

\*RoHS COMPLIANT



**BOURNS®**

## Features

- RoHS compliant\*
- Working peak voltage 7 V or 12 V
- ESD protection 30 kV max.
- Surge protection

## Applications

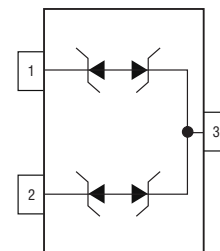
- Wireless systems
- Network protection
- Portable electronics
- RS485 port protection

# CDSOT23-SM712 — Surface Mount TVS Diode

## General Information

The CDSOT23-SM712 device provides ESD, EFT and Surge protection for 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 2 TVS diodes with Working Peak Reverse Voltage of 7 V or 12 V with Minimum Breakdown Voltage of 7.5 V or 13.3 V respectively.

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



## Absolute Maximum Ratings (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power (t <sub>p</sub> = 8/20 μs) <sup>1</sup>	P <sub>PK</sub>	400	W
Peak Pulse Current (8/20 μs)	I <sub>PP</sub>	17	A
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C
Operating Temperature	T <sub>OPR</sub>	-55 to +150	°C

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

Parameter	Symbol	Value	Unit
Minimum Breakdown Voltage @ 1 mA Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	V <sub>BR</sub>	7.5 13.3	V
Maximum Working Peak Voltage Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	V <sub>WM</sub>	7.0 12.0	V
Maximum Leakage Current @ V <sub>WM</sub> Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	I <sub>D</sub>	20.0 1.0	μA
Maximum Clamping Voltage @ I <sub>P</sub> = 1 A Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	V <sub>C</sub>	11 19	V
Maximum Clamping Voltage @ I <sub>P</sub> = 5 A Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	V <sub>C</sub>	12 20	V
Maximum Clamping Voltage @ I <sub>PP</sub> = 17 A Pin 3 - 1 and Pin 3 - 2 Pin 1 - 3 and Pin 2 - 3	V <sub>C</sub>	14 26	V
Typical Junction Capacitance @ 0 V, 1 MHz (Pin 3-1 and Pin 3-2) & (Pin 1 - 3 and Pin 2 - 3)	C <sub>D</sub>	75	pF
ESD Protection (per IEC 61000-4-2) Contact - Min. Contact - Max. Air - Min. Air - Max.	ESD	±8 ±30 ±15 ±30	kV

Note:

1. See Peak Pulse Power vs. Pulse Time.

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.

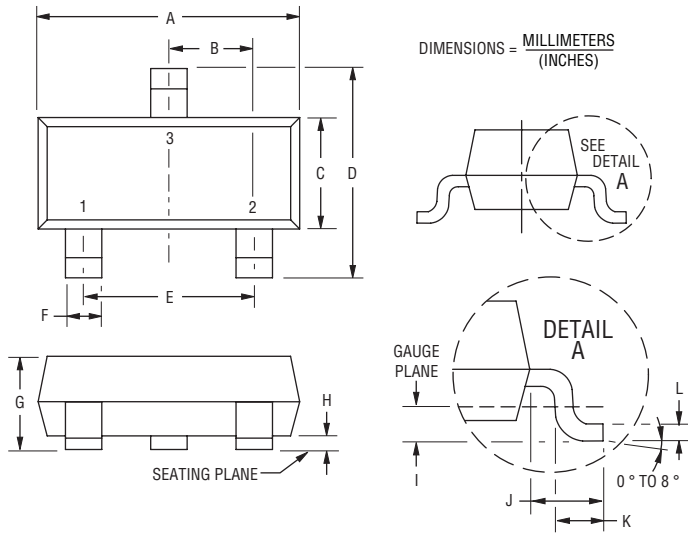
Customers should verify actual device performance in their specific applications.

# CDSOT23-SM712 — Surface Mount TVS Diode



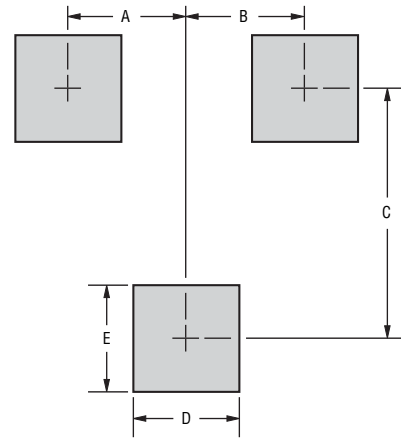
## Product Dimensions

This is a molded JEDEC SOT-23 package with 100 % Matte Sn plating on the lead frame. It weighs approximately 8 mg 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	
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 - SM 712**

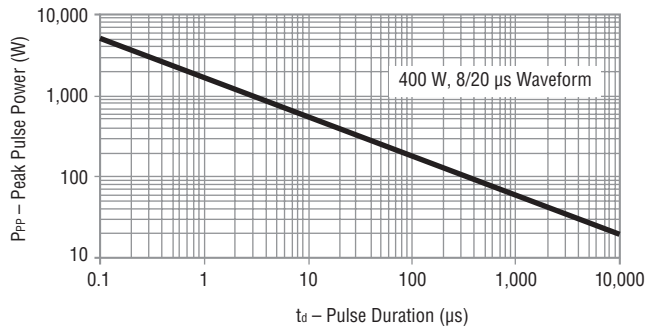
Common Code \_\_\_\_\_  
 Chip Diode \_\_\_\_\_  
 Package \_\_\_\_\_  
 • SOT23 = SOT23 Package  
 Model \_\_\_\_\_  
 SM = Special Model  
 Working Peak Reverse Voltage \_\_\_\_\_  
 712 = 7 V<sub>RWM</sub> & 12 V<sub>RWM</sub> (Volts)

## Typical Part Marking

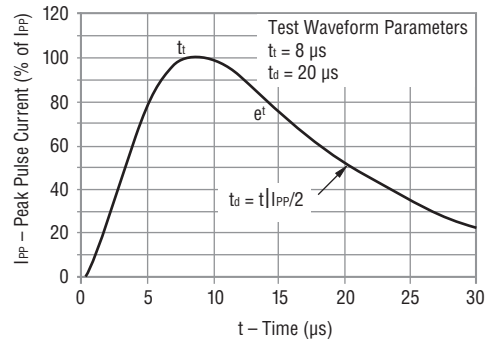
CDSOT23-SM712 ..... **712**

Performance Graphs

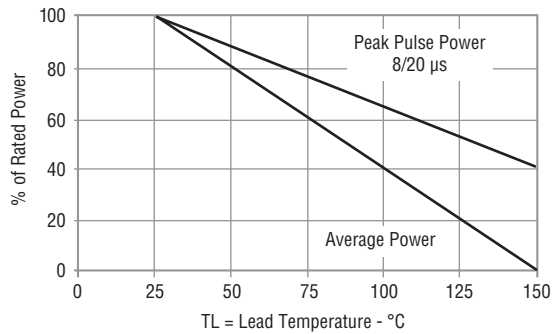
Peak Pulse Power vs Pulse Time



Pulse Waveform



Power Derating Curve

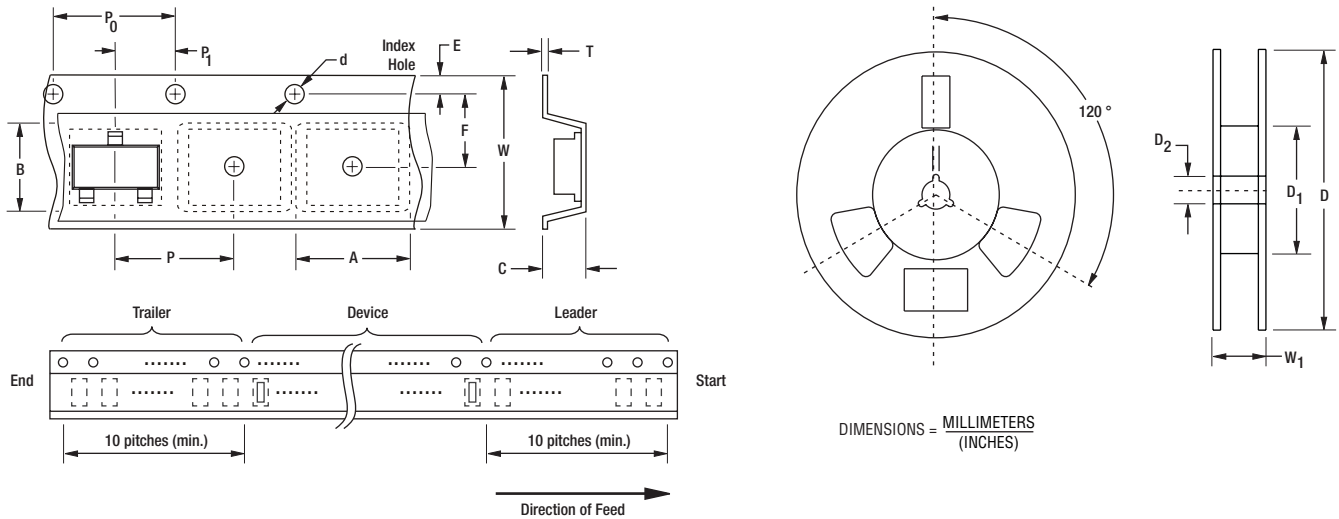


# CDSOT23-SM712 — Surface Mount TVS Diode

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## Packaging Information

The product is packaged in an 8 mm x 4 mm tape and reel format per EIA-481-A standard.



Item	Symbol	SOT23
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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