



## Features

- Lead free as standard
- RoHS compliant\*
- Halogen free\*\*
- ESD protection
- Protects 2 lines
- Low leakage current: <math><1 \mu\text{A}</math>
- Low capacitance: 3 pF

## Applications

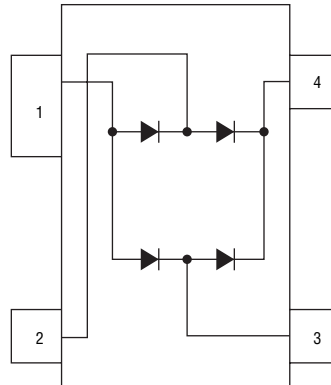
- Cell phones
- Desktops
- Laptops & notebooks
- Portable electronics

# CD143A-SR70 – Steering Diode Array Series

## General Information

The CD143A-SR70 device provides ESD protection for the external ports of portable electronic devices such as cell phones, handheld electronics and personal computers. The device also provides EFT and surge protection.

The ESD protection provided by the component enables a data port to withstand a minimum  $\pm 8$  KV Contact /  $\pm 15$  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.



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

| Parameter  | Symbol          | Min.                | Nom. | Max. | Unit          |
|--|-----------------|---------------------|------|------|---------------|
| Capacitance @ 0 V 1 MHz*   | C <sub>j</sub>  |                     |      | 10   | pF            |
| Repetitive Peak Reverse Voltage  |                 |                     |      | 70   | V             |
| Reverse Breakdown Voltage I @ 50 $\mu\text{A}$   | V <sub>BR</sub> | 85                  |      |      | V             |
| Forward Clamping Voltage 8/20 $\mu\text{s}$ I <sub>PP</sub> @ 1 A                                | V <sub>FC</sub> |                     |      | 1.5  | V             |
| Forward Clamping Voltage 8/20 $\mu\text{s}$ I <sub>PP</sub> @ 24 A                               | V <sub>FC</sub> |                     |      | 7    | V             |
| Reverse Leakage Current @ V <sub>RRM</sub>   | I <sub>R</sub>  |                     |      | 1    | $\mu\text{A}$ |
| ESD Protection: IEC 61000-4-2<br>Contact Discharge<br>Air Discharge                              |                 | $\pm 8$<br>$\pm 15$ |      |      | kV<br>kV      |
| EFT Protection: IEC 61000-4-4 @ 5/50 ns  |                 | 40                  |      |      | A             |
| Surge Protection: IEC 61000-4-5 @ 8/20 $\mu\text{s}$<br>Level 2 (Line-Gnd) & Level 3 (Line-Line) |                 | 24                  |      |      | A             |

\*Measured between I/O pins and ground. 3 pF typical between I/O pins.

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

| Parameter   | Symbol           | Min. | Nom. | Max. | Unit             |
|---|------------------|------|------|------|------------------|
| Forward Peak Pulse Current (tp = 8/20 $\mu\text{s}$ ) | I <sub>PP</sub>  |      | 24   |      | A                |
| Operating Temperature Range                           | T <sub>J</sub>   | -55  | 25   | +150 | $^\circ\text{C}$ |
| Storage Temperature Range                             | T <sub>STG</sub> | -55  | 25   | +150 | $^\circ\text{C}$ |

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

\*\* Bourns follows the prevailing definition of "halogen free" in the industry. 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.

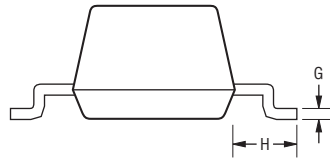
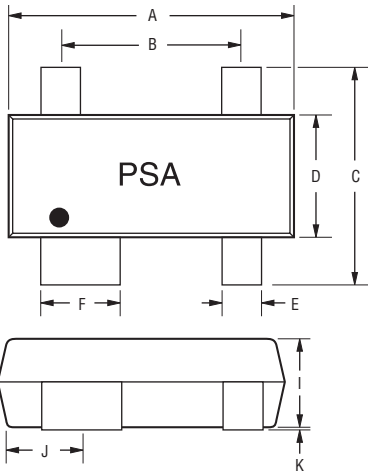
Users should verify actual device performance in their specific applications.

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## Product Dimensions

This is a molded JEDEC SOT-143 device. It weighs approximately 35 mg and has a flammability rating of UL 94V-0. The dimensions for the packaged device are shown below.

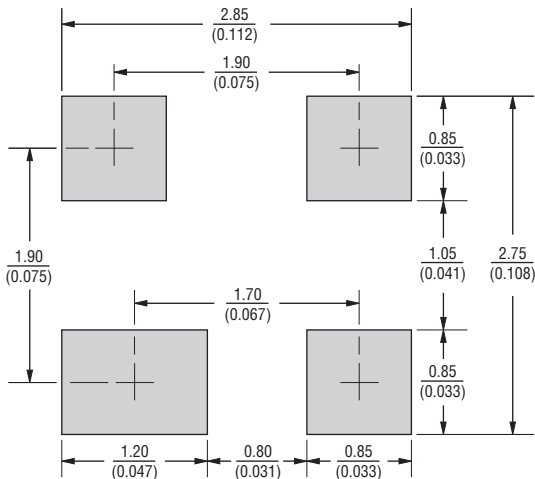


DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

| Dimensions |   |
|------------|---|
| A          | $\frac{2.80 - 3.04}{(0.110 - 0.12)}$    |
| B          | $\frac{1.78 - 2.03}{(0.070 - 0.080)}$   |
| C          | $\frac{2.11 - 2.48}{(0.083 - 0.098)}$   |
| D          | $\frac{1.20 - 1.39}{(0.047 - 0.055)}$   |
| E          | $\frac{0.39 - 0.50}{(0.015 - 0.020)}$   |
| F          | $\frac{0.79 - 0.93}{(0.031 - 0.037)}$   |
| G          | $\frac{0.08 - 0.15}{(0.003 - 0.006)}$   |
| H          | $\frac{0.46 - 0.60}{(0.018 - 0.024)}$   |
| I          | $\frac{0.84 - 1.14}{(0.033 - 0.045)}$   |
| J          | $\frac{0.72 - 0.83}{(0.028 - 0.033)}$   |
| K          | $\frac{0.013 - 0.10}{(0.0005 - 0.004)}$ |

## Recommended Pad Layout

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



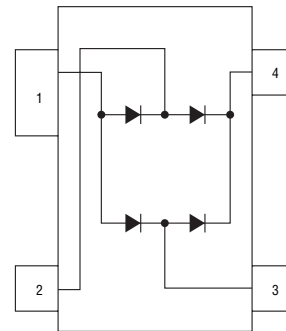
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Typical Part Marking

CD143A-SR70.....PSA

## Block Diagram

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



## Device Pin Out

| Pin | Function |
|-----|----------|
| 1   | $V_N$    |
| 2   | I/O 1    |
| 3   | I/O 2    |
| 4   | $V_P$    |

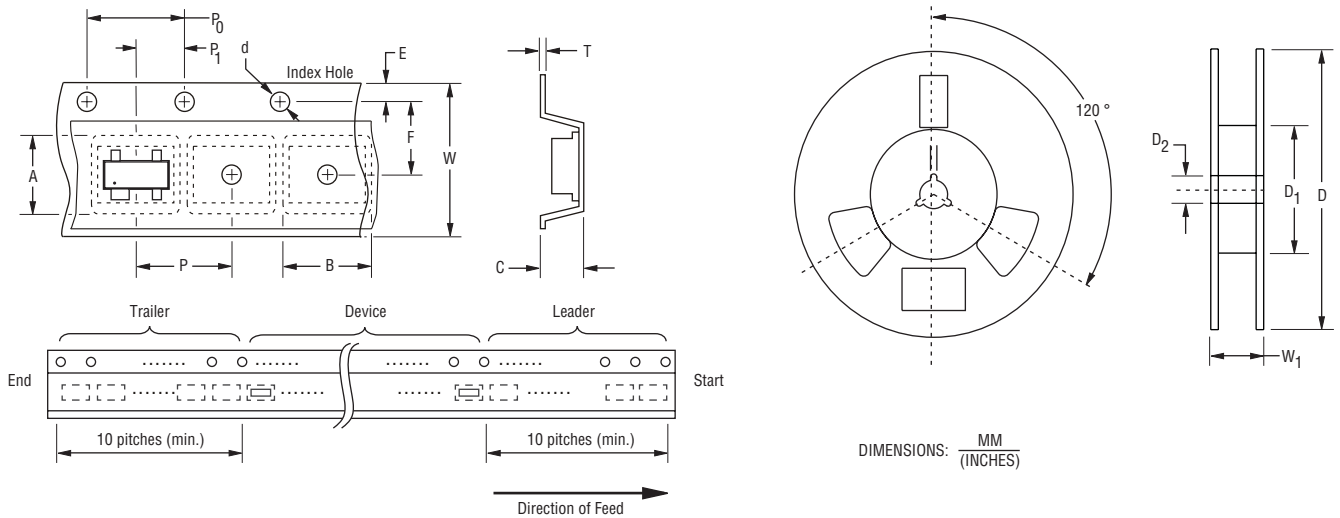
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## Packaging Information

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



| Item                   | Symbol         | SOT-143                                 |
|------------------------|----------------|---|
| Carrier Width          | A              | $\frac{2.75 \pm 0.10}{(0.108 - 0.004)}$ |
| Carrier Length         | B              | $\frac{3.30 \pm 0.10}{(0.130 - 0.004)}$ |
| Carrier Depth          | C              | $\frac{1.25 \pm 0.10}{(0.049 - 0.004)}$ |
| 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 <sub>1</sub> | $\frac{50.0}{(1.969)}$ Min.             |
| Feed Hole Diameter     | D <sub>2</sub> | $\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$ |
| Sprocket Hole Position | E              | $\frac{1.75 \pm 0.10}{(0.069 - 0.004)}$ |
| Punch Hole Position    | F              | $\frac{3.50 \pm 0.05}{(0.138 - 0.002)}$ |
| Punch Hole Pitch       | P              | $\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$ |
| Sprocket Hole Pitch    | P <sub>0</sub> | $\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$ |
| Embossment Center      | P <sub>1</sub> | $\frac{2.00 \pm 0.05}{(0.079 - 0.002)}$ |
| Overall Tape Thickness | T              | $\frac{0.20 \pm 0.10}{(0.008 - 0.004)}$ |
| Tape Width             | W              | $\frac{8.00 \pm 0.20}{(0.315 - 0.008)}$ |
| Reel Width             | W <sub>1</sub> | $\frac{14.4}{(0.567)}$ Max.             |
| Quantity per Reel      | —              | 3,000                                   |

## How To Order

Common Code **CD 143A - SR 70**  
 Chip Diode  
 Package  
 • 143A = SOT-143  
 Model  
 SR = Steering Diode Array  
 Repetitive Peak Reverse Voltage  
 70 = 70 V<sub>RPM</sub> (Volts)

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