



## Features

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

## Applications

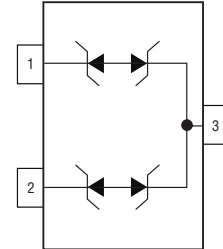
- Wireless systems
- Network protection
- Portable electronics
- RS-485 port protection

# 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 two TVS diodes with a Working Peak Reverse Voltage of 7 V or 12 V and 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.

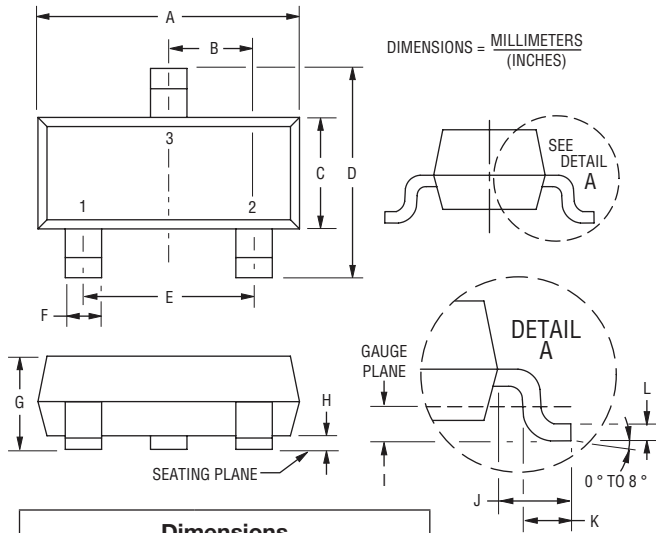
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# CDSOT23-SM712 - Surface Mount TVS Diode

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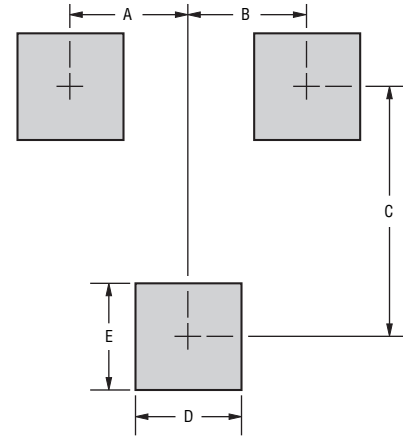
## Product Dimensions

This is a molded JEDEC SOT-323 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	$\frac{0.08 - 0.20}{(0.003 - 0.008)}$

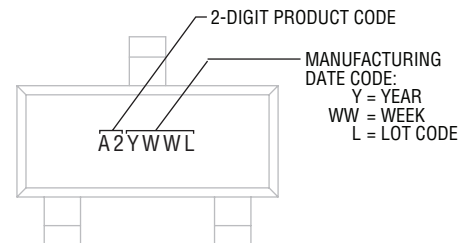
## Recommended Footprint



DIMENSIONS = MILLIMETERS (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	$\frac{0.85}{(0.033)}$

## Typical Part Marking



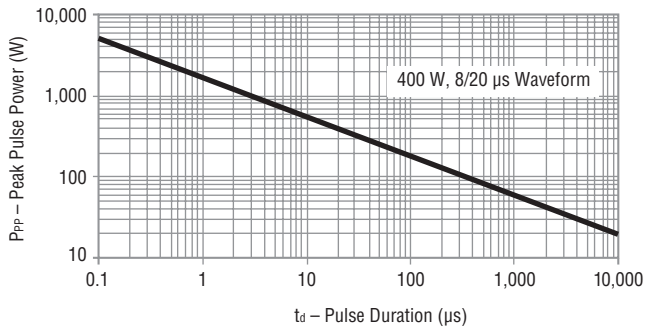
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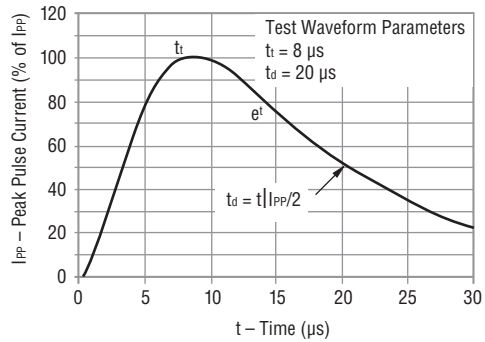


## Performance Graphs

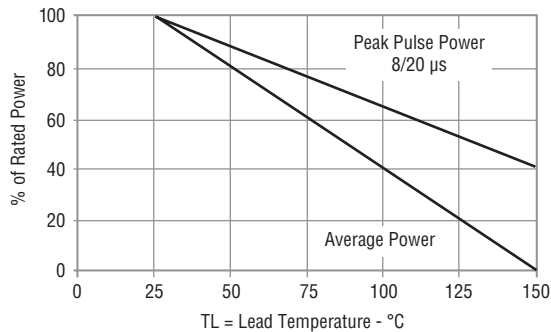
### Peak Pulse Power vs. Pulse Time



### Pulse Waveform



### Power Derating Curve



### 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  $V_{RWM}$  & 12  $V_{RWM}$  (Volts)

### Environmental Specifications

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

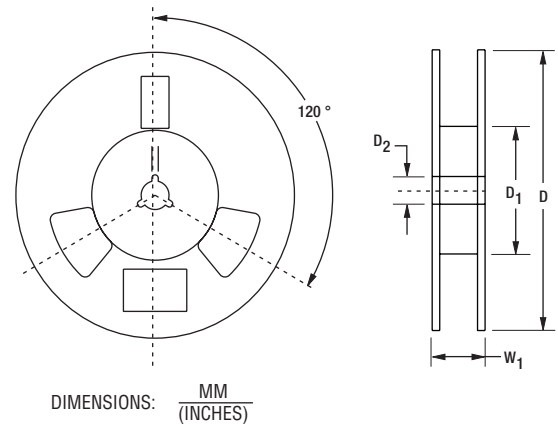
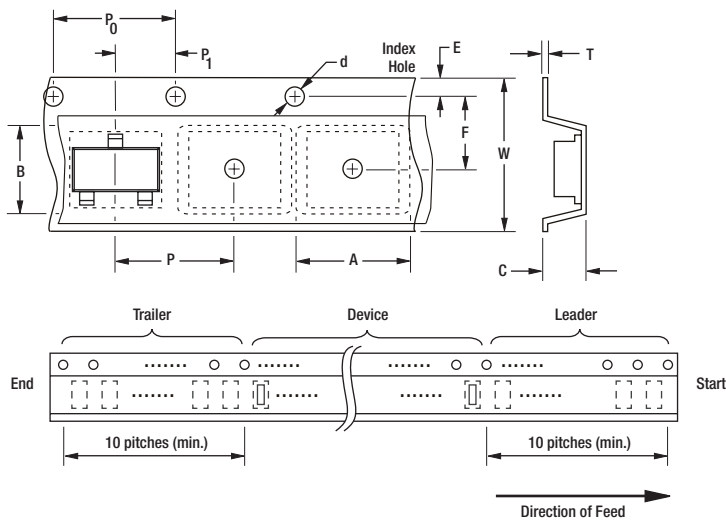
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## Packaging Information

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



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

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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REV. 01/18

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