Features

- RoHS compliant*
- Halogen free**
- ESD protection
- Protects two lines
- Low leakage current
- Low capacitance

Applications

- Ethernet - 10//100/1000 Base T
- Firewire and USB
- Portable electronics
- Video/graphic cards

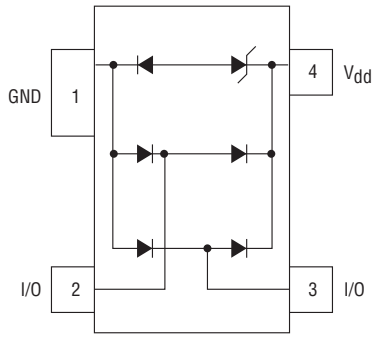
CD143A-SR2.8~3.3 - Steering/TVS Diode Array Series

General Information

The Model CD143A-SR2.8 and CD143A-SR3.3 devices provide ESD protection for the external ports of portable electronic devices such as cell phones, handheld electronics and personal computers.

The ESD protection provided by the component enables a data port to withstand a minimum ±8 kV Contact / ±15 kV Air Discharge per the ESD test method specified in IEC 61000-4-2. The device measures 2.80 mm x 1.20 mm and is available in a SOT-143 package intended to be mounted directly onto an FR4 printed circuit board.

The Bourns® device will meet IEC 61000-4-2 (ESD) to 30 kV, IEC 61000-4-4 (EFT) to 40 A and IEC 61000-4-5 (Surge) to 12 A.



Absolute Maximum Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power (t_p= 8/20 μs) [1]	P_{PP}	200	W
Peak Pulse Current (t_p= 8/20 μs)	I_{PP}	12	A
Operating Supply Voltage (V_{dd} - Gnd)	V_{dc}	3.8	V
ESD Protection per IEC 61000-4-2 (Air, Contact)	V_{esd}	±30	kV
DC Voltage at any I/O Pin	V_{io}	(Gnd -0.5) to (V_{dd} +0.5)	V
Operating Temperature	T_J	-55 °C to +125 °C	°C
Storage Temperature	T_{STG}	-55 °C to +150 °C	°C

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

Parameter	Symbol	CD143A-SR2.8	CD143A-SR3.3	Unit
Breakdown Voltage Minimum @ 1 mA [2]	V_{BR}	4.5		V
Working Peak Voltage [2]	V_{WM}	2.8	3.3	V
Clamping Voltage Maximum @ I_P = 1 A [2,3]	V_C	5.0	7.0	V
Clamping Voltage Maximum @ I_P [2,3]	V_C	8.5 @ 5 A	8.2 @ 10 A	V
Reverse Leakage Current Maximum @ V_{WM} [2]	I_L	5.0		μA
Forward Voltage Maximum @ 15 mA [4]	V_f	1.0		V
Leakage Current @ V_{WM} [5]	I_D	1.0		μA
Capacitance Typical @ 0 V, 1 MHz [5]	C_J	4.5		pF

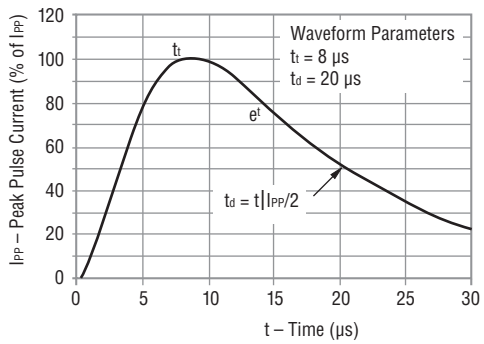
Notes:
1. See Peak Pulse Power vs. Pulse Time.
2. From Pin 4 to Pin 1.
3. See Pulse Wave Form.
4. From Pin 1 to Pin 4.
5. From Pin 1 to Pin 3, Pin 1 to Pin 2.

* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
**Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.
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.

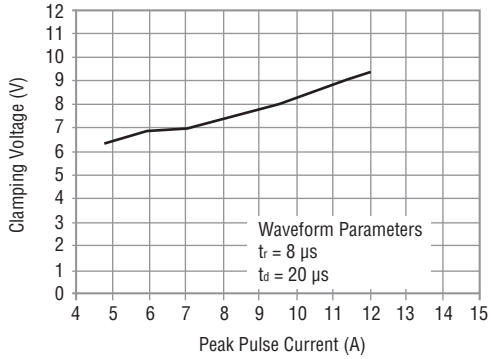
CD143A-SR2.8~3.3 - Steering/TVS Diode Array Series

Typical Characteristics

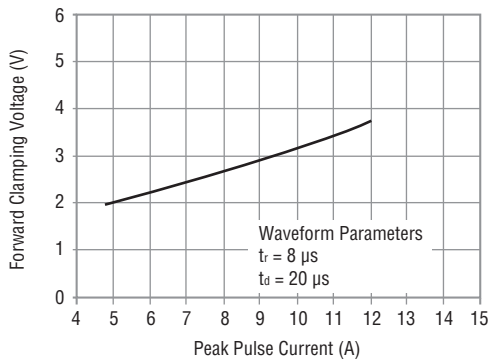
Pulse Wave Form



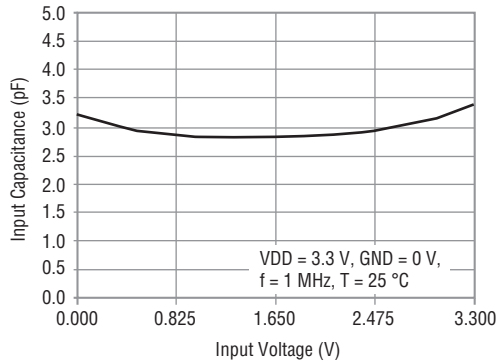
Clamping Voltage vs. Peak Pulse Current



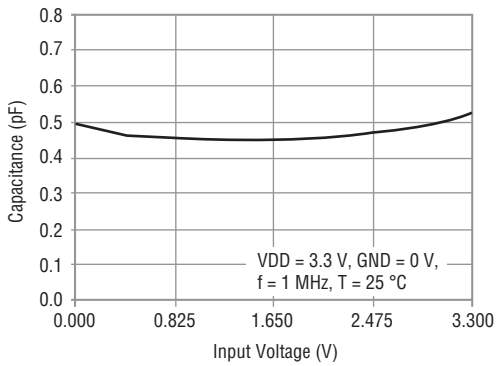
Forward Clamping Voltage vs. Peak Pulse Current



Typical Variation of C_{IN} vs. V_{IN}



Typical Variation of $C_{I/O\text{-}to\text{-}I/O}$ vs. V_{IN}



How to Order

CD 143A - SR 3.3 C

- Common Code
  Chip Diode
- Package
  143A = SOT-143
- Model
  SR = Steering Diode Array
- Repetitive Peak Reverse Voltage
  3.3 = 3.3 V_{RWM} (Volts)
- Customer Specific Requirements

Specifications are subject to change without notice.
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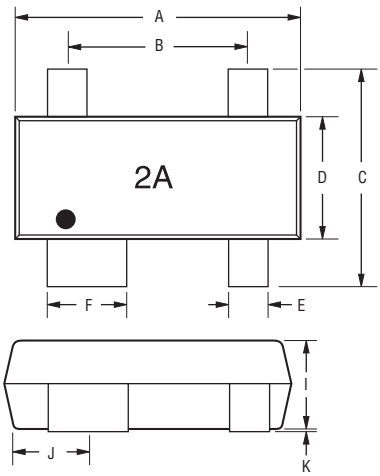
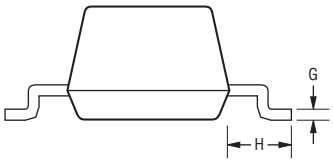
Product Dimensions

This is a molded device. It weighs approximately 35 mg and has a flammability rating of UL 94V-0. The dimensions for the packaged device are shown below.



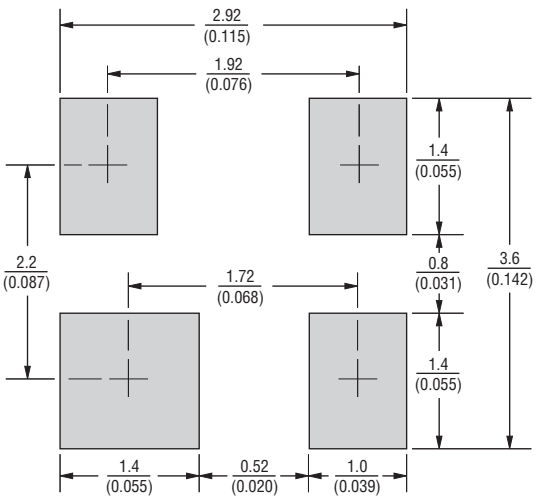


DIMENSIONS: MM / (INCHES)

Dimensions	
A	2.80 - 3.04 (0.110 - 0.12)
B	1.80 - 2.02 (0.071 - 0.080)
C	2.25 - 2.55 (0.089 - 0.100)
D	1.2 - 1.4 (0.047 - 0.055)
E	0.35 - 0.50 (0.014 - 0.020)
F	0.76 - 0.89 (0.030 - 0.035)
G	0.09 - 0.18 (0.035 - 0.007)
H	0.46 - 0.60 (0.018 - 0.024)
I	0.9 - 1.1 (0.035 - 0.043)
J	0.72 - 0.83 (0.028 - 0.033)
K	0.05 - 0.1 (0.002 - 0.004)

Recommended Pad Layout

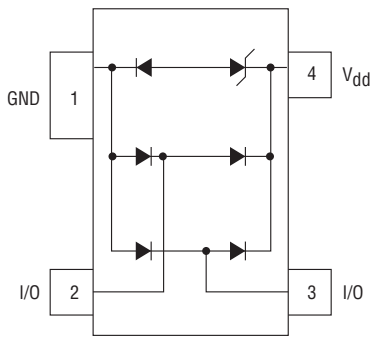
This is the footprint recommended for this SOT-143 device.



DIMENSIONS: MM / (INCHES)

Block Diagram

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



Typical Part Marking

CD143A-SR2.8..... 2A
CD143A-SR3.3..... 3A

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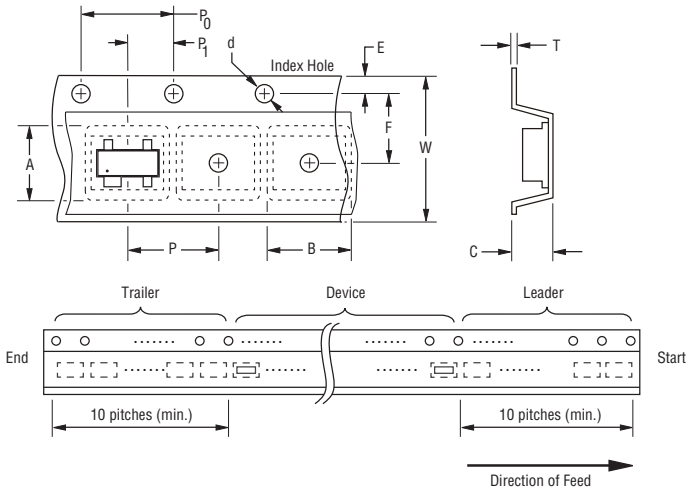
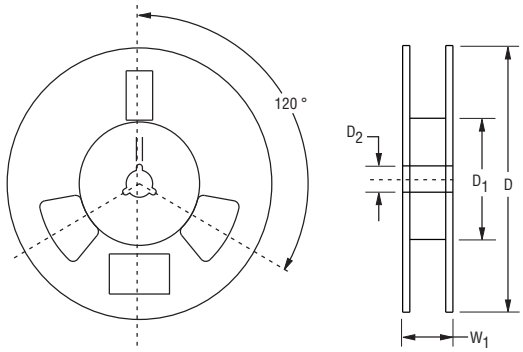
Packaging Information

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





DIMENSIONS: MM (INCHES)

Item	Symbol	SOT-143
Carrier Width	A	3.19 ± 0.10 (0.126 ± 0.004)
Carrier Length	B	2.8 ± 0.10 (0.110 ± 0.004)
Carrier Depth	C	1.31 ± 0.10 (0.052 ± 0.004)
Sprocket Hole	d	1.5 +0.1/-0 (0.059 +0.004/-0)
Reel Outside Diameter	D	180 ± 3 (7.087 ± 0.012)
Reel Inner Diameter	D_1	50.0 (1.969) MIN.
Feed Hole Diameter	D_2	13.0 +0.5/-0.2 (0.512 +0.020/-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	0.6 (0.024) MAX.
Tape Width	W	8.3 (0.327) MAX.
Reel Width	W_1	14.4 (0.567) MAX.
Quantity per Reel	--	3,000

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