

Features

- Lead free as standard*
- ESD protection >30 kV
- Low capacitance ~ 1.0 pF
- Protects 1 line
- Uni/bidirectional configuration

Applications

- HDMI 1.4
- Digital Visual Interface (DVI)
- USB 3.0 / USB OTG
- Memory protection
- SIM card ports

CDSOD323-TxxLC - TVS Diode Series

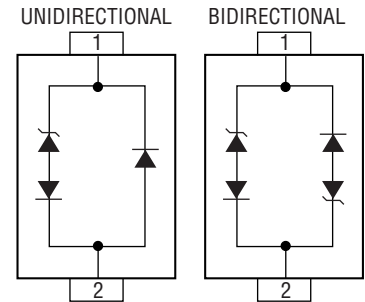
General Information

The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications in SOD323 package size format. The Transient Voltage Suppressor Diode series offers a choice of voltage types ranging from 3 V to 24 V in a unidirectional or bidirectional configuration.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away. The Bourns® device meets IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.

This device is not recommended for use in VDSL applications.



Electrical & Thermal Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Unidirectional Peak Pulse Power (t _p = 8/20 μs)	P _{PP}	350	W
Bidirectional Peak Pulse Power (t _p = 8/20 μs)	P _{PP}	250	W
Operating Temperature	T _L	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C
Minimum ESD Protection (per IEC 61000-4-2)			
Contact Discharge	ESD	±8	kV
Air Discharge	ESD	±15	kV

Parameter	Symbol	CDSOD323-								Unit
		Uni-T03L	Bi-T03LC	Uni-T05L	Bi-T05LC	Uni-T08L	Bi-T08LC	Uni-T12L	Bi-T12LC	
Min. Breakdown Voltage @ 1 mA	V _{BR}	4.0	4.0	6.0	6.0	8.5	8.5	13.3	13.3	V
Working Peak Voltage	V _M	3.3	3.3	5.0	5.0	8.0	8.0	12.0	12.0	V
Maximum Clamping Voltage @ I _P = 1 A	V _F	6.5	7.0	9.8	9.8	13.4	13.4	19.0	19.0	V
Typical Clamping Voltage @ 8/20 μs @ I _{PP}	V _C	20 V @ 24 A	20 V @ 24 A	18.3 V @ 15 A	18.3 V @ 15 A	18.3 V @ 15 A	18.3 V @ 15 A	28.6 V @ 11 A	28.6 V @ 11 A	V
Maximum Leakage Current @ V _{WM}	I _D	5	5	5	5	2	2	1	1	μA
Typical Capacitance @ 0 V, 1 MHz	C _P	1.0								pF

Notes:

1. Part numbers with suffix "C" indicate bidirectional device, i.e. CDSOD323-T05LC.
2. For bidirectional devices only, the electrical specifications apply in both directions.
3. Unidirectional only: Positive potential is applied from pin 1 to 2.



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*No lead detected in standard tests of homogeneous materials.
 **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.

CDSOD323-TxxLC - TVS Diode Series

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Electrical & Thermal Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

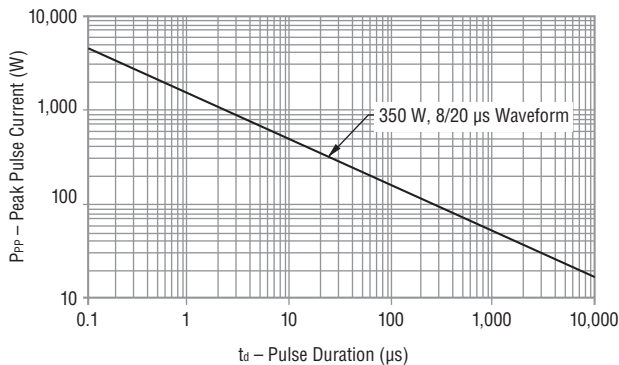
Parameter	Symbol	CDSOD323-						Unit
		Uni-T15L	Bi-T15LC	Uni-T18L	Bi-T18LC	Uni-T24L	Bi-T24LC	
Min. Breakdown Voltage @ 1 mA	V_{BR}	16.7	16.7	20.0	20.0	26.7	26.7	V
Working Peak Voltage	V_M	15.0	15.0	18.0	18.0	24.0	24.0	V
Maximum Clamping Voltage @ $I_P = 1\text{ A}$	V_F	24.0	24.0	29.0	29.0	43.0	43.0	V
Typical Clamping Voltage @ 8/20 μs @ I_{PP}	V_C	31.8 V @ 10 A	31.8 V @ 10 A	45.0 V @ 8 A	45.0 V @ 8 A	56.0 V @ 6 A	56.0 V @ 6 A	V
Maximum Leakage Current @ V_{WM}	I_D	1						μA
Typical Capacitance @ 0 V, 1 MHz	C_J	1.0						pF

Notes:

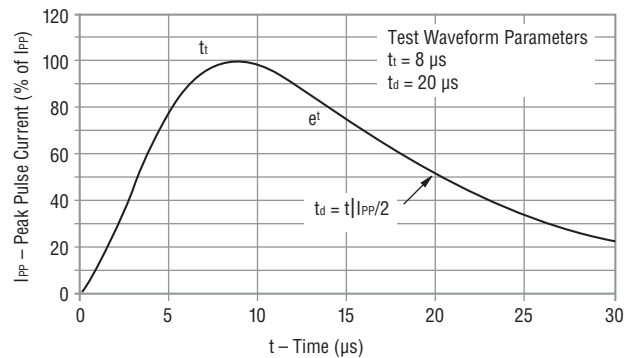
- Part numbers with suffix "C" indicate bidirectional device, i.e. CDSOD323-T05LC.
- For bidirectional devices only, the electrical specifications apply in both directions.
- Unidirectional only: Positive potential is applied from pin 1 to 2.

Performance Graphs

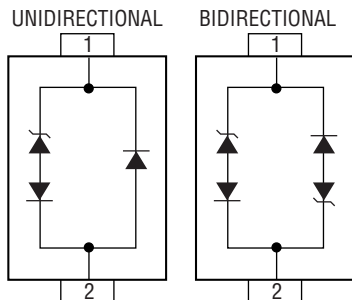
Peak Pulse Power vs. Pulse Time



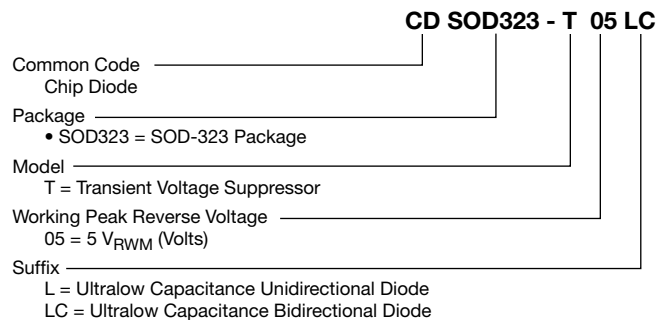
Pulse Waveform



Block Diagram



How to Order



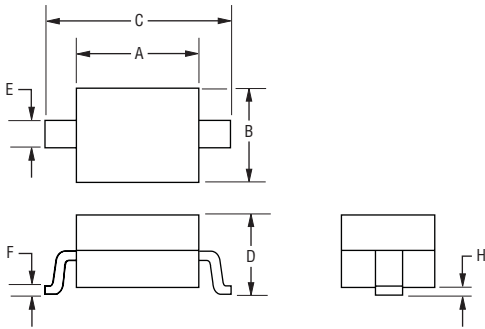
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CDSOD323-TxxLC - TVS Diode Series

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Product Dimensions

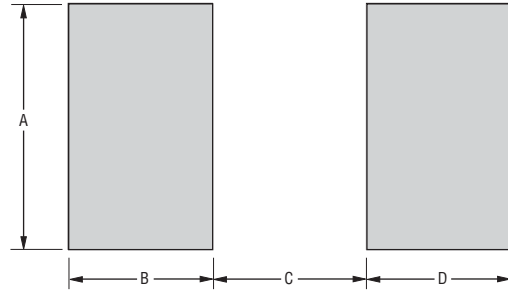
This is a molded JEDEC SOD-323 package with lead free 100 % Sn plating on the terminations. It weighs approximately 30 mg and has a flammability rating of UL 94V-0.



Dimensions	
A	$\frac{1.60 - 1.90}{(0.063 - 0.075)}$
B	$\frac{1.15 - 1.45}{(0.045 - 0.057)}$
C	$\frac{2.39 - 2.70}{(0.094 - 0.106)}$
D	$\frac{0.92 - 1.10}{(0.036 - 0.043)}$
E	$\frac{0.25 - 0.40}{(0.010 - 0.016)}$
F	$\frac{0.10 - 0.20}{(0.004 - 0.008)}$
H	$\frac{0.10}{(0.004)}$ MAX.

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Recommended Footprint



Dimensions (Nominal)	
A	$\frac{0.80}{(0.031)}$
B	$\frac{0.80}{(0.031)}$
C	$\frac{1.40}{(0.055)}$
D	$\frac{0.80}{(0.031)}$

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Typical Part Marking

Each device has device marking outlined below and the unidirectional devices have an additional Polarity Band indicating the cathode.

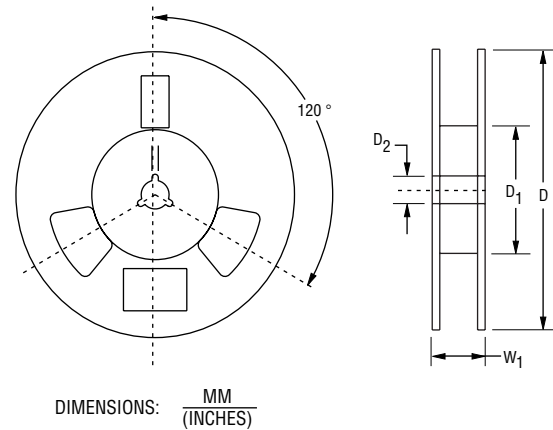
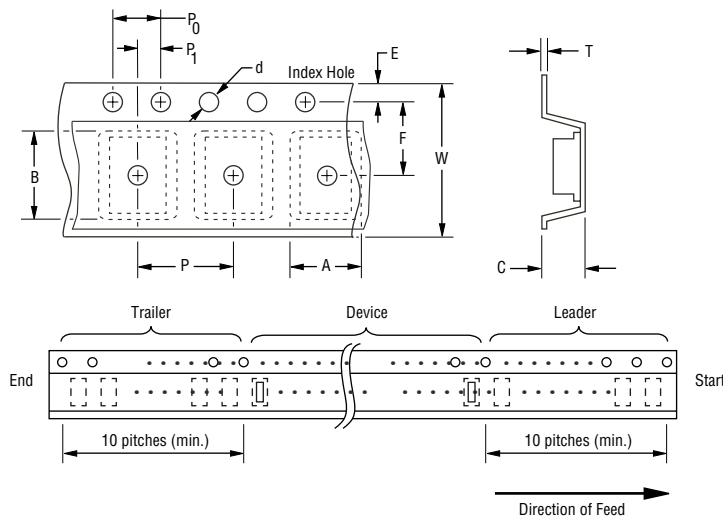
CDSOD323-T03L	T3
CDSOD323-T03LC	S3
CDSOD323-T05L	T5
CDSOD323-T05LC	S5
CDSOD323-T08L	T8
CDSOD323-T08LC	S8
CDSOD323-T12L	T12
CDSOD323-T12LC	S12
CDSOD323-T15L	T15
CDSOD323-T15LC	S15
CDSOD323-T18L	T18
CDSOD323-T18LC	S18
CDSOD323-T24L	T24
CDSOD323-T24LC	S24

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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	SOD-323
Carrier Width	A	$\frac{1.55 \pm 0.10}{(0.061 - 0.004)}$
Carrier Length	B	$\frac{2.90 \pm 0.10}{(0.114 - 0.004)}$
Carrier Depth	C	$\frac{1.35 \pm 0.10}{(0.053 - 0.004)}$
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	$\frac{80.0}{(3.150)}$ 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	$\frac{13.5}{(0.531)}$ Max.
Quantity per Reel	--	3,000

REV. 02/11

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