

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, 8/20 μ s - Level 2 (Line-Gnd) & Level 3 (Line-Line)
- 300 Watts Peak Pulse Power per Line (tp = 8/20 μ s)
- Provides Two Lines of Protection
- Low Leakage Current < 1.0 μ A
- Ultra Low Capacitance: 4.5pF Typical
- RoHS Compliant
- REACH Compliant

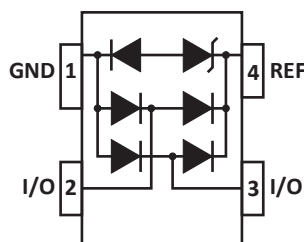
APPLICATIONS

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

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_L | -55 to 150 | °C |
| Storage Temperature | T_{STG} | -55 to 150 | °C |
| Peak Pulse Power (tp = 8/20µs) - See Figure 1 | P_{PP} | 300 | Watts |
| Forward Surge Rating (1/20s @ 25°C, $I_F = 10mA$) | V_F | 1 | Volts |
| Peak Pulse Current (tp = 8/20µs) | I_{PP} | 30 | Amps |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE (Note 1) V_{WM} VOLTS | MINIMUM SNAP-BACK VOLTAGE @ 50mA $V_{(SB)}$ VOLTS | MINIMUM BREAKDOWN VOLTAGE (Note 1) @ 2µA $V_{(BR)}$ VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ $I_p = 1A$ V_c VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ 8/20µs V_c VOLTS | MAXIMUM LEAKAGE CURRENT (Note 1) @ V_{WM} I_D µA | TYPICAL CAPACITANCE (Note 2) 0V, 1MHz $C_{J(SD)}$ 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

1. From pin 4 to 1.
2. From pin 1 to 3, 1 to 2, 3 to 4, 2 to 4.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

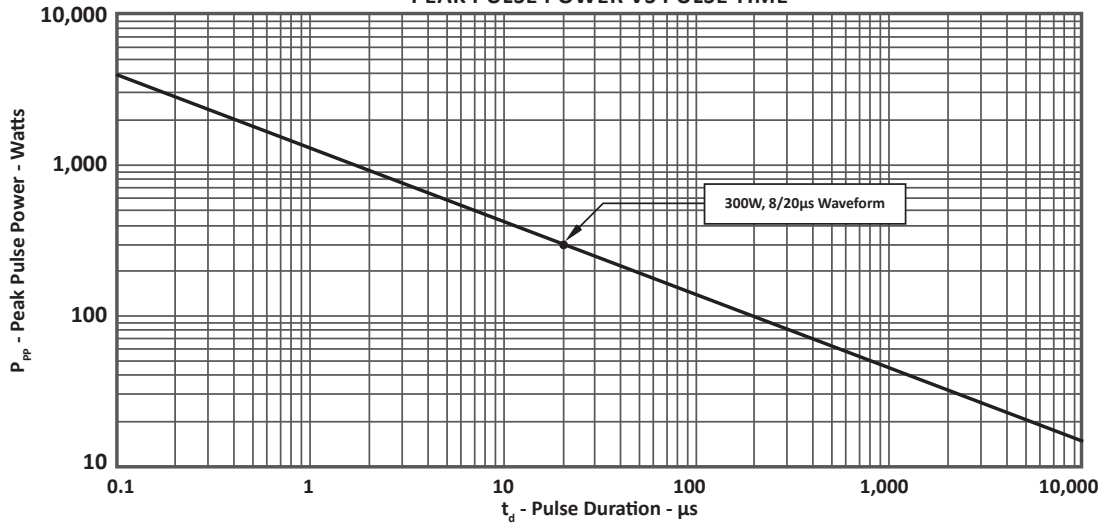


FIGURE 2
PULSE WAVE FORM

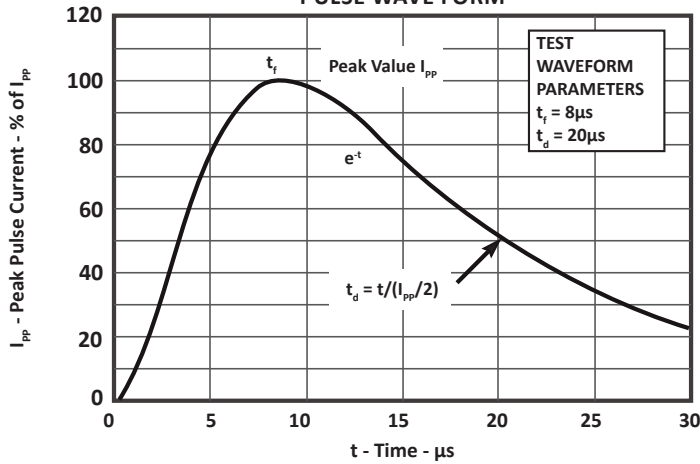
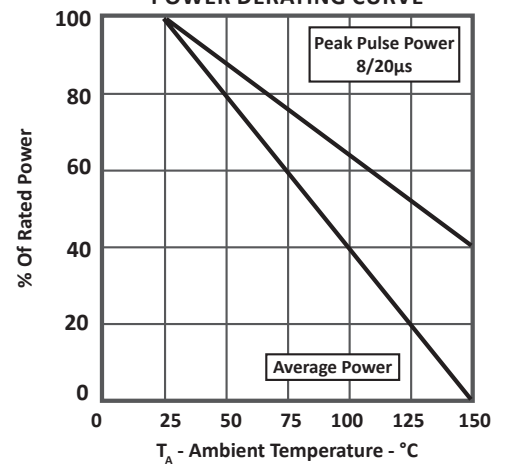


FIGURE 3
POWER DERATING CURVE



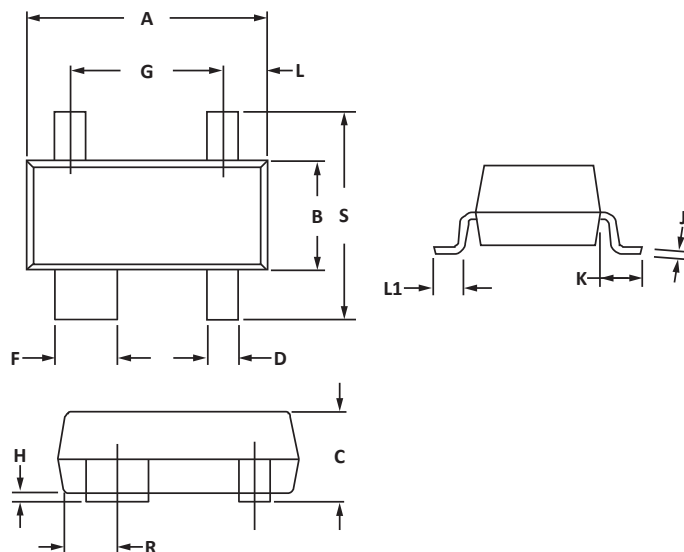
SOT-143 PACKAGE INFORMATION

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.

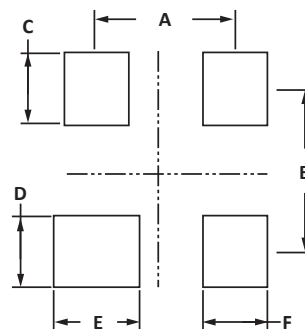


PAD LAYOUT DIMENSIONS

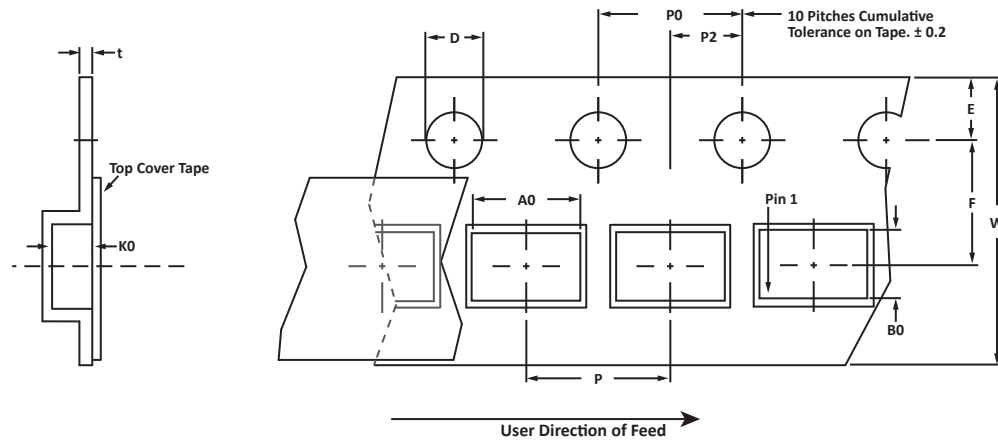
| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.88 | 2.13 | 0.074 | 0.084 |
| B | 1.80 | 2.06 | 0.071 | 0.081 |
| C | 0.71 | 0.97 | 0.028 | 0.038 |
| D | 0.76 | 1.02 | 0.030 | 0.040 |
| E | 1.07 | 1.32 | 0.042 | 0.052 |
| F | 0.71 |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

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 | TUBE QTY |
|------------------|-----------------|-------------|----------|-----------|----------|
| SR2.8/SR3.3 | -LF | -T7 | 3000 | 7" | n/a |
| SR2.8/SR3.3 | -LF | -T13 | 10,000 | 13" | n/a |

COMPANY INFORMATION

COMPANY PROFILE

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

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