

## ULTRA LOW CAPACITANCE STEERING DIODE ARRAY



**SOT-143 PACKAGE**

### DESCRIPTION

The SR70 is an ultra low capacitance steering diode array. Designed for protection against Electrostatic Discharge (ESD), Electrical Fast Transients (EFT) and secondary lightning threats, this device is ideal for use in high-speed signal interface application such as USB, microprocessor bus and mobile electronics.

The SR70 is capable of protecting one line pair or two single lines via the steering of transient voltage to power lines or ground. Its ultra low capacitance allows maintenance of signal integrity for high-speed data lines while protecting the circuit ICs from the damage of severe transients. An extremely low leakage current makes the SR70 suitable for battery powered devices and POE applications. The SR70 is available in the small SOT-143 package, which reduces internal lead inductance for low, overshoot voltage during fast front time transient events like ESD. This device meets the IEC 61000-4-2 and IEC 61000-4-4 requirements.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 30A, 8/20 $\mu$ s - Level 2(Line-Gnd) & Level 3 (Line-Line)
- 225 Milliwatts Continuous Power Dissipation
- Provides Two Lines of Protection
- Low Leakage Current < 1.0 $\mu$ A
- Ultra Low Capacitance: 3pF Typical
- RoHS Compliant
- REACH Compliant

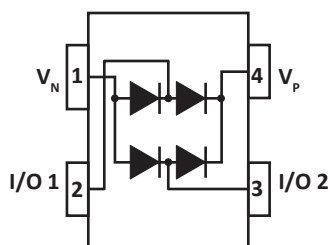
### APPLICATIONS

- USB Interface Ports
- POE Applications
- Video
- Handheld Electronics
- Laptops

### MECHANICAL CHARACTERISTICS

- Molded JEDEC SOT-143 Package
- Approximate Weight: 9 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

### PIN CONFIGURATION



**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

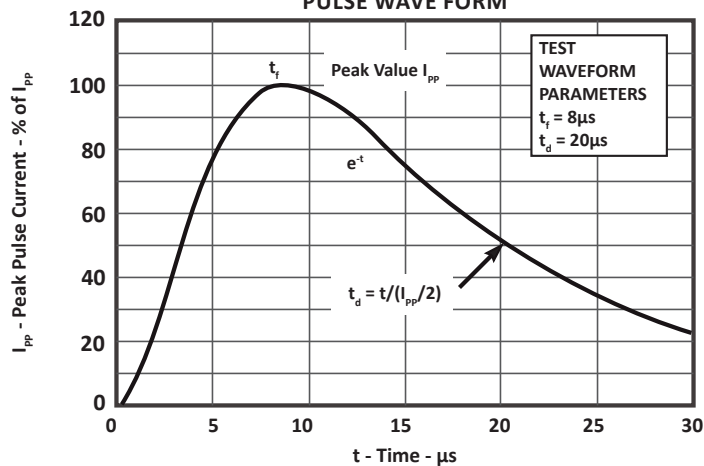
PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	$T_A$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
Forward Peak Pulse Current ( $t_p = 8/20\mu s$ )	$I_{PP}$	30	A

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

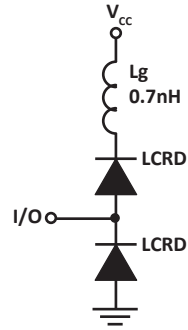
PART NUMBER	DEVICE MARKING	REPETITIVE PEAK REVERSE VOLTAGE $V_{RRM}$ VOLTS	MINIMUM REVERSE BREAKDOWN VOLTAGE $I @ 50\mu A$ $V_{(BR)}$ VOLTS	MAXIMUM REVERSE LEAKAGE CURRENT @ $V_{RRM}$ $I_R$ $\mu A$	MAXIMUM FORWARD CLAMPING VOLTAGE 8/20 $\mu s$ $I_{PP} @ 1A$ $V_{FC}$ VOLTS	MAXIMUM FORWARD CLAMPING VOLTAGE 8/20 $\mu s$ $I_{PP} @ 30A$ $V_{FC}$ VOLTS	MAXIMUM CAPACITANCE (Note 1)  0V, 1MHz $C_J$ pF
SR70	PSA	70	85	1	1.5	8	5

**NOTES**

1. Measured between I/O pins to I/O pins.

**FIGURE 1  
PULSE WAVE FORM**


## SPICE MODEL



LCRD - Low Capacitance Rectifier Diode  
 Lg - Lead Inductance

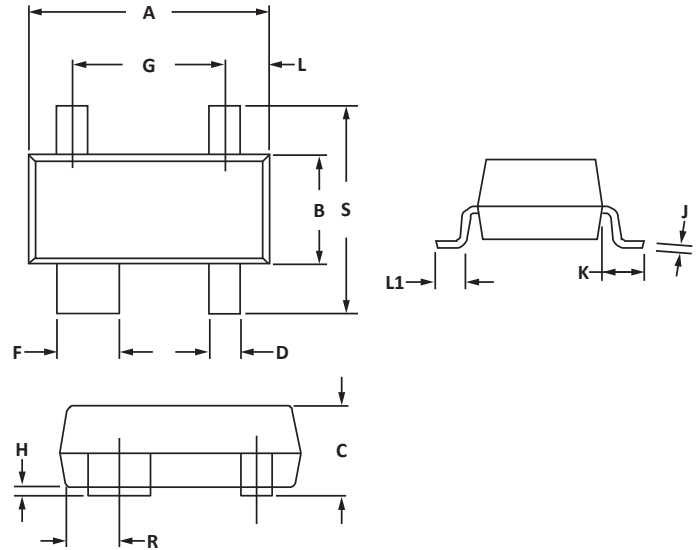
TABLE 1 - SPICE PARAMETERS		
PARAMETER	UNIT	LCRD
BV	V	200
IBV	$\mu\text{A}$	0.01
$C_{jo}$	pF	5
$I_s$	A	1E-13
Vj	V	0.6
M	-	0.33
N	-	1
$R_s$	Ohms	0.31
TT	s	1E-8
EG	eV	1.11

**SOT-143 PACKAGE INFORMATION**
**OUTLINE DIMENSIONS**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	1.20	1.39	0.047	0.055
C	0.84	1.14	0.033	0.045
D	0.39	0.50	0.015	0.020
F	0.79	0.93	0.031	0.037
G	1.78	2.03	0.070	0.080
J	0.08	0.15	0.003	0.006
K	0.46	0.60	0.018	0.024
L	0.445	0.60	0.0175	0.024
L1	0.40	0.60	0.016	0.024
R	0.72	0.83	0.028	0.033
S	2.11	2.48	0.083	0.098

**NOTES**

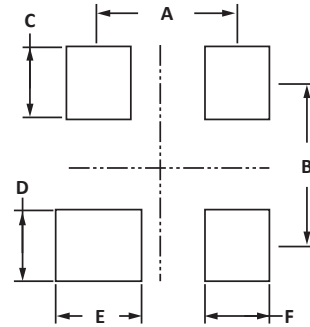
1. Dimensioning and tolerances per ANSI Y14.M, 1985.
2. Controlling dimension: inches.
3. Dimensions are exclusive of mold flash and metal burrs.

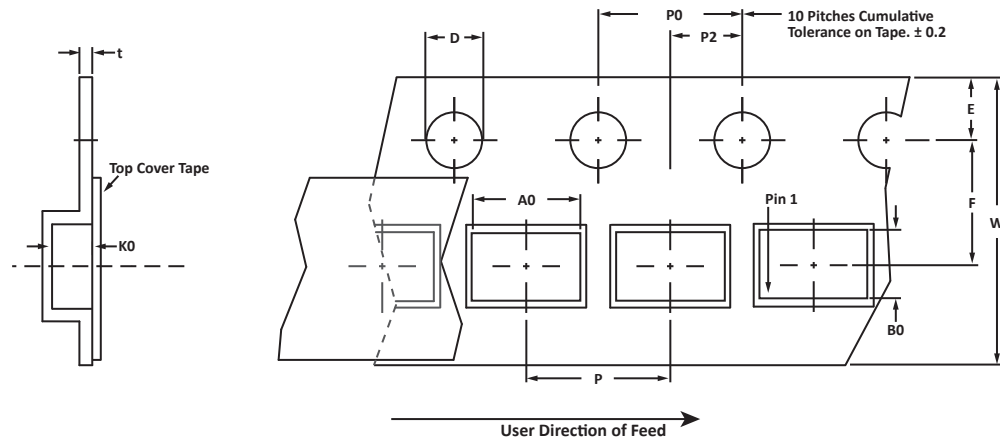

**PAD LAYOUT DIMENSIONS**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.88	2.13	0.074	0.084
B	1.80	2.06	0.071	0.081
C	0.71	0.97	0.028	0.038
D	0.76	1.02	0.030	0.040
E	1.07	1.32	0.042	0.052
F	0.71	0.97	0.028	0.038

**NOTES**

1. Controlling dimension: inches.



**TAPE AND REEL**

**SPECIFICATIONS**

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	3.10 ± 0.10	2.70 ± 0.10	1.35 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

**NOTES**

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix - T7 = 7" Reel - 3,000 pieces per 8mm tape.
- Suffix - T13 = 13" Reel - 10,000 pieces per 8mm tape.
- Marking on Part - marking code (see page 2) and date code.

**ORDERING INFORMATION**

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
SR70	-LF	-T7	3000	7"	n/a
SR70	-LF	-T13	10,000	13"	n/a

This device is only available in a Lead-Free configuration.

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 20 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers high performance interface and linear products. They include analog switches; multiplexers; LED drivers; LED wafer die for ESD protection; audio control ICs; RF and related high frequency products.

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