



Features

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

Applications

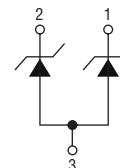
- Personal Digital Assistants (PDAs)
- Mobile phones & accessories
- Portable electronics
- Power lines and low speed data lines

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_A = 25 °C Unless Otherwise Noted)

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



WARNING Cancer and Reproductive Harm - 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.

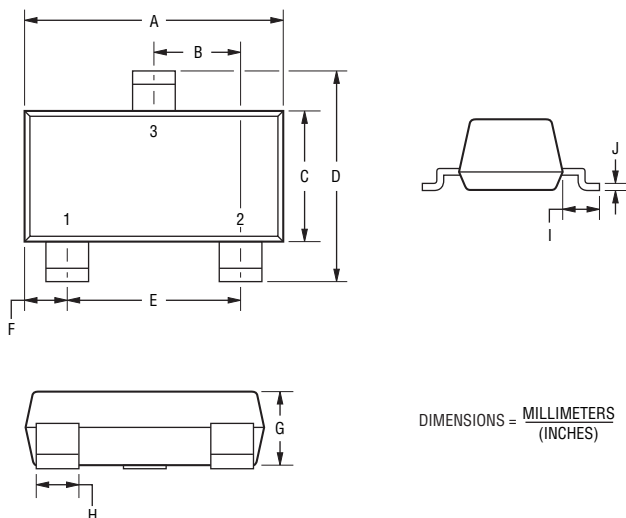
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CDSOT23-0502U - Surface Mount TVS Diode



Product Dimensions

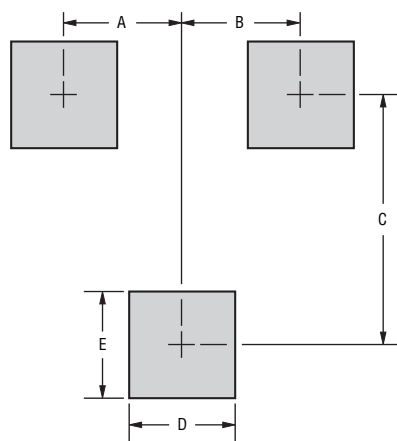
This is a molded SOT23-3L package with lead free 100 % Matte Sn on the lead frame. It weighs approximately 8 mg and has a flammability rating of UL 94V-0.



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

Common Code _____ **CD SOT23 - 05 02 U**

Chip Diode

Package _____
• SOT23 = SOT-23-3L Package

Working Peak Voltage _____
05 = 5 V

Lines _____
02 = 2 Lines

Suffix _____
U = Unidirectional Diode

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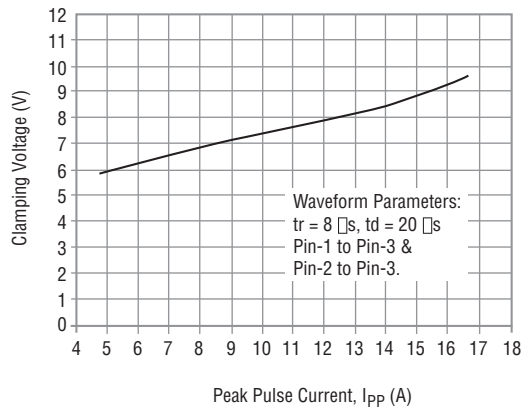
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CDSOT23-0502U - Surface Mount TVS Diode

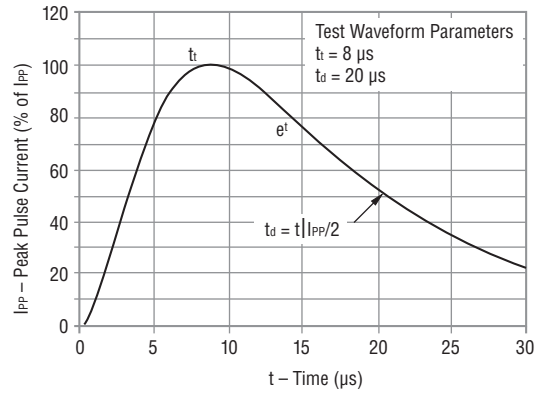


Rating & Characteristic Curves

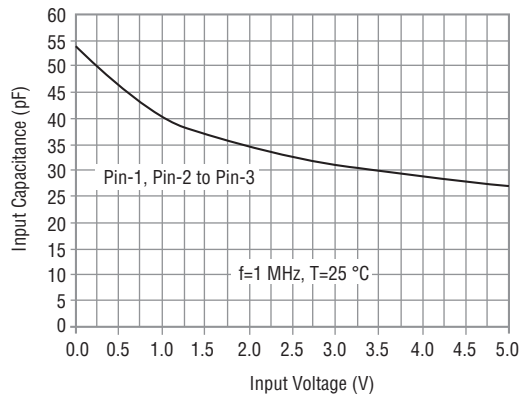
Reverse Clamping Voltage vs Peak Pulse Current



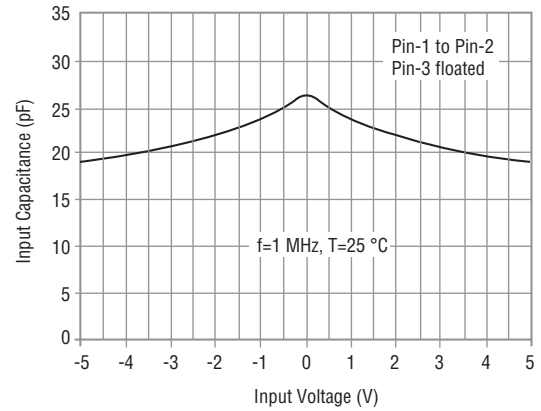
Pulse Waveform



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



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



Typical Part Marking

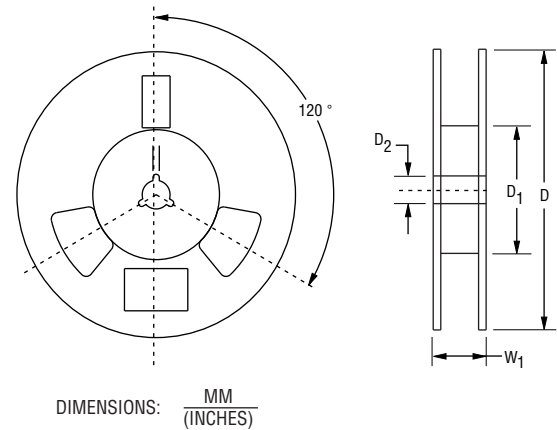
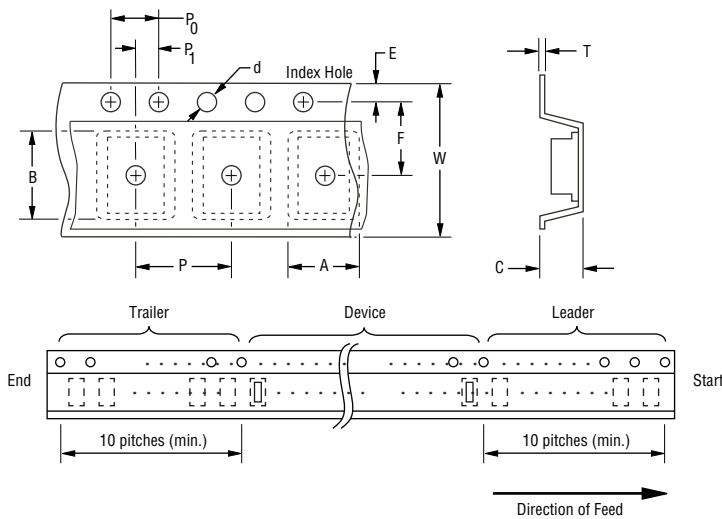
CDSOT23-0502U 52U

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 ₁	$\frac{50.0}{(1.969)}$ Min.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
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 ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
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 ₁	$\frac{14.4}{(0.567)}$ Max.
Quantity per Reel	--	3,000

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REV. 08/19

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