

## Features

- Protects one or two lines
- Unidirectional and bidirectional configurations
- ESD protection 30 kV max.
- RoHS compliant\*
- AEC-Q101 compliant\*\*

## Applications

- Protection of power buses
- Protection of I/O interfaces
- Overvoltage transient protection
- Telecom, computer, industrial and consumer electronics applications

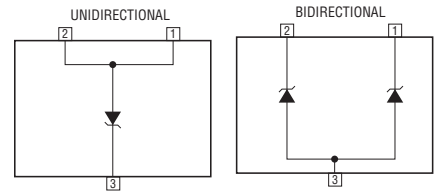
# CDSOT23-T03-Q~T15C-Q - TVS Diode Array Series

### 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 as listed below. 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 assist in meeting 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 |
|---------------------|------------------|-------------|------|
| Ambient Temperature | T <sub>A</sub>   | -55 to +150 | °C   |
| Storage Temperature | T <sub>STG</sub> | -55 to +150 | °C   |

### Additional Information

Click these links for more information:



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

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

| Parameter  | Symbol             | CDSOT23-         |                  |                  | Unit |
|--|--------------------|------------------|------------------|------------------|------|
|  |                    | Unidirectional   | Bidirectional    | Bidirectional    |      |
|  |                    | T03-Q            | T08C-Q           | T15C-Q           |      |
| Maximum Working Peak Voltage   | V <sub>WM</sub>    | 3.3              | 8.0              | 15.0             | V    |
| Minimum Breakdown Voltage @ 1 mA   | V <sub>BR</sub>    | 4.0              | 8.5              | 16.7             | V    |
| Maximum Clamping Voltage<br>V <sub>C</sub> @ I <sub>P</sub> = 1 A (1)      | V <sub>C</sub>     | 7.0              | 13.4             | 24.0             | V    |
| Typical Clamping Voltage<br>@ 8/20 μs V <sub>C</sub> = I <sub>PP</sub> (1) | V <sub>C</sub>     | 10.9 V<br>@ 43 A | 16.9 V<br>@ 34 A | 25.0 V<br>@ 15 A | V    |
| Typical Peak Pulse Power<br>(t <sub>p</sub> @ 8/20 μs) (1)                 | P <sub>PP</sub>    | 500              |                  |                  | W    |
| Maximum Leakage Current<br>@ V <sub>WM</sub>                               | I <sub>D</sub>     | 125              | 10               | 1                | μA   |
| Typical Capacitance<br>@ 0 V, 1 MHz  | C <sub>j(SD)</sub> | 500              | 150              | 60               | pF   |
| ESD Protection (per IEC 61000-4-2)<br>Contact - Max.<br>Air - Max.         | ESD                | ±30<br>±30       |                  |                  | kV   |

Notes: (1) See Pulse Wave Form.

Part numbers with a "C" suffix are bidirectional devices, i.e., CDSOT23-T08C-Q & CDSOT23-T15C-Q.



**CALIFORNIA WARNING:** Can expose you to lead, a carcinogen and reproductive toxicant.

See [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\* "Q" part number suffix indicates AEC-Q101 compliance.

Specifications are subject to change without notice.

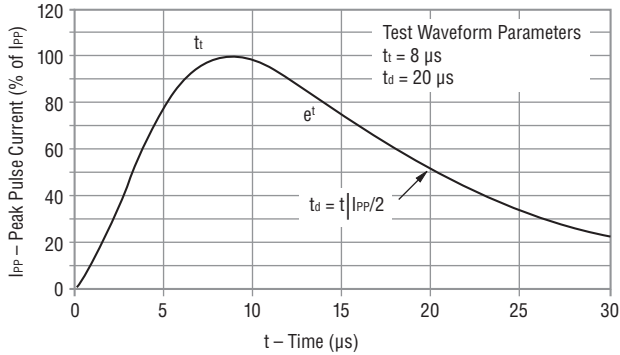
Users should verify actual device performance in their specific applications.

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## Performance Graph - Pulse Waveform

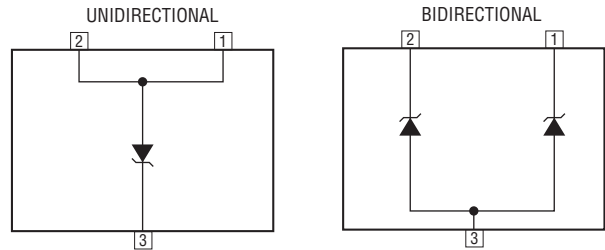


## How to Order

|                                  |                              |
|----------------------------------|------------------------------|
|                                  | <b>CD SOT23 - T 03 C - Q</b> |
| Common Code                      | _____                        |
| Chip Diode                       | _____                        |
| Package                          | _____                        |
| SOT23 = SOT-23 Package           | _____                        |
| Model                            | _____                        |
| T = Transient Voltage Suppressor | _____                        |
| Working Peak Voltage             | _____                        |
| 03 = 3.3 $V_{WM}$ (Volts)        | _____                        |
| 08 = 8 $V_{WM}$ (Volts)          | _____                        |
| 15 = 15 $V_{WM}$ (Volts)         | _____                        |
| Suffix                           | _____                        |
| C = Bidirectional Diode          | _____                        |
| AEC-Q101 Suffix                  | _____                        |
| Q = AEC-Q101 Compliant           | _____                        |

## Block Diagram

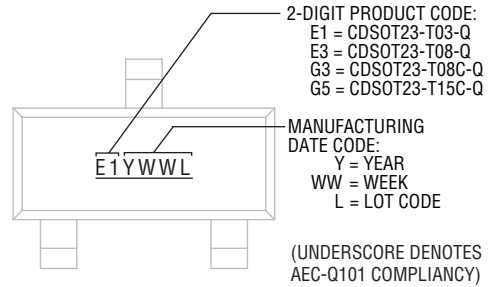
The device block diagrams below include the pin names and basic electrical connections associated with each channel.



## Environmental Specifications

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

## Typical Part Marking



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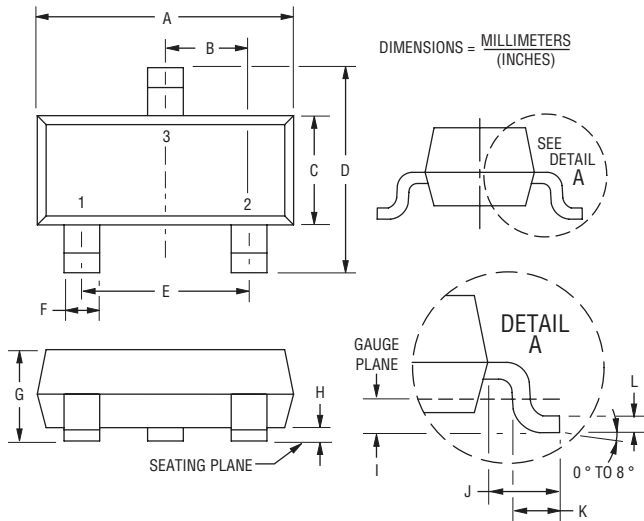
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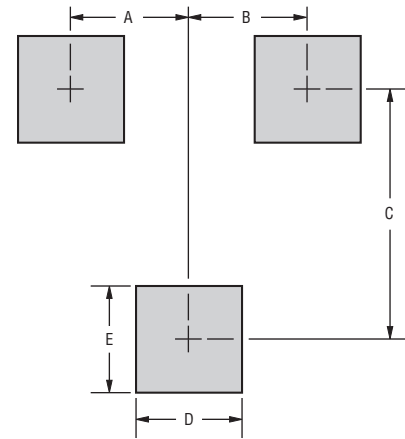
## Product Dimensions

This is a molded JEDEC SOT-23 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 = MILLIMETERS  
(INCHES)

| 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          | $\frac{0.85}{(0.033)}$ |

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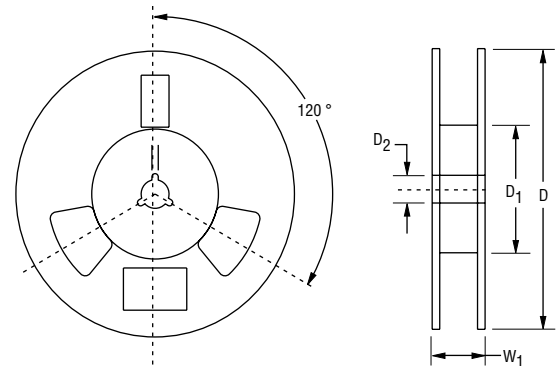
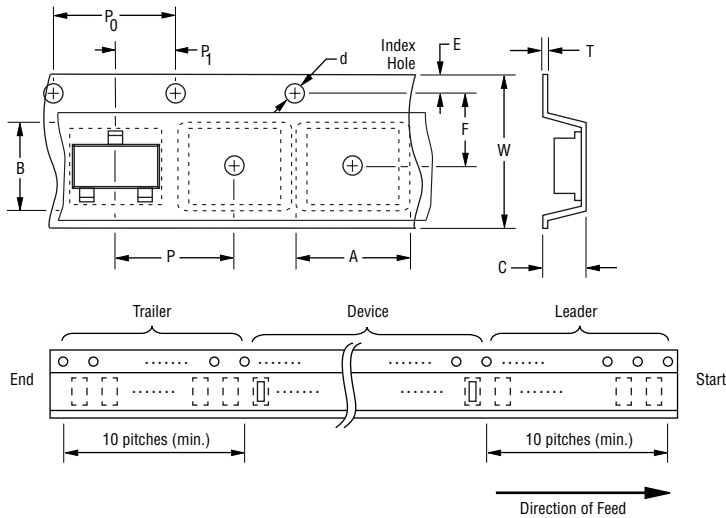
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## Packaging Information

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         | SOT-23                                    |
|------------------------|----------------|---|
| 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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