



## Features

- Lead free as standard
- RoHS compliant\*
- Low clamping voltage
- Bidirectional ESD protection
- Protects 2 lines

## Applications

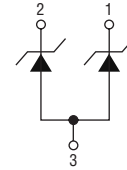
- Personal Digital Assistants (PDAs)
- Mobile phones & accessories
- Portable electronics
- Power lines and low speed data lines

# CDSOT23-0502U - Surface Mount TVS Diode

## General Information

The CDSOT23-0502U 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 SOT23-3 packaged device will mount directly onto the industry standard SOT23-3 footprint. Bourns® Chip Diodes are easy to handle with standard pick and place equipment and their flat configuration minimizes roll away.



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

Parameter	Symbol	Value	Unit
Peak Pulse Current (t <sub>p</sub> = 8/20μs)	I <sub>PPM</sub>	16	A
Storage Temperature	T <sub>STG</sub>	-55 to 125	°C
Operating Temperature	T <sub>OPR</sub>	-55 to 150	°C
Minimum Breakdown Voltage @ 1 mA	V <sub>BR</sub>	6.0	V
Reverse Standoff Voltage	V <sub>M</sub>	5	V
Maximum Leakage Current @ V <sub>WM</sub>	I <sub>L</sub>	2.5	μA
Maximum Forward Voltage	V <sub>F</sub>	1	V
Maximum Surge Clamping Voltage1 @ I <sub>PP</sub> =5 A (NOTE 1,2)	V <sub>CS1</sub>	7	V
Maximum Surge Clamping Voltage2 @ I <sub>PP</sub> =5 A (NOTE 3)	V <sub>CS2</sub>	8	V
Typical ESD Clamping Voltage1 @ I <sub>PP</sub> =17 A (NOTE 1,2)	V <sub>ESD1</sub>	9	V
Typical ESD Clamping Voltage2 @ I <sub>PP</sub> =17 A (NOTE 3)	V <sub>ESD2</sub>	11	V
Max Channel Input Capacitance @ 0 V, 1 MHz (NOTE 1,2)	C <sub>N</sub>	65	pF
Max Channel to Channel Capacitance @ 0 V, 1 MHz (NOTE 3)	C <sub>CROSS</sub>	32.5	pF

### Notes:

1. Test between Pins 1 to 3.
2. Test between Pins 2 to 3.
3. Test between Pins 1 to 2.



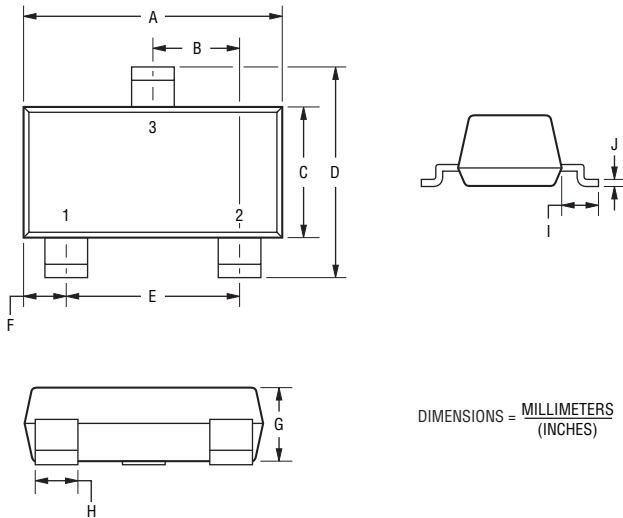
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# CDSOT23-0502U - Surface Mount TVS Diode

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## Product Dimensions

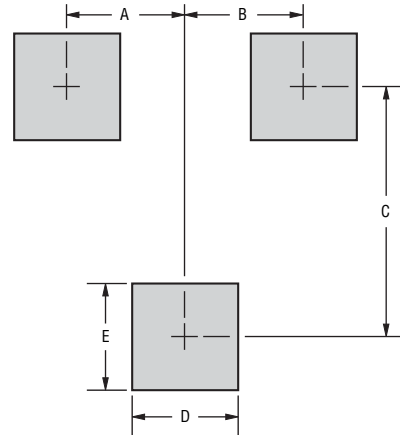
This is a molded SOT23-3L package with lead free 100 % Matte Sn on the lead frame. It weighs approximately 8 mg and has a flammability rating of UL 94V-0.



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

Dimensions	
A	$\frac{2.82 - 3.02}{(0.111 - 0.119)}$
B	$\frac{0.95}{(0.037)}$ TYP.
C	$\frac{1.20 - 1.40}{(0.047 - 0.055)}$
D	$\frac{2.25 - 2.55}{(0.089 - 0.100)}$
E	$\frac{1.80 - 2.00}{(0.071 - 0.079)}$
F	$\frac{0.45 - 0.60}{(0.018 - 0.024)}$
G	$\frac{0.90 - 1.05}{(0.035 - 0.041)}$
H	$\frac{0.30 - 0.40}{(0.012 - 0.016)}$
I	$\frac{0.55}{(0.022)}$ REF.
J	$\frac{0.08 - 0.15}{(0.003 - 0.006)}$

## Recommended Footprint



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

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

## How to Order

**CD SOT23 - 05 02 U**

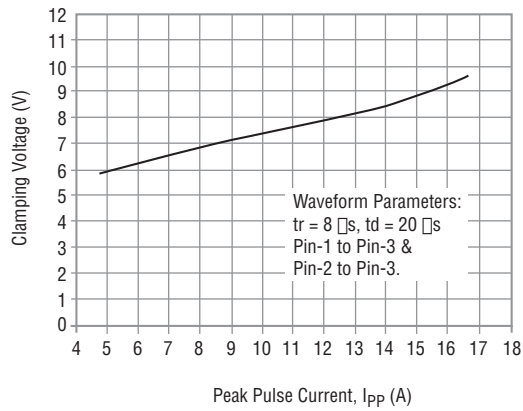
Common Code \_\_\_\_\_  
 Chip Diode \_\_\_\_\_  
 Package \_\_\_\_\_  
 • SOT23 = SOT-23-3L Package  
 Working Peak Voltage \_\_\_\_\_  
 05 = 5 V  
 Lines \_\_\_\_\_  
 02 = 2 Lines  
 Suffix \_\_\_\_\_  
 U = Unidirectional Diode

# CDSOT23-0502U - Surface Mount TVS Diode

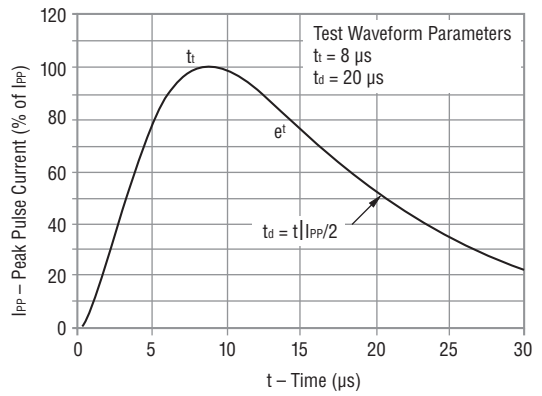


## Rating & Characteristic Curves

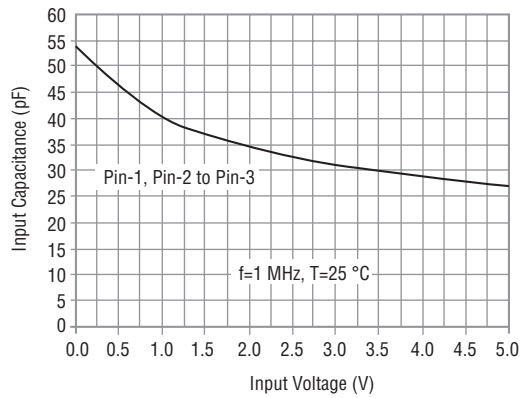
### Reverse Clamping Voltage vs Peak Pulse Current



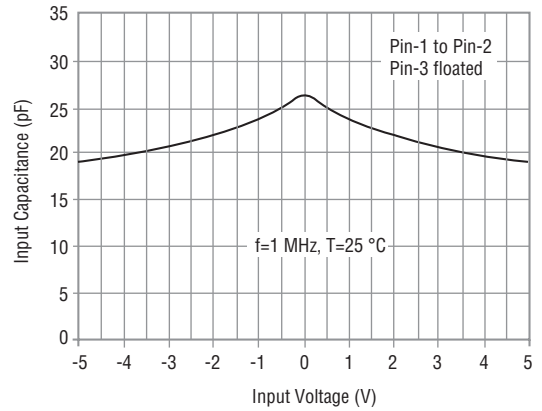
### Pulse Waveform



### Typical variation of $C_{IN}$ vs. $V_{IN}$ (1)



### Typical variation of $C_{IN}$ vs. $V_{IN}$ (1)



### Typical Part Marking

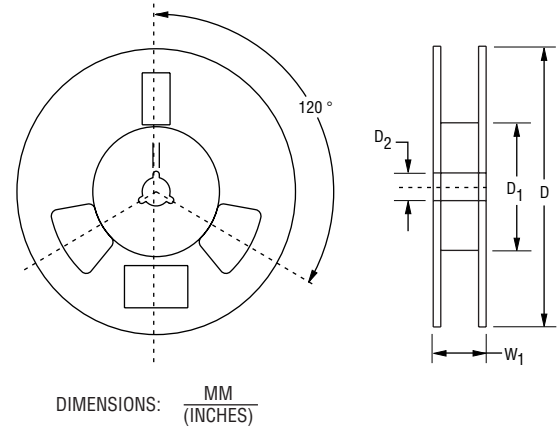
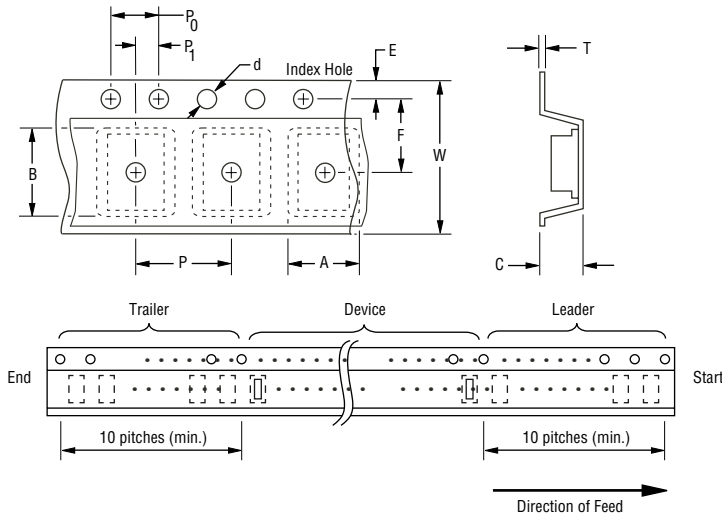
CDSOT23-0502U ..... 52U

# CDSOT23-0502U - Surface Mount TVS Diode

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## Packaging Information

The product is dispensed in tape and reel format (see diagram below).



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

Item	Symbol	SOT-23
Carrier Width	A	$\frac{2.25 \pm 0.10}{(0.088 - 0.004)}$
Carrier Length	B	$\frac{2.34 \pm 0.10}{(0.092 - 0.004)}$
Carrier Depth	C	$\frac{1.22 \pm 0.10}{(0.048 - 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 - 0.002)}$
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	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
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	$\frac{8.00 \pm 0.20}{(0.315 - 0.008)}$
Reel Width	W <sub>1</sub>	$\frac{14.4}{(0.567)}$ Max.
Quantity per Reel	--	3,000