

ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



DESCRIPTION

The PLR0502-6-DFN is an ultra low capacitance (0.7pF Max. I/O to I/O) steering diode and TVS array combo. This device provides circuit protection for interfaces and wireless bus applications and portable electronics. The PLR0502-6-DFN is ideally suited to protect USB(1.0-3.1), Gigabit Ethernet, HDMI (2.0 & 4K) data I/O ports against the effects of ESD and EFT.

The PLR0502-6-DFN meets the requirements of IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT). At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. The PLR0502-6-DFN offers a ultra low capacitance and low leakage current in a DFN-6 package.

FEATURES

- IEC 61000-4-2 (ESD) Compliant: Air ± 15 kV, Contact ± 8 kV
- IEC 61000-4-4 (EFT) Complaint
- IEC 61000-4-5 (Surge): 3A, 50W, 8/20 μ s
- Low Clamping Voltage
- Low Leakage Current
- Unidirectional Configuration
- Protects 2 I/O Ports and Power Supply
- Ultra Low Capacitance: 0.7pF (Max. I/O - I/O)
- RoHS Compliant
- REACH Compliant

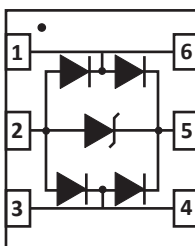
APPLICATIONS

- USB (1.0 to 3.1)
- HDMI (2.0 & 4K)
- Gigabit Ethernet
- DVI
- IEEE 1394 FireWire

MECHANICAL CHARACTERISTICS

- Molded DFN-6 Package
- Approximate Weight: 3.05mg
- 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



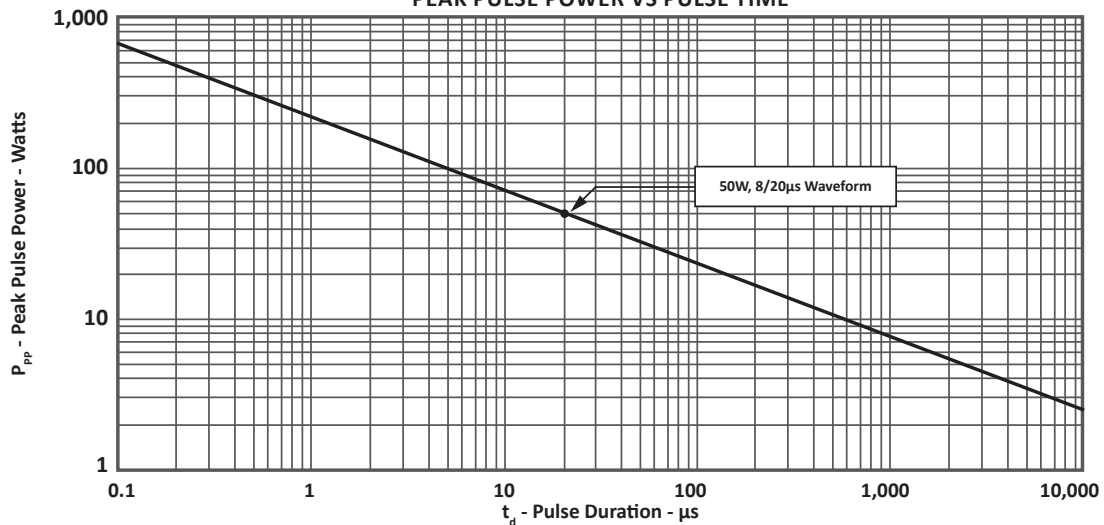
TYPICAL DEVICE CHARACTERISTICS
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|-----------|------------|-------|
| Operating Temperature | T_J | -55 to 125 | °C |
| Storage Temperature | T_{STG} | -55 to 150 | °C |
| Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1 | P_{PP} | 50 | Watts |
| ESD per IEC 61000-4-2 (Air) | V_{ESD} | ±25 | kV |
| ESD per IEC 61000-4-2 (Contact) | V_{ESD} | ±15 | kV |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

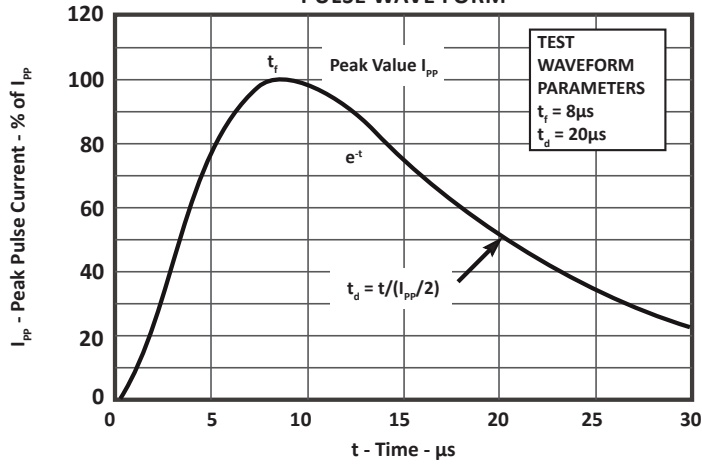
| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE | MINIMUM BREAKDOWN VOLTAGE | MAXIMUM CLAMPING VOLTAGE (Fig. 2) | MAXIMUM CLAMPING VOLTAGE (Fig. 2) | MAXIMUM LEAKAGE CURRENT | MAXIMUM CAPACITANCE I/O - I/O | MAXIMUM CAPACITANCE I/O - GND |
|---------------|----------------|-------------------------|-----------------------------|-----------------------------------|-----------------------------------|--------------------------------|-------------------------------|-------------------------------|
| | | V_{WM} VOLTS | @1mA $V_{(BR)}$ VOLTS | @ $I_p = 1A$ V_c VOLTS | @ $I_p = 3A$ V_c VOLTS | @ V_{WM} I_D μA | @0V, 1MHz C_J pF | @0V, 1MHz C_J pF |
| PLR0502-6-DFN | P26 | 5.0 | 6.0 | 11.0 | 17.0 | 0.1 | 0.7 | 0.9 |

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

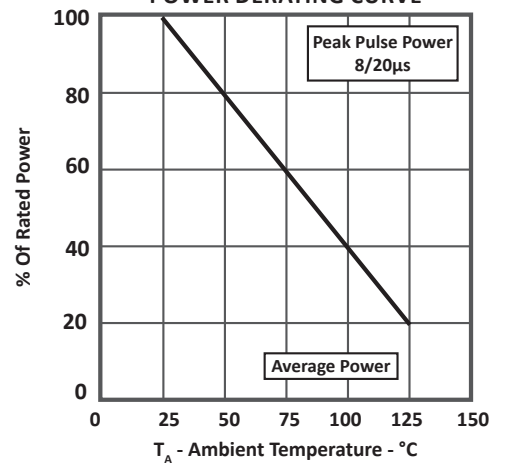


TYPICAL DEVICE CHARACTERISTICS

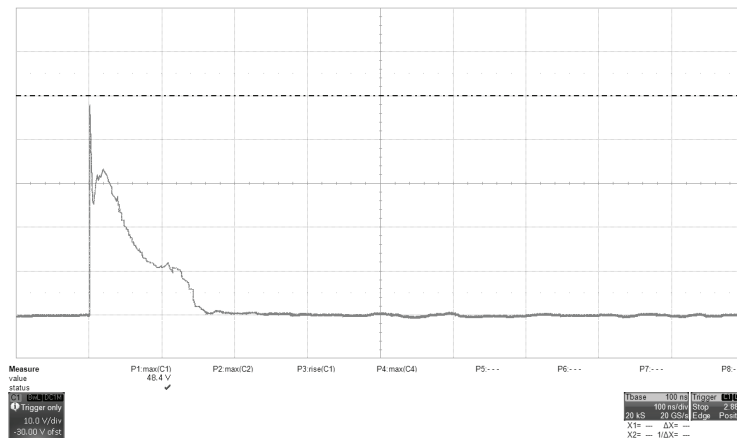
**FIGURE 2
PULSE WAVE FORM**



**FIGURE 3
POWER DERATING CURVE**



**FIGURE 4
TYPICAL ESD 8KV CONTACT WAVEPLOT**



TYPICAL DEVICE CHARACTERISTICS

FIGURE 5
S21 ATTENUATION PLOT

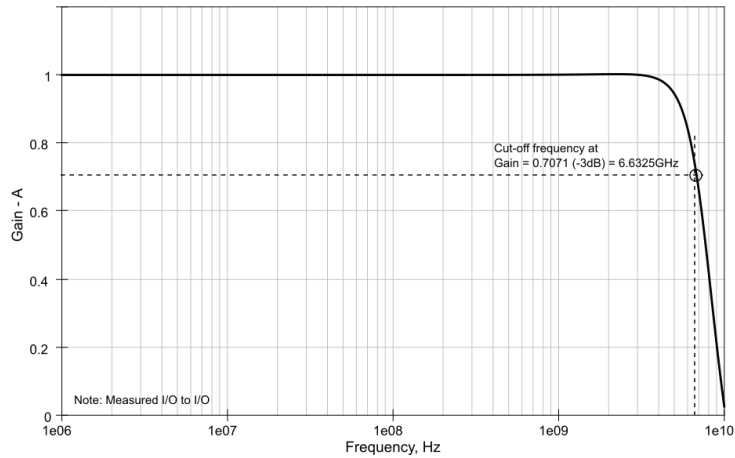
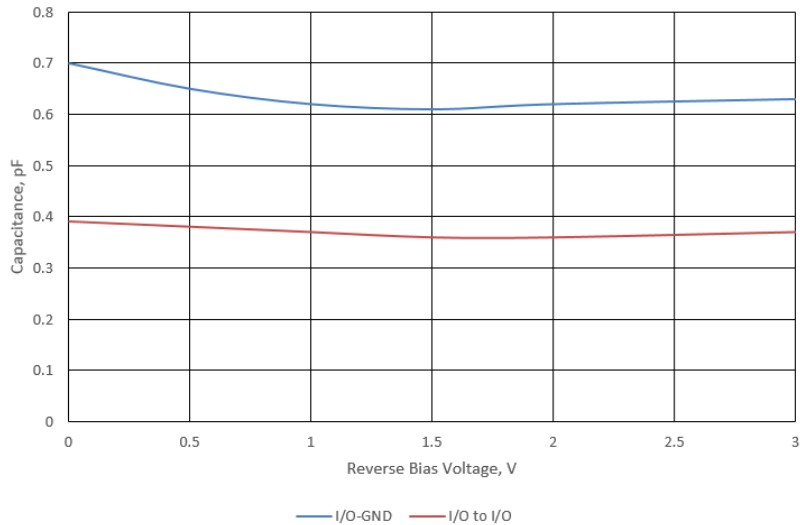


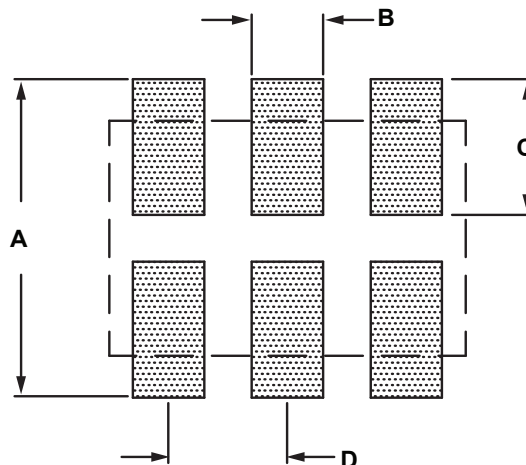
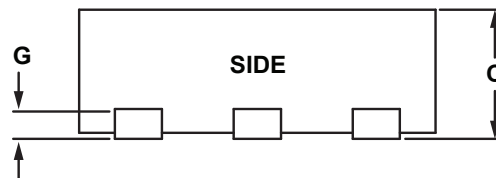
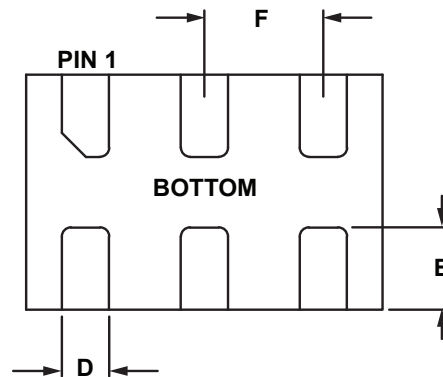
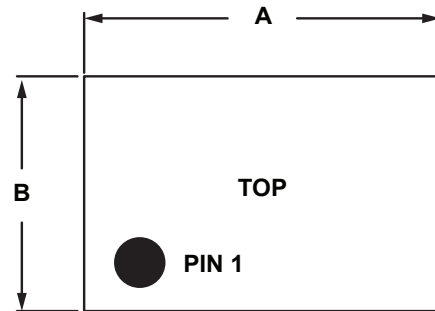
FIGURE 6
TYPICAL CAPACITANCE VS DC BIAS VOLTAGE



PACKAGE INFORMATION
OUTLINE DIMENSIONS

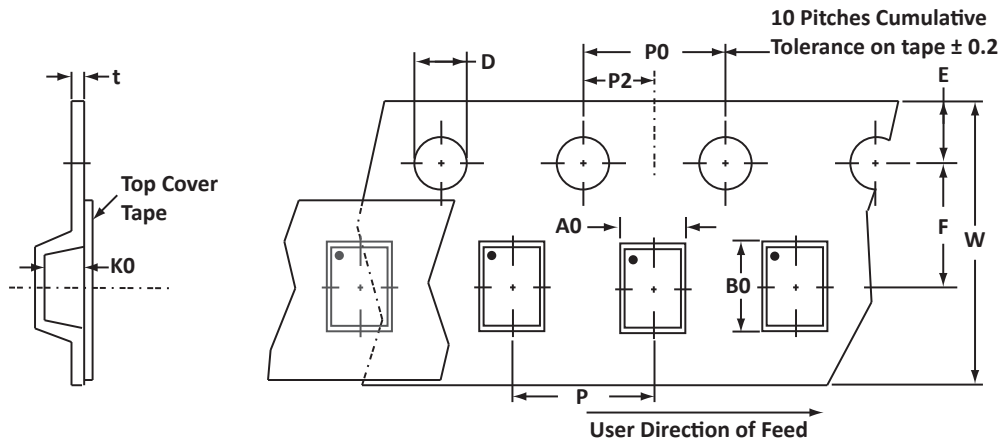
| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.45 | 1.55 | 0.057 | 0.061 |
| B | 0.95 | 1.05 | 0.037 | 0.041 |
| C | 0.50 | 0.60 | 0.020 | 0.024 |
| D | 0.15 | 0.25 | 0.007 | 0.010 |
| E | 0.30 | 0.40 | 0.012 | 0.016 |
| F | 0.50 | | 0.020 | |
| G | 0.13 | | 0.005 | |

NOTES
1. Controlling dimension: millimeters.


PAD LAYOUT DIMENSIONS

| DIM | MILLIMETERS | INCHES |
|-----|-------------|---------|
| | NOMINAL | NOMINAL |
| A | 1.36 | 0.053 |
| B | 0.30 | 0.012 |
| C | 0.58 | 0.023 |
| D | 0.50 | 0.020 |

TAPE AND REEL



SPECIFICATIONS

| REEL DIA. | TAPE WIDTH | A0 | B0 | K0 | D | E | F | W | P0 | P2 | P | t _{max} |
|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| 178mm (7") | 8mm | 1.78 ± 0.05 | 1.80 ± 0.05 | 0.69 ± 0.05 | 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 - T73 = 7" Reel - 3000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2) and pin one defined by dot on package.

ORDERING INFORMATION

| BASE PART NUMBER | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------|-----------------|-------------|----------|-----------|----------|
| PLR0502-6-DFN | N/A | -T73 | 3000 | 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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