# **ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY**



### **DESCRIPTION**

The SR series offers two low voltage (2.8V & 3.3V) and low capacitance steering diode TVS arrays. This series is designed to protect two line pair or four data/transmission lines from the effects of Electrostatic Discharge (ESD) and Electrical Fast Transients (EFT).

The SR series is ideal for low voltage circuit applications. The leakage current for the SR2.8 is less than 1.0 microampere. The low capacitance of the steering diode allows the designer to protect high speed data applications. The small SOT-143 package, with four leads reduces the internal lead inductance for low overshoot voltage during fast front time transient events, such as 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): 24A, 8/20μs Level 2(Line-Gnd) & Level 3 (Line-Line)
- 300 Watts Peak Pulse Power per Line (tp = 8/20µs)
- Provides Two Lines of Protection
- Low Leakage Current < 1.0μA
- Ultra Low Capacitance: 4.5pF Typical
- RoHS Compliant
- REACH Compliant

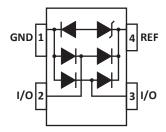
## **MECHANICAL CHARACTERISTICS**

- 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

### **APPLICATIONS**

- Ethernet 10/100/1000 Base T
- USB
- Handheld Electronics
- Video Cards
- WAN/LAN Equipment

## **PIN CONFIGURATION**



# TYPICAL DEVICE CHARACTERISTICS

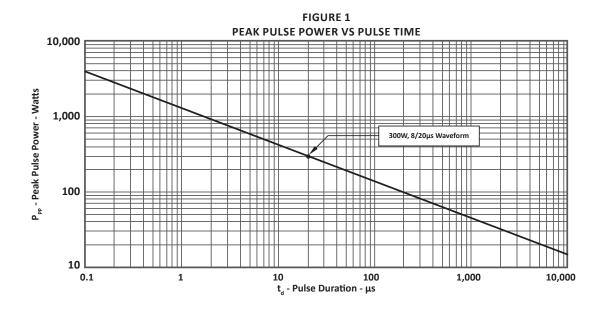
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified									
PARAMETER SYMBOL VALUE UNITS									
Operating Temperature	T <sub>L</sub>	-55 to 150	°C						
Storage Temperature	T <sub>stg</sub>	-55 to 150	°C						
Peak Pulse Power (tp = 8/20μs) - See Figure 1	P <sub>PP</sub>	300	Watts						
Forward Surge Rating (1/20s @ 25°C, I <sub>F</sub> = 10mA)	V <sub>F</sub>	1	Volts						
Peak Pulse Current (tp = 8/20μs)	I <sub>pp</sub>	30	Amps						

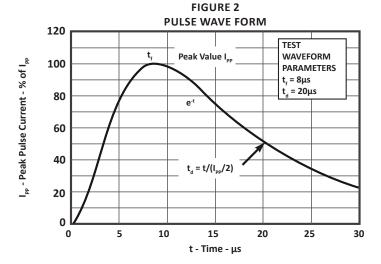
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified										
PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (Note 1) V <sub>WM</sub>	MINIMUM SNAP-BACK VOLTAGE @ 50mA V <sub>(SB)</sub>	MINIMUM BREAKDOWN VOLTAGE (Note 1) @ 2μA V <sub>(BR)</sub>	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ I <sub>p</sub> = 1A V <sub>c</sub>	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ 8/20μs V <sub>c</sub>	MAXIMUM LEAKAGE CURRENT (Note 1) @ V <sub>WM</sub> I <sub>D</sub>	TYPICAL CAPACITANCE (Note 2)  OV, 1MHz C <sub>J(SD)</sub>		
		VOLTS	VOLTS	VOLTS	VOLTS	VOLTS	μΑ	pF		
SR2.8	2A	2.8	2.8	3.0	5.0	8.5V @ 5A	1	4.5		
SR3.3	3A	3.3	3.3	3.5	7.0	15V @ 10A	1	4.5		

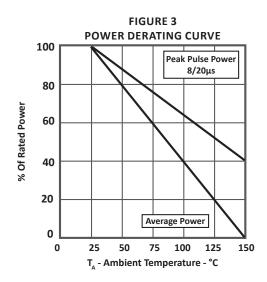
### NOTES

<sup>1.</sup> From pin 4 to 1. 2. From pin 1 to 3, 1 to 2, 3 to 4, 2 to 4.

# **TYPICAL DEVICE CHARACTERISTICS**







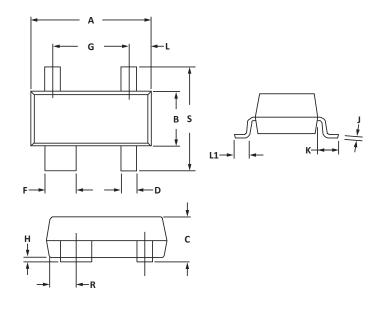


# **SOT-143 PACKAGE INFORMATION**

OUTLINE DIMENSIONS								
MILLIN	IETERS	INCHES						
MIN	MAX	MIN	MAX					
2.80	3.04	0.110	0.120					
1.20	1.39	0.047	0.055					
0.84	1.14	0.033	0.045					
0.39	0.50	0.015	0.020					
0.79	0.93	0.031	0.037					
1.78	2.03	0.070	0.080					
0.08	0.15	0.003	0.006					
0.46	0.60	0.018	0.024					
0.445	0.60	0.0175	0.024					
0.40	0.60	0.016	0.024					
0.72	0.83	0.028	0.033					
2.11	2.48	0.083	0.098					
	MILLIN MIN  2.80  1.20  0.84  0.39  0.79  1.78  0.08  0.46  0.445  0.40  0.72	MILLIMETERS           MIN         MAX           2.80         3.04           1.20         1.39           0.84         1.14           0.39         0.50           0.79         0.93           1.78         2.03           0.08         0.15           0.46         0.60           0.445         0.60           0.40         0.60           0.72         0.83	MILLIMETERS         INC           MIN         MAX         MIN           2.80         3.04         0.110           1.20         1.39         0.047           0.84         1.14         0.033           0.39         0.50         0.015           0.79         0.93         0.031           1.78         2.03         0.070           0.08         0.15         0.003           0.46         0.60         0.018           0.445         0.60         0.0175           0.40         0.60         0.016           0.72         0.83         0.028					



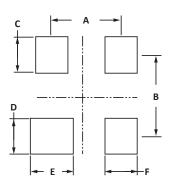
- 1. Dimensioning and tolerances per ANSI Y14.M, 1985.
- 2. Controlling dimension: inches.
- 3. Dimensions are exclusive of mold flash and metal burrs.



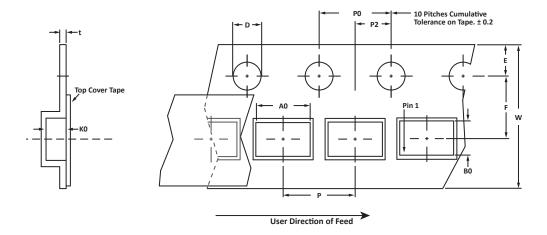
PAD LAYOUT DIMENSIONS								
DIM	MILLIN	IETERS	INCHES					
	MIN	MAX	MIN	MAX				
А	1.88	2.13	0.074	0.084				
В	1.80	2.06	0.071	0.081				
С	0.71	0.97	0.028	0.038				
D	0.76	1.02	0.030	0.040				
Е	1.07	1.32	0.042	0.052				
F	0.71	0.97	0.028	0.038				

#### NOTES

1. Controlling dimension: inches.



# **TAPE AND REEL**



SPECIFICATIONS												
REEL DIA.	TAPE WIDTH	A0	В0	КО	D	E	F	W	P0	P2	Р	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**

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

Package outline, pad layout and tape specifications per document number 06011.R4 8/10.

ORDERING INFORMATION								
BASE PART NUMBER LEADFREE SUFFIX TAPE SUFFIX QTY/REEL REEL SIZE T								
SR2.8/SR3.3	-LF	-Т7	3000	7"	n/a			
SR2.8/SR3.3	-LF	-T13	10,000	13"	n/a			
This desire is not a suitable in a land Fare and framewhite								

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



## **COMPANY INFORMATION**

#### **COMPANY PROFILE**

In business more than 20 years, ProTek Devices™ is a privately-held company located in Tempe, Arizona, that offers a product line of transient voltage suppressors (TVS); avalanche breakdown diodes; steering diode TVS arrays and other surge suppressor component products. These TVS devices protect electronic systems from the effects of lightning, electrostatic discharge (ESD), nuclear electromagnetic pulses (NEMP), inductive switching and EMI / RFI. ProTek Devices also offers high performance interface and linear products that include analog switches; multiplexers; LED drivers; audio control ICs; RF and related high frequency products. The analog devices work in a host of consumer; industrial; automotive and other applications.

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