



## Features

- RoHS compliant\*
- Protects one line or one I/O port
- Bidirectional configuration
- ESD protection 30 kV max.
- Low capacitance: ~3 pF typical
- Replaces 0805 MLV devices

## Applications

- Cellular phones
- PDAs and notebooks
- Digital cameras
- MP3 players and GPS
- USB interface

## CDSOD323-TxxC - TVS Diode Array Series

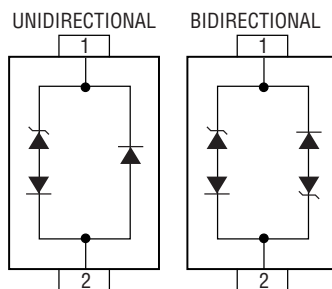
### General Information

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 SOD323 package size format. The Transient Voltage Suppressor Array series offers a choice of voltage types ranging from 3 V to 24 V in a unidirectional or bidirectional configuration. 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 compliance with IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.

Note: For 12 V and 24 V VDSL applications, the CDSOD323-TxxC-DSL family of devices is recommended.



### Additional Information

Click these links for more information:



**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.

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

| Parameter                       | Symbol           | Value       | Unit |
|---------------------------------|------------------|-------------|------|
| Peak Pulse Power (tp = 8/20 μs) | P <sub>PP</sub>  | 350         | W    |
| Operating Temperature           | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage Temperature             | T <sub>STG</sub> | -55 to +150 | °C   |

| Parameter                                            | Symbol          | CDSOD323-     |         |               |         |               |         |               |         | Unit |
|------------------------------------------------------|-----------------|---------------|---------|---------------|---------|---------------|---------|---------------|---------|------|
|                                                      |                 | Uni-T03       | Bi-T03C | Uni-T05       | Bi-T05C | Uni-T08       | Bi-T08C | Uni-T12       | Bi-T12C |      |
| Minimum Breakdown Voltage @ 1 mA                     | V <sub>BR</sub> | 4.0           |         | 6.0           |         | 8.5           |         | 13.3          |         | V    |
| Working Peak Voltage                                 | V <sub>WM</sub> | 3.3           |         | 5.0           |         | 8.0           |         | 12.0          |         | V    |
| Maximum Clamping Voltage @ I <sub>P</sub> = 1 A      | V <sub>C</sub>  | 7.0           |         | 9.8           |         | 13.4          |         | 19.0          |         | V    |
| Typical Clamping Voltage @ 8/20 μs @ I <sub>PP</sub> | V <sub>C</sub>  | 19.0 V @ 20 A |         | 18.3 V @ 17 A |         | 18.5 V @ 17 A |         | 28.3 V @ 11 A |         | V    |
| Maximum Leakage Current @ V <sub>WM</sub>            | I <sub>D</sub>  | 5             |         | 5             |         | 2             |         | 1             |         | μA   |
| Typical Capacitance @ 0 V, 1 MHz                     | C <sub>J</sub>  | 3             |         |               |         |               |         |               |         | pF   |

| Parameter                                            | Symbol          | CDSOD323-     |         |              |         |              |         | Unit |
|------------------------------------------------------|-----------------|---------------|---------|--------------|---------|--------------|---------|------|
|                                                      |                 | Uni-T15       | Bi-T15C | Uni-T18      | Bi-T18C | Uni-T24      | Bi-T24C |      |
| Minimum Breakdown Voltage @ 1 mA                     | V <sub>BR</sub> | 16.7          |         | 20.0         |         | 26.7         |         | V    |
| Working Peak Voltage                                 | V <sub>WM</sub> | 15.0          |         | 18.0         |         | 24.0         |         | V    |
| Maximum Clamping Voltage @ I <sub>P</sub> = 1 A      | V <sub>C</sub>  | 24.0          |         | 29.0         |         | 43.0         |         | V    |
| Typical Clamping Voltage @ 8/20 μs @ I <sub>PP</sub> | V <sub>C</sub>  | 31.8 V @ 10 A |         | 45.0 V @ 8 A |         | 56.0 V @ 6 A |         | V    |
| Maximum Leakage Current @ V <sub>WM</sub>            | I <sub>D</sub>  | 1             |         |              |         |              |         | μA   |
| Typical Capacitance @ 0 V, 1 MHz                     | C <sub>J</sub>  | 3             |         |              |         |              |         | pF   |

Notes:

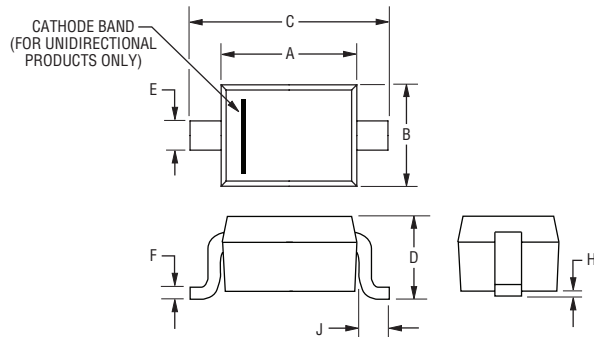
1. Part numbers with suffix "C" indicate bidirectional device, i.e. CDSOD323-T05C.
2. For bidirectional devices only, the electrical specifications apply in both directions.

## CDSOD323-TxxC - TVS Diode Array Series

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### Product Dimensions

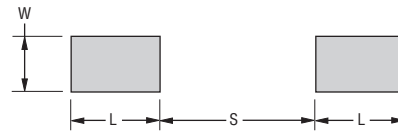
This is an RoHS compliant molded JEDEC SOD-323 package with 100 % Sn plating on the terminations. It weighs approximately 30 mg and has a flammability rating of UL 94V-0.



| Dimensions |                                       |
|------------|---------------------------------------|
| A          | $\frac{1.60 - 1.90}{(0.063 - 0.075)}$ |
| B          | $\frac{1.15 - 1.45}{(0.045 - 0.057)}$ |
| C          | $\frac{2.39 - 2.70}{(0.094 - 0.106)}$ |
| D          | $\frac{0.92 - 1.14}{(0.036 - 0.045)}$ |
| E          | $\frac{0.25 - 0.40}{(0.010 - 0.016)}$ |
| F          | $\frac{0.08 - 0.20}{(0.003 - 0.008)}$ |
| H          | $\frac{0.13}{(0.005)} \text{ MAX.}$   |
| J          | $\frac{0.30 - 0.45}{(0.012 - 0.018)}$ |

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

### Recommended Footprint



| Dimensions (Nominal) |                        |
|----------------------|------------------------|
| L                    | $\frac{0.80}{(0.031)}$ |
| S                    | $\frac{1.40}{(0.055)}$ |
| W                    | $\frac{0.50}{(0.020)}$ |

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

### Typical Part Marking

Each device has device marking outlined below and the unidirectional devices have an additional Polarity Band indicating the cathode.

|               |         |
|---------------|---------|
| CDSOD323-T03  | .....3  |
| CDSOD323-T03C | .....3C |
| CDSOD323-T05  | .....5  |
| CDSOD323-T05C | .....5C |
| CDSOD323-T08  | .....8  |
| CDSOD323-T08C | .....8C |
| CDSOD323-T12  | .....2  |
| CDSOD323-T12C | .....2C |
| CDSOD323-T15  | .....6  |
| CDSOD323-T15C | .....6C |
| CDSOD323-T18  | .....1  |
| CDSOD323-T18C | .....1C |
| CDSOD323-T24  | .....4  |
| CDSOD323-T24C | .....4C |

### Environmental Specifications

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

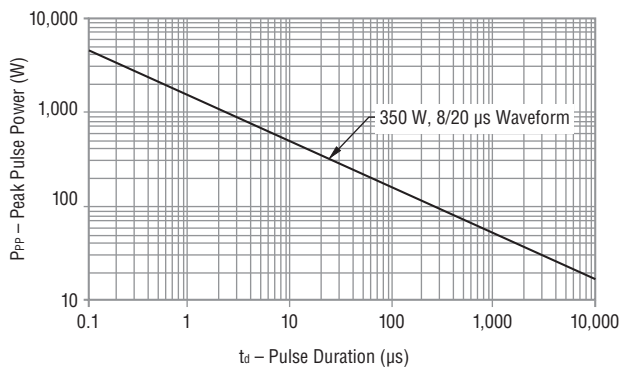
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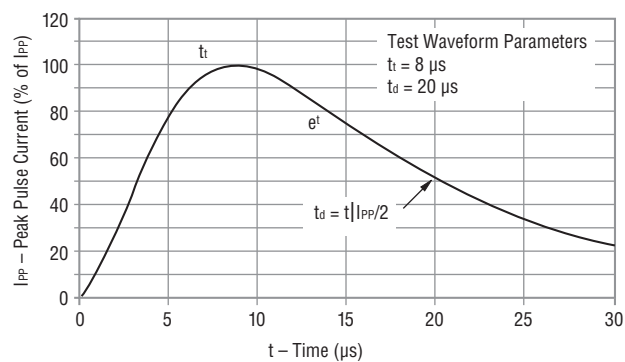
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### Performance Graphs

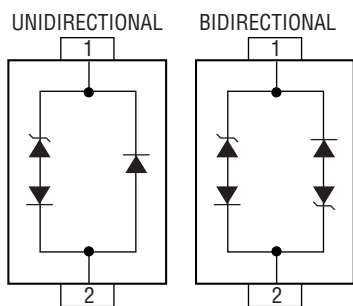
#### Peak Pulse Power vs Pulse Time



#### Pulse Waveform



#### Block Diagram



#### How to Order

**CD SOD323 - T 05 C**

Common Code \_\_\_\_\_  
 Chip Diode \_\_\_\_\_  
 Package \_\_\_\_\_  
 SOD323 = SOD-323 Package \_\_\_\_\_  
 Model \_\_\_\_\_  
 T = Transient Voltage Suppressor \_\_\_\_\_  
 Working Peak Reverse Voltage \_\_\_\_\_  
 05 = 5  $V_{WM}$  (Volts) \_\_\_\_\_  
 Suffix \_\_\_\_\_  
 C = Bidirectional Diode \_\_\_\_\_

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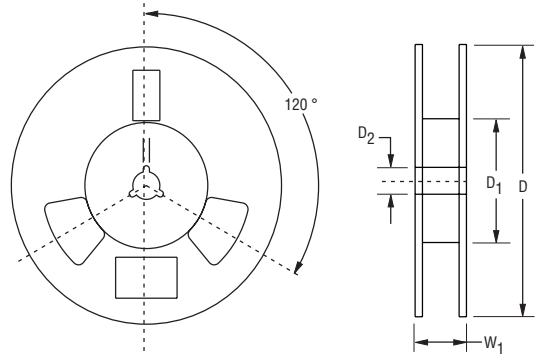
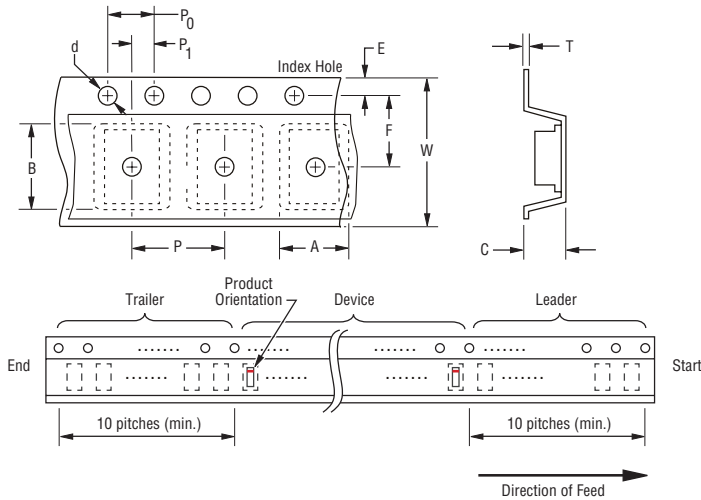
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### Packaging Information

The product is packaged in tape and reel format per EIA-481 standard.



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

| Item                   | Symbol         | SOD-323                                   |
|------------------------|----------------|-------------------------------------------|
| Carrier Width          | A              | $\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$ |
| Carrier Length         | B              | $\frac{2.90 \pm 0.10}{(0.114 \pm 0.004)}$ |
| Carrier Depth          | C              | $\frac{1.35 \pm 0.10}{(0.053 \pm 0.004)}$ |
| 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> | $\frac{80.0}{(3.150)} \text{ MIN.}$       |
| 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> | $\frac{13.5}{(0.531)} \text{ MAX.}$       |
| Quantity per Reel      | --             | 3000                                      |

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