THE DATASHEET OF

CDSOT23-T12

Features

- RoHS compliant*
- Protects one or two lines
- Unidirectional and bidirectional configurations
- ESD protection 30 kV max.

Applications

- RS-232, RS-422 and RS-423 data lines
- Portable electronics
- Wireless bus protection
- Control and monitoring systems

CDSOT23-T03~T36C - TVS Diode Array Series

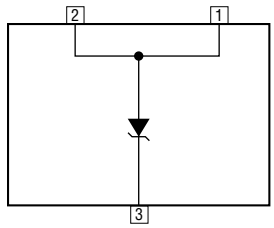
General Information

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

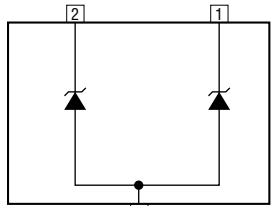
Bourns offers Transient Voltage Suppressor Array diodes for surge and ESD protection applications, in compact chip package SOT23 size format. The TransientVoltage Supressor Array series offers a choice of voltage types ranging from 3 V to 36 V. Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away.

The Bourns device will meet IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements.

UNIDIRECTIONAL



BIDIRECTIONAL



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

Parameter	Symbol	Value	Unit
Operating Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	CDSOT23-														Unit
		Uni-	Bi-	Uni-	Bi-	Uni-	Bi-	Uni-	Bi-	Uni-	Bi-	Uni-	Bi-	Uni-	Bi-	
		T03	T03C	T05	T05C	T08	T08C	T12	T12C	T15	T15C	T24	T24C	T36	T36C	
Breakdown Voltage @ 1 mA	V_{BR}	4.0		6.0		8.5		13.3		16.7		26.7		40.0		V
Working Peak Voltage	V_{WM}	3.3		5.0		8.0		12.0		15.0		24.0		36.0		V
Maximum Clamping Voltage V_C @ I_P = 1 A (1)	V_F	7.0		9.8		13.4		19.0		24.0		43.0		51.0		V
Maximum Clamping Voltage @ 8/20 µs V_C = I_{PP} (1)	V_F	10.9 V @ 43 A		13.5 V @ 42 A		16.9 V @ 34 A		25.9 V @ 21 A		30.0 V @ 17 A		49.0 V @ 12 A		76.8 V @ 9 A		V
Maximum Leakage Current @ V_{WM}	I_D	125		20		10		2		1		1		1		µA
Typical Capacitance - Unidirectional @ 0 V, 1 MHz	$C_{j(SD)}$	500		350		250		150		100		88		80		pF
Typical Capacitance - Bidirectional @ 0 V, 1 MHz	$C_{j(SD)}$	300		210		150		90		60		63		60		pF
ESD Protection (per IEC 61000-4-2) Contact - Min. Contact - Max. Air - Min. Air - Max.	ESD	±8 ±30 ±15 ±30														kV
Peak Pulse Power (t_p @ 8/20 µs) (2)	P_{PP}	500														W
Forward Voltage @ 100 mA, 300 µs - Square Wave (3)	V_F	1.5														V

Notes:
1. See Pulse Wave Form.
2. See Peak Pulse Power vs. Pulse Time.
3. Only applies to unidirectional devices.
4. Part numbers with a "C" suffix are bidirectional devices, i.e., CDSOT23-T03C.

WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*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.
Users should verify actual device performance in their specific applications.
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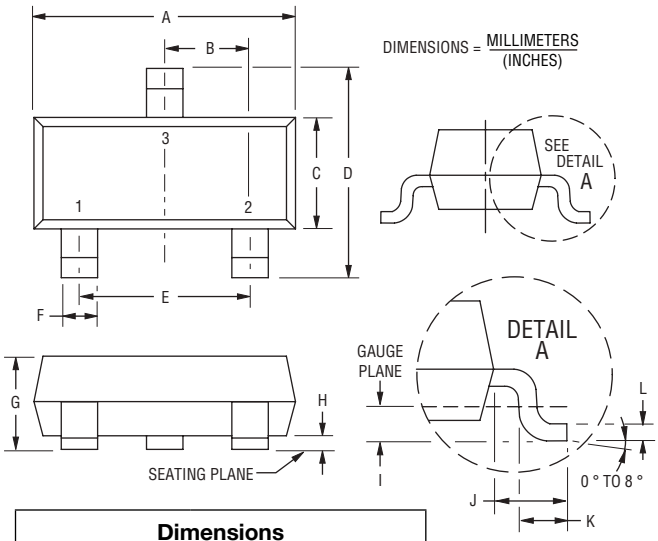
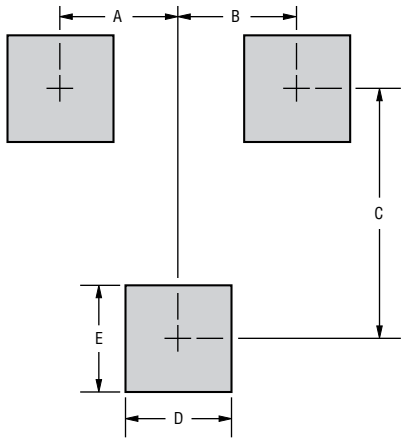
Product Dimensions

This is a molded JEDEC SOT-323 package with 100 % Matte Sn plating on the lead frame. It weighs approximately 0.6 g and has a flammability rating of UL 94V-0.



Dimensions	
A	2.80 - 3.00 / (0.110 - 0.118)
B	0.95 / (0.037) BSC
C	1.20 - 1.40 / (0.047 - 0.055)
D	2.10 - 2.49 / (0.083 - 0.098)
E	1.90 / (0.075) BSC
F	0.30 - 0.50 / (0.012 - 0.019)
G	0.89 - 1.17 / (0.035 - 0.046)
H	0.05 - 0.015 / (0.002 - 0.006)
I	0.25 / (0.010) BSC
J	0.46 - 0.64 / (0.018 - 0.025)
K	0.40 - 0.58 / (0.016 - 0.023)
L	0.08 - 0.20 / (0.003 - 0.008)

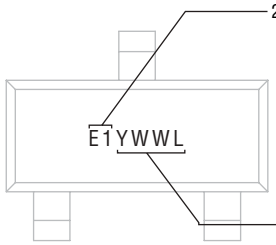
Recommended Footprint



DIMENSIONS = MILLIMETERS / (INCHES)

Dimensions	
A	0.95 / (0.037)
B	0.95 / (0.037)
C	2.00 / (0.079)
D	0.85 / (0.033)
E	0.85 / (0.033)

Typical Part Marking



2-DIGIT PRODUCT CODE:

E1 = CDSOT23-T03	G1 = CDSOT23-T03C
E2 = CDSOT23-T05	G2 = CDSOT23-T05C
E3 = CDSOT23-T08	G3 = CDSOT23-T08C
E4 = CDSOT23-T12	G4 = CDSOT23-T12C
E5 = CDSOT23-T15	G5 = CDSOT23-T15C
E6 = CDSOT23-T24	G6 = CDSOT23-T24C
E7 = CDSOT23-T36	G7 = CDSOT23-T36C

MANUFACTURING DATE CODE:
Y = YEAR
WW = WEEK
L = LOT CODE

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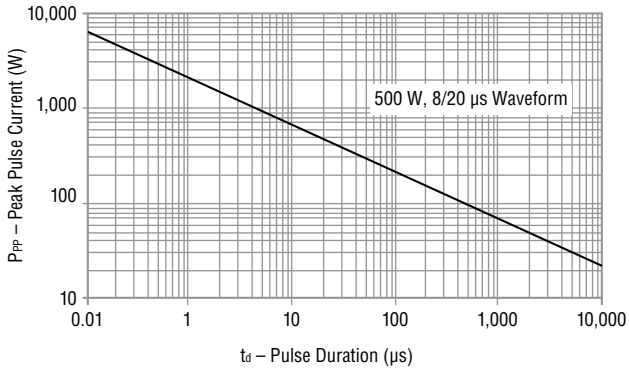
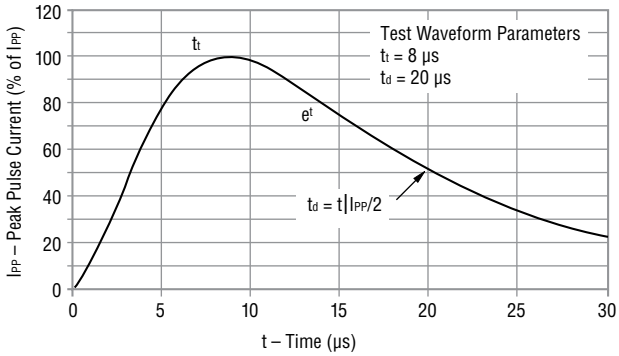
Performance Graphs

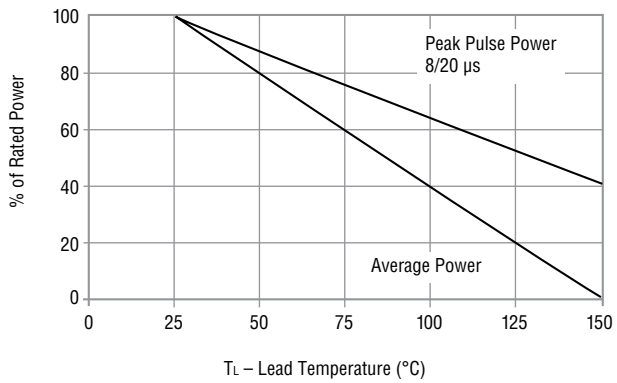
Peak Pulse Power vs. Pulse Time



Pulse Waveform



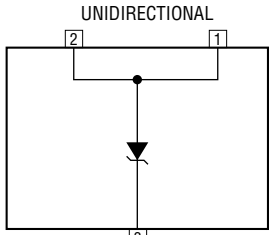
Power Derating Curve



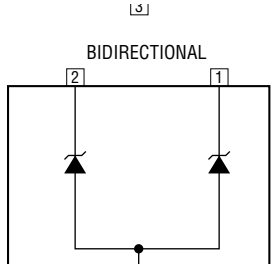
Block Diagram

The device block diagrams below include the pin names and basic electrical connections associated with each channel.

Unidirectional



Bidirectional



How to Order

CD SOT23 - T 03 C

Common Code
Chip Diode

Package
• SOT23 = SOT23 Package

Model
T = Transient Voltage Suppressor

Working Peak Voltage
3 = 3 V_{RWM} (Volts)

Suffix
C = Bidirectional Diode

Environmental Specifications

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

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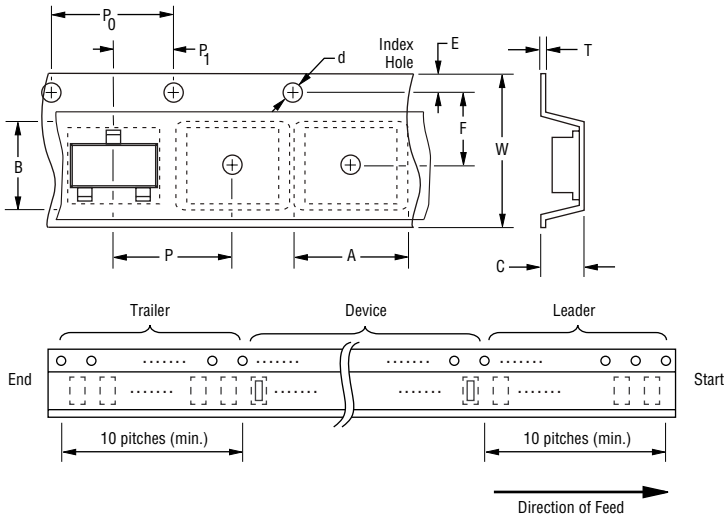
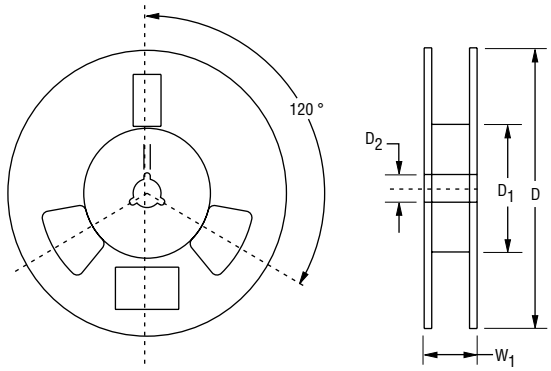
Packaging Information

The surface mount product is packaged in an 12 mm x 8 mm tape and reel format per EIA-481 standard.





DIMENSIONS: MM / (INCHES)

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

Item	Symbol	SOT23
Carrier Width	A	2.25 ± 0.10 (0.088 ± 0.004)
Carrier Length	B	2.34 ± 0.10 (0.092 ± 0.004)
Carrier Depth	C	1.22 ± 0.10 (0.048 ± 0.004)
Sprocket Hole	d	1.55 ± 0.05 (0.061 ± 0.002)
Reel Outside Diameter	D	178 (7.008)
Reel Inner Diameter	D_1	50.0 (1.969) MIN.
Feed Hole Diameter	D_2	13.0 ± 0.20 (0.512 ± 0.008)
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)
Punch Hole Position	F	3.50 ± 0.05 (0.138 ± 0.002)
Punch Hole Pitch	P	4.00 ± 0.10 (0.157 ± 0.004)
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)
Embossment Center	P_1	2.00 ± 0.05 (0.079 ± 0.002)
Overall Tape Thickness	T	0.20 ± 0.10 (0.008 ± 0.004)
Tape Width	W	8.00 ± 0.20 (0.315 ± 0.008)
Reel Width	W_1	14.4 (0.567) MAX.
Quantity per Reel	--	3,000

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- Bourns Inc. Information

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- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management