

## Features

- RoHS compliant\*
- Low capacitance - 1 pF
- ESD protection >15 kV
- Protects 4 I/O and 1 V<sub>DD</sub> line

## Applications

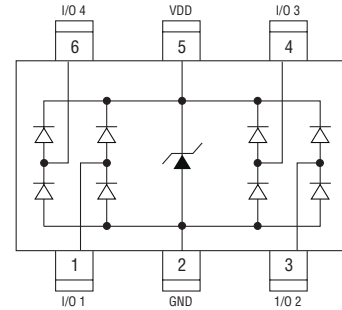
- HDMI 1.3 version
- PDAs and notebooks
- Consumer electronics
- Display port interface
- USB 2.0 up to 480 Mb/s

# CDSOT236-0504C - TVS/Steering Diode Array

### General Information

The CDSOT236-0504C device provides ESD, EFT and Surge protection for high speed data ports meeting IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements. The Transient Voltage Suppressor array offers a Working Peak Reverse Voltage of 5 V and Minimum Breakdown Voltage of 6 V.

The SOT23-6 packaged device will mount directly onto the industry standard SOT23-6 footprint. Bourns® Chip Diodes are easy to handle with standard pick and place equipment and the flat configuration minimizes roll away.



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

| Parameter  | Symbol               | CDSOT236-0504C                      | Unit |
|--|----------------------|-------------------------------------|------|
| Peak Pulse Current (t <sub>p</sub> = 8/20 μs)            | I <sub>PP</sub>      | 5.5                                 | A    |
| Storage Temperature                                      | T <sub>STG</sub>     | -55 to +150                         | °C   |
| Operating Temperature                                    | T <sub>OPR</sub>     | -55 to +85                          | °C   |
| Operating Supply Voltage                                 | V <sub>DC</sub>      | 6                                   | V    |
| ESD per IEC 61000-4-2 (Air) (I/O Pins)                   | V <sub>ESD_IO</sub>  | 15                                  | kV   |
| ESD per IEC 61000-4-2 (Contact) (I/O Pins)               |                      | 8                                   |      |
| ESD per IEC 61000-4-2 (Air) (V <sub>CC</sub> to GND)     | V <sub>ESD_VCC</sub> | 30                                  | kV   |
| ESD per IEC 61000-4-2 (Contact) (V <sub>CC</sub> to GND) |                      | 30                                  |      |
| DC Voltage at any I/O Pin                                | V <sub>IO</sub>      | (GND-0.5) to (V <sub>CC</sub> +0.5) | V    |

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

| Parameter  | Symbol                | CDSOT236-0504C | Unit |
|--|-----------------------|----------------|------|
| Maximum Reverse Standoff Voltage <sup>1</sup>  | V <sub>RWM</sub>      | 5.0            | V    |
| Maximum Leakage Current <sup>1</sup> @ V <sub>RWM</sub>  | I <sub>L</sub>        | 2.0            | μA   |
| Maximum Channel Leakage Current @ V <sub>RWM</sub>   | I <sub>CD</sub>       | 1.0            | μA   |
| Minimum Reverse Breakdown Voltage <sup>1</sup><br>@ I <sub>BV</sub> = 1 mA   | V <sub>BR</sub>       | 6.0            | V    |
| Maximum Forward Voltage <sup>4</sup> @ I <sub>F</sub> = 15 mA  | V <sub>F</sub>        | 1.2            | V    |
| Maximum Clamping Voltage <sup>2</sup> @ 5 A 8/20 μs  | V <sub>C</sub>        | 10             | V    |
| Typical ESD Clamping Voltage - I/O <sup>2</sup>  | V <sub>clamp_io</sub> | 14             | V    |
| Maximum Channel Input Capacitance <sup>2</sup> @<br>V <sub>PIN5</sub> = 5 V, V <sub>PIN2</sub> = 0 V, V <sub>IN</sub> = 2.5 V, f = 1 MHz                     | C <sub>IN</sub>       | 1.2            | pF   |
| Maximum Channel to Channel Input<br>Capacitance <sup>3</sup> @ V <sub>PIN5</sub> = 5 V, V <sub>PIN2</sub> = 0 V,<br>V <sub>IN</sub> = 2.5 V, f = 1 MHz       | C <sub>CROSS</sub>    | 0.12           | pF   |
| Maximum Variation of Channel Input<br>Capacitance @ V <sub>PIN5</sub> = 5 V, V <sub>PIN2</sub> = 0 V,<br>V <sub>IN</sub> = 2.5 V, f = 1 MHz (I/O Pin to GND) | ΔC <sub>IN</sub>      | 0.05           | pF   |

#### NOTES:

1. Pin 5 to Pin 2 (GND)
2. Pin 1,3,4 or 6 to Pin 2 (GND)
3. Between any two of Pins 1,3,4,6
4. Pin 2 (GND) to Pin 5

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.

Specifications are subject to change without notice.

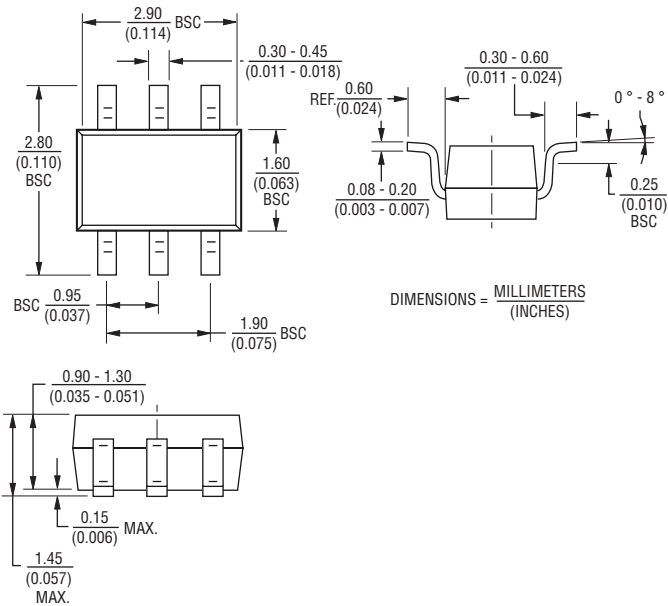
Customers should verify actual device performance in their specific applications.

# CDSOT236-0504C - TVS/Steering Diode Array

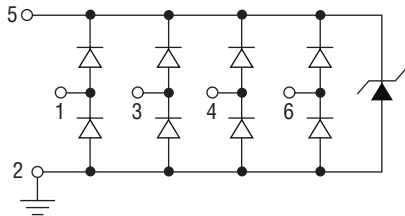
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## Product Dimensions

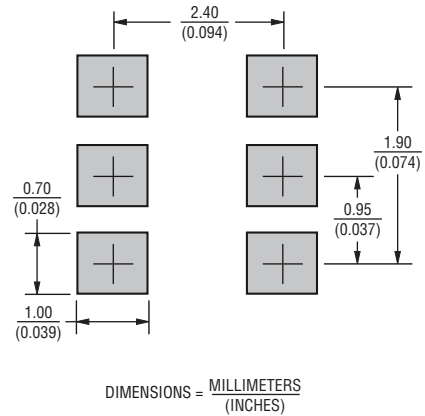
This is a molded SOT23-6L package with lead free 100 % Matte Sn on the lead frame. It weighs approximately 3 mg and has a flammability rating of UL 94V-0.



## Circuit Diagram



## Recommended Footprint



## Typical Part Marking

CDSOT236-0504C .....54C

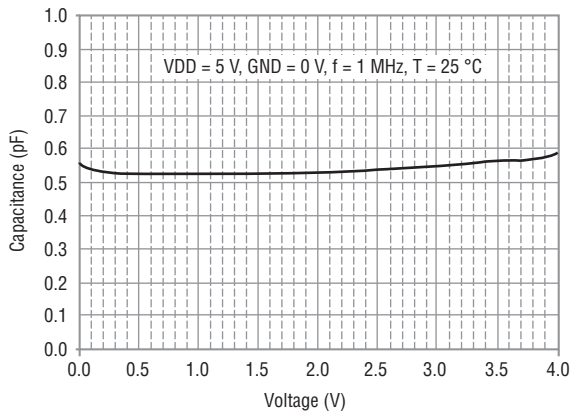
## How to Order

**CD SOT236 - 05 04 C**

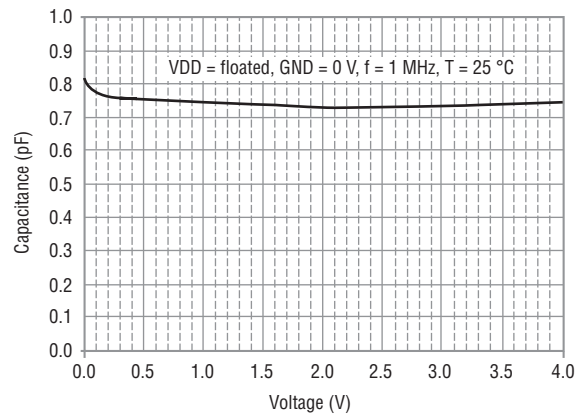
- Common Diode \_\_\_\_\_
- Chip Diode \_\_\_\_\_
- Package \_\_\_\_\_  
SOT236 = SOT23-6 Package
- Working Peak Reverse Voltage \_\_\_\_\_  
05 = 5 V<sub>RWM</sub> (Volts)
- Number of Lines \_\_\_\_\_  
04 = 4 Data Lines
- Suffix \_\_\_\_\_  
C = Low Capacitance

## Typical Characteristics

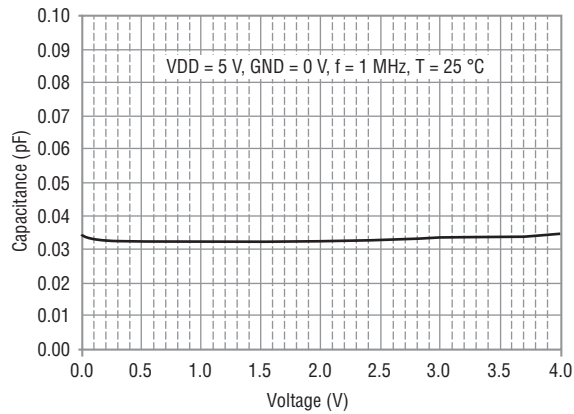
### Typical Variation of $C_{IN}$ vs. $V_{IN}$



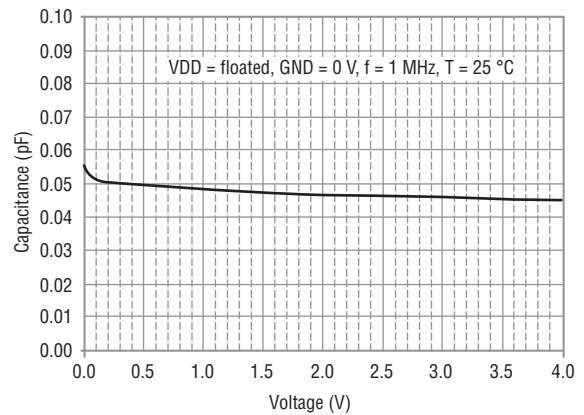
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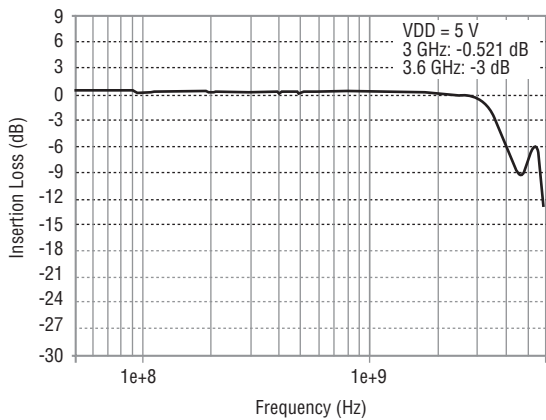
### Typical Variation of $C_{IO}$ to IO vs. $V_{IN}$



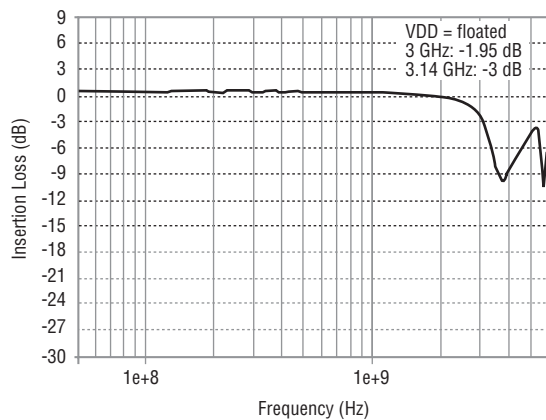
### Typical Variation of $C_{IO}$ to IO vs. $V_{IN}$



### Insertion Loss S21 (I/O to GND)



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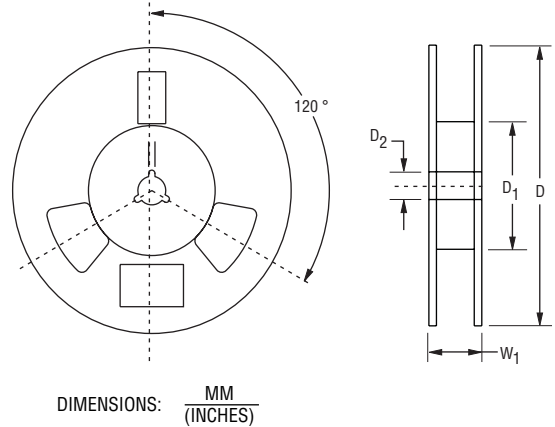
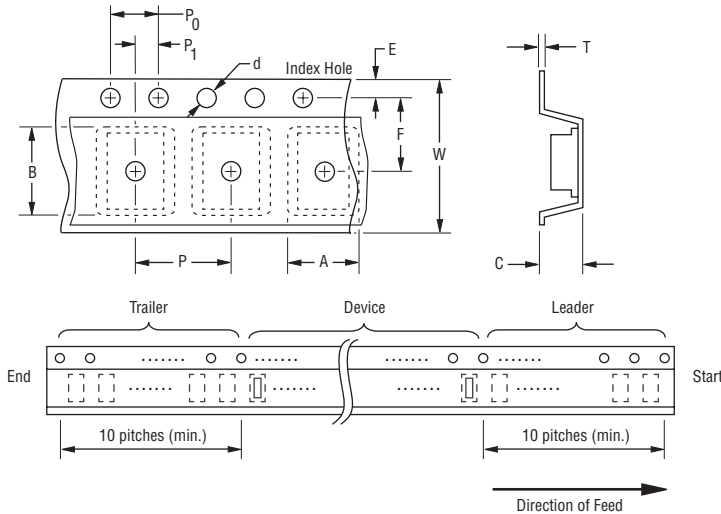


# CDSOT236-0504C - TVS/Steering Diode Array

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## Packaging Information

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         | SOT23-6                                   |
|------------------------|----------------|---|
| Carrier Width          | A              | $\frac{3.90 \pm 0.10}{(0.154 \pm 0.004)}$ |
| Carrier Length         | B              | $\frac{3.90 \pm 0.10}{(0.154 \pm 0.004)}$ |
| Carrier Depth          | C              | $\frac{0.90 \pm 0.10}{(0.035 \pm 0.004)}$ |
| 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      | --             | 3000                                      |

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### Asia-Pacific:

Tel: +886-2 2562-4117  
Fax: +886-2 2562-4116

### Europe:

Tel: +41-41 768 5555  
Fax: +41-41 768 5510

### The Americas:

Tel: +1-951 781-5500  
Fax: +1-951 781-5700

[www.bourns.com](http://www.bourns.com)

REV. 05/11

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