

ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



DFN-10 PACKAGE

DESCRIPTION

The PLR2504 is an ultra low capacitance steering diode/TVS array. This device is designed to protect computing applications such as gigabit Ethernet, USB and DVI interfaces as well as telecommunication equipment and systems. The PLR2504 is available in the space-saving DFN-10 package configuration and is rated at 300 Watts peak pulse current (8/20 μ s waveshape).

This device meets the IEC 61000-4-2 (ESD), 61000-4-2 (EFT) and 61000-4-4 (Surge) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This device in conjunction with passive components integrated into a TVS/filter network can be used for EMI/RFI protection.

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air ± 15 kV, Contact ± 8 kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge)
- 300 Watts Peak Pulse Power per Line (tp = 8/20 μ s)
- ESD Protection > 25 kilovolts
- Very Low Clamping Voltage: V_c Max 12V @ 25A, 8/20 μ s
- Unidirectional Configuration
- Protects 4 I/O Ports & Power Supply
- Ultra Low Capacitance : 4pF
- RoHS Compliant
- REACH Compliant

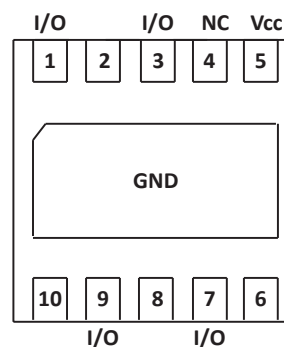
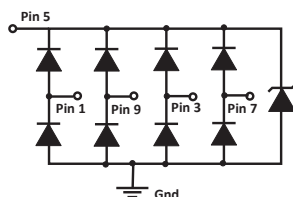
APPLICATIONS

- Gigabit Ethernet
- T1/E1, T3/E3 Chip Side Protection
- Wireless Communications
- USB & DVI Interfaces

MECHANICAL CHARACTERISTICS

- Molded JEDEC DFN-10 Package
- Approximate Weight: 7 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

CIRCUIT DIAGRAM & PIN CONFIGURATION



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

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|-----------|------------|-------|
| Peak Pulse Power (tp = 8/20μs) - See Figure 1 | P_{PP} | 300 | Watts |
| Operating Temperature | T_L | -55 to 150 | °C |
| Storage Temperature | T_{STG} | -55 to 150 | °C |
| Peak Pulse Current - 8/20μs | I_{PP} | 25 | Amps |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE V_{WM} VOLTS | MINIMUM SNAP-BACK VOLTAGE @ 50mA $V_{(SB)}$ VOLTS | MINIMUM PUNCH THROUGH VOLTAGE @ 5μA $V_{(PT)}$ VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ $I_p = 1A$ V_C VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1) @ $I_p = 10A$ V_C VOLTS | MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA | TYPICAL CAPACITANCE I/O TO GND @ 0V, 1MHz C pF |
|-------------|----------------|--|--|---|--|---|--|---|
| PLR2504 | 254 | 2.5 | 2.0 | 2.7 | 4.5 | 7.5 | 0.5 | 4.0 |

NOTE

1. Pin 5 to ground.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

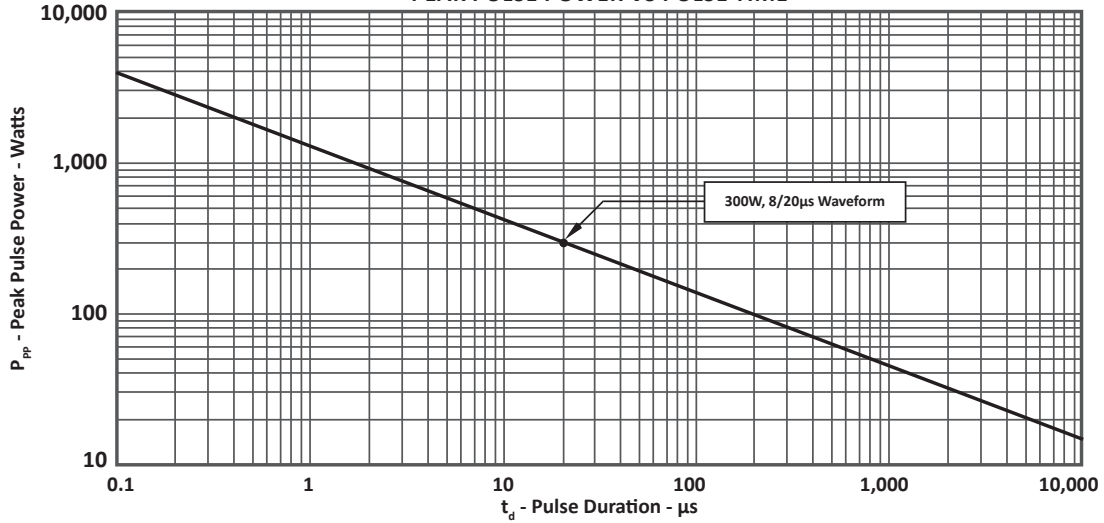


FIGURE 2
PULSE WAVE FORM

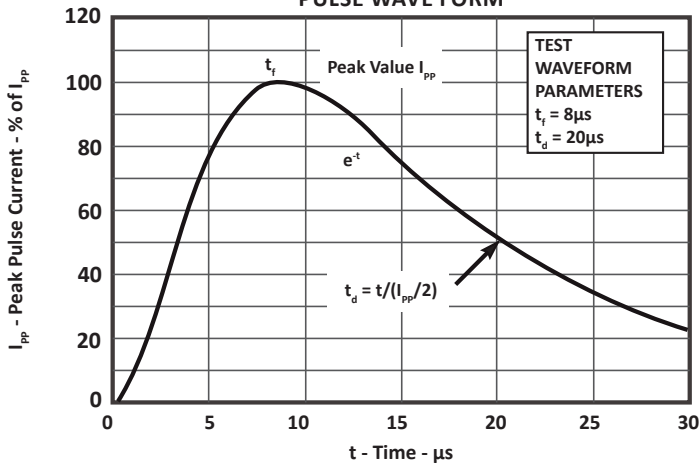
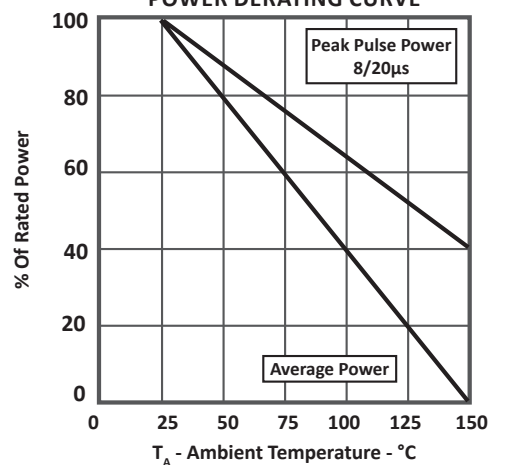


FIGURE 3
POWER DERATING CURVE



TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
OVERSHOOT & CLAMPING VOLTAGE

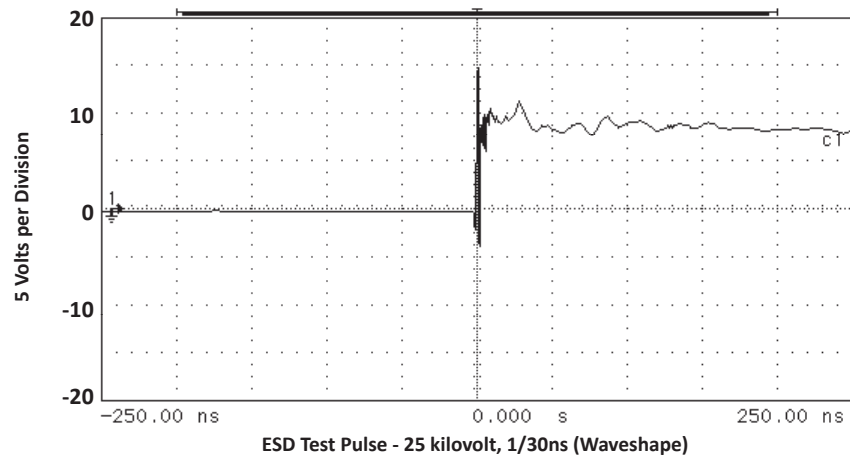
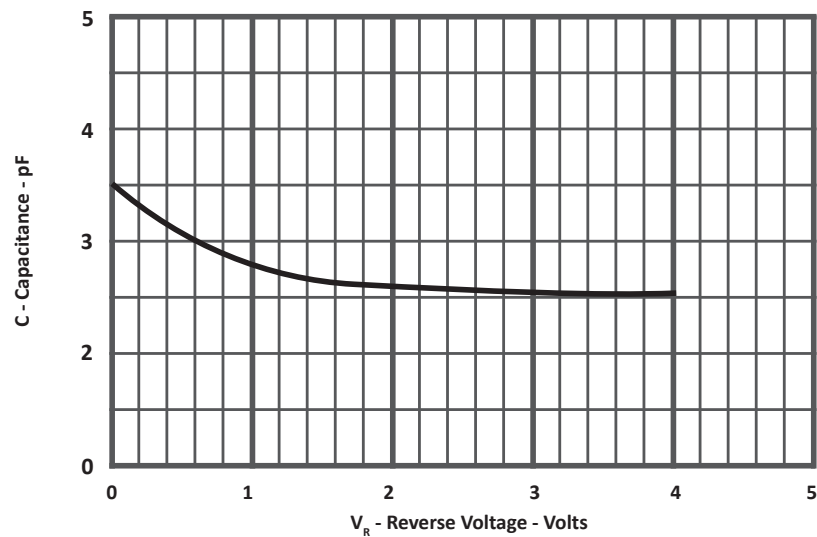


FIGURE 5
TYPICAL REVERSE VOLTAGE VS CAPACITANCE (I/O TO GND)



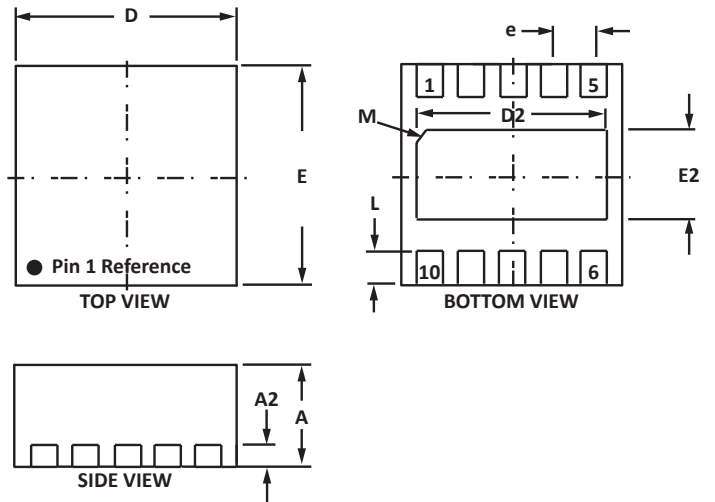
DFN-10 PACKAGE INFORMATION

OUTLINE DIMENSIONS

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.55 | 0.017 | 0.021 |
| A2 | 0.13 BSC | | 0.005 BSC | |
| D | 2.50 | 2.70 | 0.097 | 0.105 |
| D2 | 2.10 | 2.20 | 0.083 | 0.085 |
| E | 2.50 | 2.70 | 0.097 | 0.105 |
| E2 | 1.21 | 1.31 | 0.046 | 0.051 |
| e | 0.50 BSC | | 0.020 BSC | |
| L | 0.35 | 0.45 | 0.013 | 0.017 |
| M | 0.25 | 0.45 | 0.010 | 0.018 |

NOTES

1. Controlling dimension: millimeters.
2. Dimensioning and tolerances per ANSI Y14.M, 1985.
3. Coplanarity applies to the exposed pad as well as the terminals.

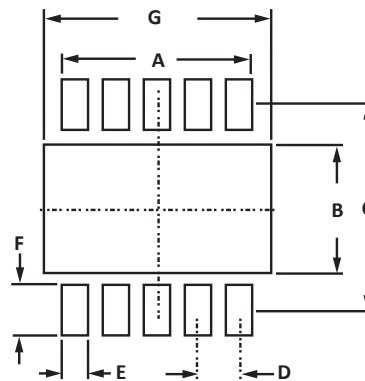


PAD LAYOUT DIMENSIONS

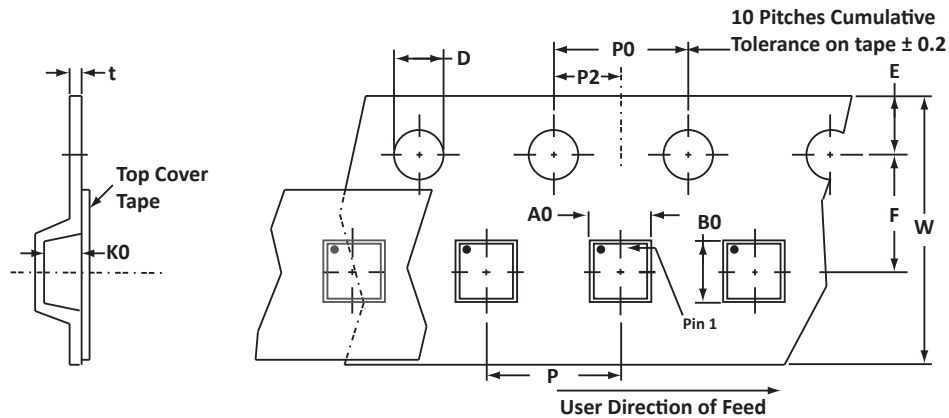
| DIM | MILLIMETERS | INCHES |
|-----|-------------|-----------|
| | NOMINAL | NOMINAL |
| A | 2.25 | 0.089 |
| B | 1.42 | 0.056 |
| C | 2.90 | 0.114 |
| D | 0.50 BSC | 0.020 BSC |
| E | 0.30 | 0.012 |
| F | 0.58 | 0.023 |

NOTES

1. Controlling dimension: millimeters.



TAPE AND REEL



SPECIFICATIONS

| REEL DIA. | TAPE WIDTH | A0 | B0 | K0 | D | E | F | W | P0 | P2 | P | tmax |
|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| 178mm (7") | 8mm | 2.90 ± 0.10 | 2.90 ± 0.10 | 0.80 ± 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. Marking on Part - marking code (see page 2) and polarity dot.

ORDERING INFORMATION

| BASE PART NUMBER | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------|-----------------|-------------|----------|-----------|----------|
| PLR2504 | N/A | -T7 | 3,000 | 7" | n/a |

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

COMPANY INFORMATION

COMPANY PROFILE

In business more than 25 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 LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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