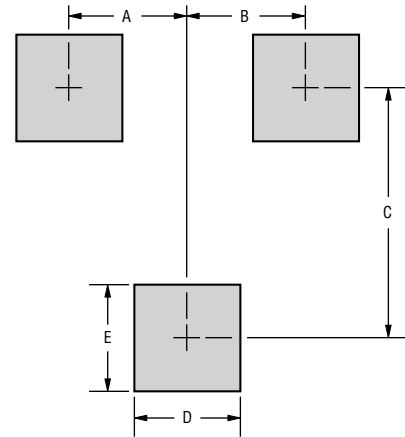
### Product Dimensions

This is a molded JEDEC SOT-323 package with 100 % Matte Sn plating on the lead frame. It weighs approximately 0.6 g and has a flammability rating of UL 94V-0.



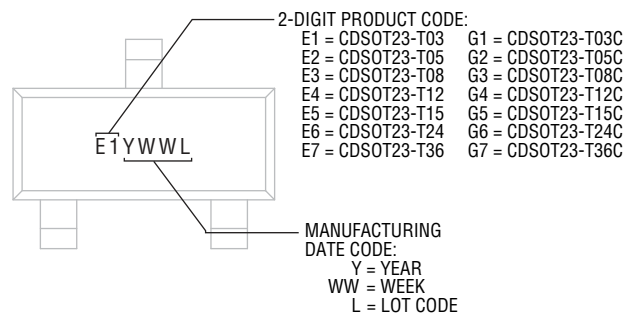
| Dimensions |  |
|------------|--|
| A          | $\frac{2.80 - 3.00}{(0.110 - 0.118)}$  |
| B          | $\frac{0.95}{(0.037)}$ BSC             |
| C          | $\frac{1.20 - 1.40}{(0.047 - 0.055)}$  |
| D          | $\frac{2.10 - 2.49}{(0.083 - 0.098)}$  |
| E          | $\frac{1.90}{(0.075)}$ BSC             |
| F          | $\frac{0.30 - 0.50}{(0.012 - 0.019)}$  |
| G          | $\frac{0.89 - 1.17}{(0.035 - 0.046)}$  |
| H          | $\frac{0.05 - 0.015}{(0.002 - 0.006)}$ |
| I          | $\frac{0.25}{(0.010)}$ BSC             |
| J          | $\frac{0.46 - 0.64}{(0.018 - 0.025)}$  |
| K          | $\frac{0.40 - 0.58}{(0.016 - 0.023)}$  |
| L          | $\frac{0.08 - 0.20}{(0.003 - 0.008)}$  |

### Recommended Footprint



| Dimensions |                        |
|------------|------------------------|
| A          | $\frac{0.95}{(0.037)}$ |
| B          | $\frac{0.95}{(0.037)}$ |
| C          | $\frac{2.00}{(0.079)}$ |
| D          | $\frac{0.85}{(0.033)}$ |
| E          | $\frac{0.85}{(0.033)}$ |

### Typical Part Marking



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

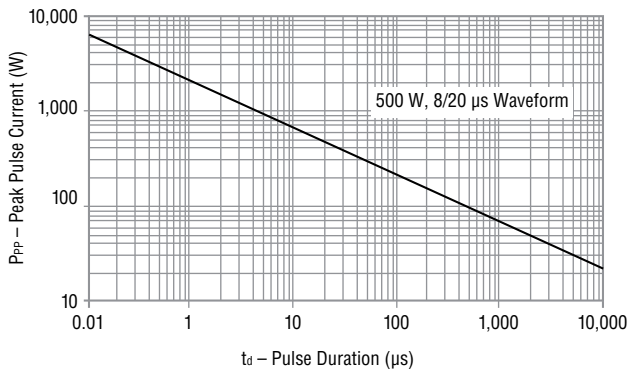
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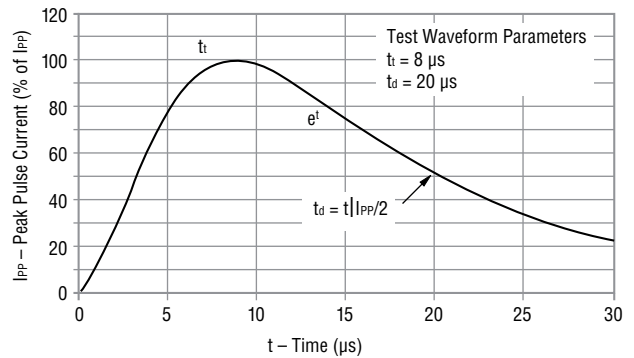


## Performance Graphs

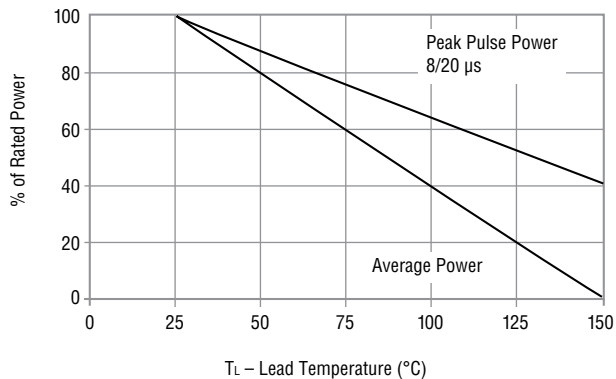
### Peak Pulse Power vs. Pulse Time



### Pulse Waveform

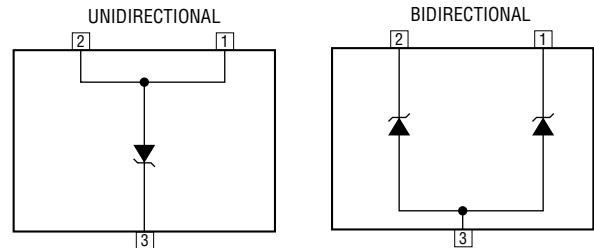


### Power Derating Curve



### Block Diagram

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



### Environmental Specifications

|                                 |    |
|---------------------------------|----|
| Moisture Sensitivity Level..... | 1  |
| ESD Classification (HBM).....   | 3B |

### How to Order

**CD SOT23 - T 03 C**

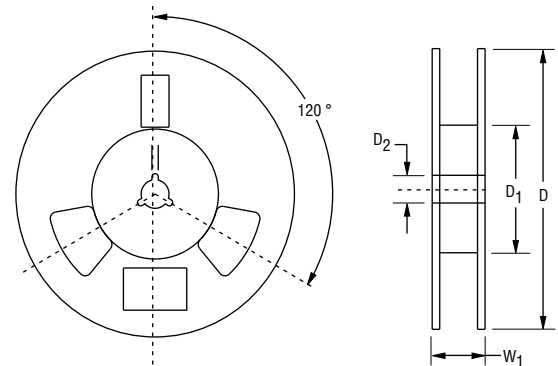
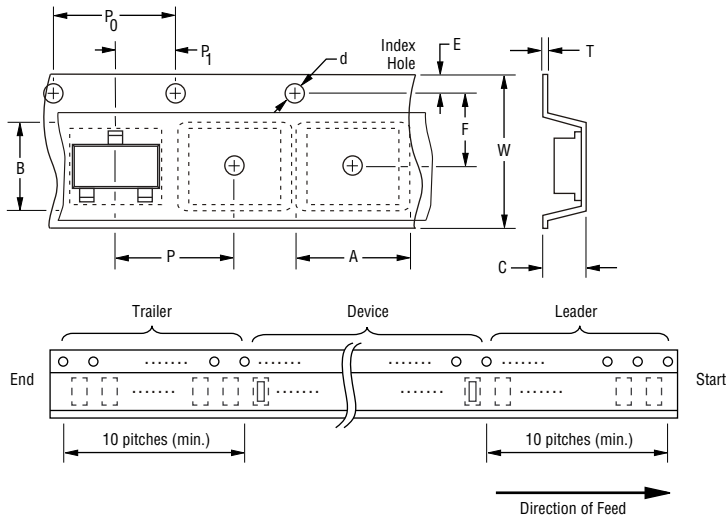
Common Code \_\_\_\_\_  
 Chip Diode \_\_\_\_\_  
 Package \_\_\_\_\_  
 • SOT23 = SOT23 Package  
 Model \_\_\_\_\_  
 T = Transient Voltage Suppressor  
 Working Peak Voltage \_\_\_\_\_  
 3 = 3 V<sub>RWM</sub> (Volts)  
 Suffix \_\_\_\_\_  
 C = Bidirectional Diode

# CDSOT23-T03~T36C - TVS Diode Array Series

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## Packaging Information

The surface mount product is packaged in an 12 mm x 8 mm tape and reel format per EIA-481 standard.



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

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

| Item                   | Symbol         | SOT23                                     |
|------------------------|----------------|---|
| Carrier Width          | A              | $\frac{2.25 \pm 0.10}{(0.088 \pm 0.004)}$ |
| Carrier Length         | B              | $\frac{2.34 \pm 0.10}{(0.092 \pm 0.004)}$ |
| Carrier Depth          | C              | $\frac{1.22 \pm 0.10}{(0.048 \pm 0.004)}$ |
| Sprocket Hole          | d              | $\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$ |
| Reel Outside Diameter  | D              | $\frac{178}{(7.008)}$                     |
| Reel Inner Diameter    | D <sub>1</sub> | $\frac{50.0}{(1.969)}$ 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              | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$ |
| 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              | $\frac{8.00 \pm 0.20}{(0.315 \pm 0.008)}$ |
| Reel Width             | W <sub>1</sub> | $\frac{14.4}{(0.567)}$ MAX.               |
| Quantity per Reel      | --             | 3,000                                     |

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REV. 09/19

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