

ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



DFN-10 PACKAGE

DESCRIPTION

The PLR0524 is an ultra low capacitance steering diode/TVS array. This device is designed to protect computing applications such as gigabit Ethernet, HDMI, USB(1.0-3.0) and DVI interfaces as well as telecommunication equipment and systems. The PLR0524 is available in the space-saving DFN-10 package configuration.

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 - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Lightning): 5A - 8/20 μ s
- ESD Protection > 25 kilovolts
- **Low Leakage Current < 0.5 μ A**
- Protects 4 Lines
- Ultra Low Capacitance : 0.7pF Typical(I/O to GND)
- RoHS Compliant
- REACH Compliant

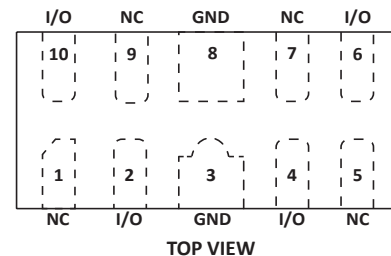
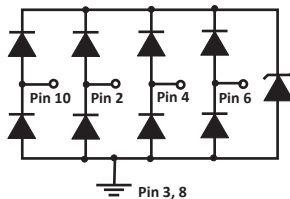
APPLICATIONS

- Gigabit Ethernet
- DVI Interface
- High-Speed Data Line ESD Protection
- FireWire, SATA & PCIe Interfaces
- IEEE 1394 to 3.2Gbps
- USB 1.0, USB 2.0 & USB 3.0
- HDMI 1.4 & 2.0 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



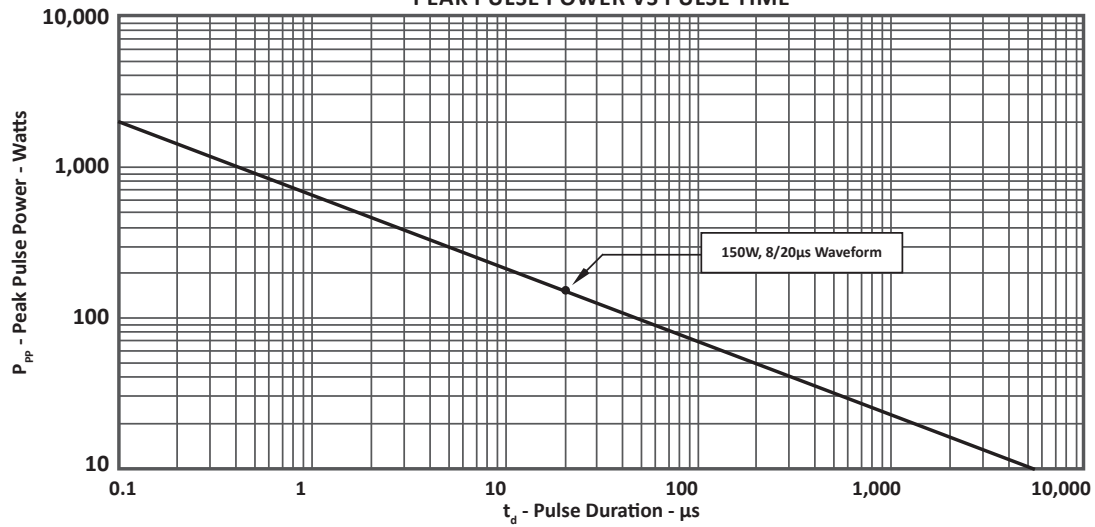
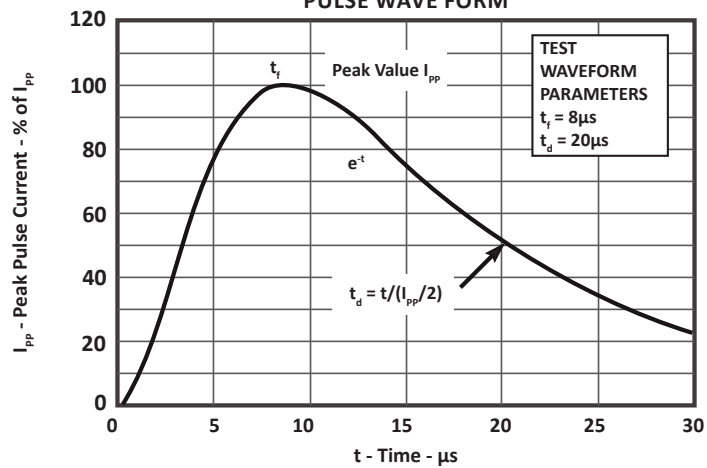
TYPICAL DEVICE CHARACTERISTICS
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|-----------|------------|-------|
| Peak Pulse Current | I_{PP} | 5 | Amps |
| 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} | 150 | Watts |

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE V_{WM} VOLTS | MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ $I_p = 1A$ V_C VOLTS | MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA | TYPICAL CAPACITANCE I/O - GND @ 0V, 1MHz C pF |
|-------------|----------------|--|---|---|--|--|
| PLR0524 | 24D | 5.0 | 6.0 | 12 | 0.5 | 0.7 |

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

FIGURE 2
PULSE WAVE FORM


TYPICAL DEVICE CHARACTERISTICS

FIGURE 3
 CURRENT FROM I/O TO VSS
 VS. VOLTAGE FROM I/O TO VSS

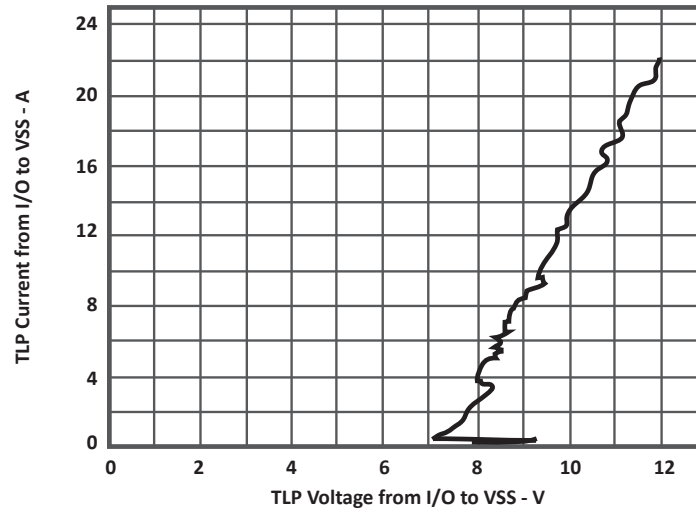
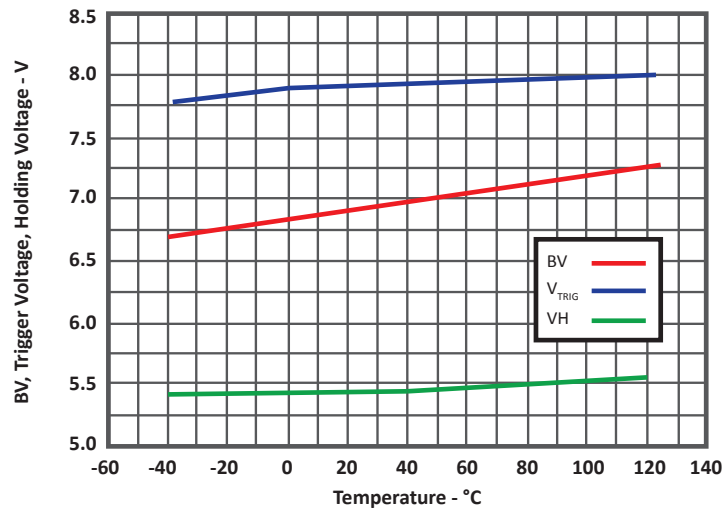


FIGURE 4
 BV, TRIGGER VOLTAGE, HOLDING VOLTAGE
 VS. TEMPERATURE



TYPICAL DEVICE CHARACTERISTICS

FIGURE 5
CLAMPING VOLTAGE VS CURRENT FROM I/O TO VSS
8/20μs

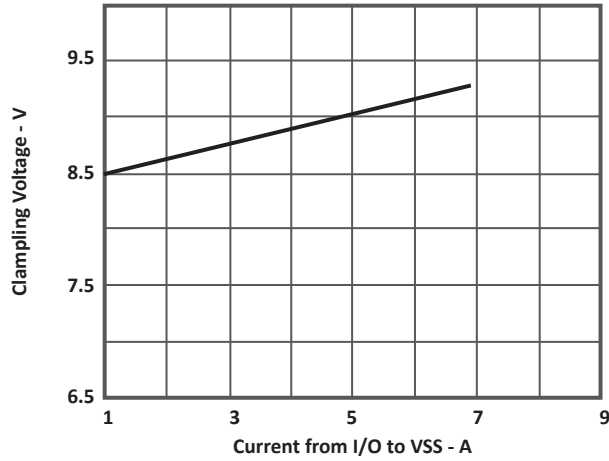
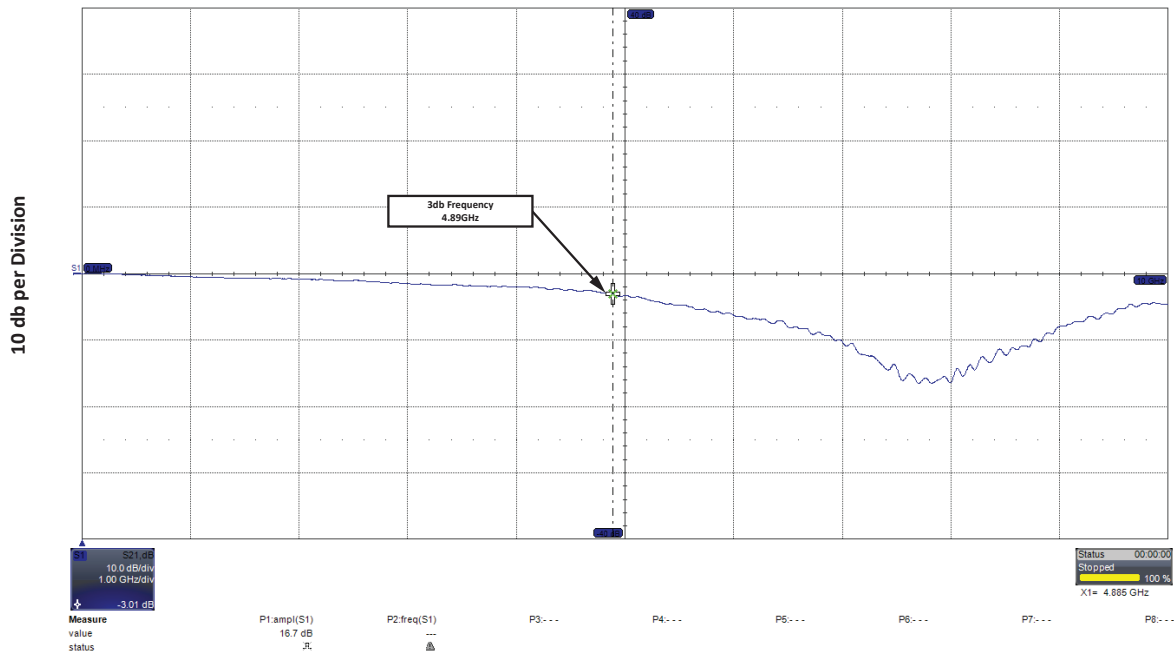


FIGURE 6
INSERTION LOSS

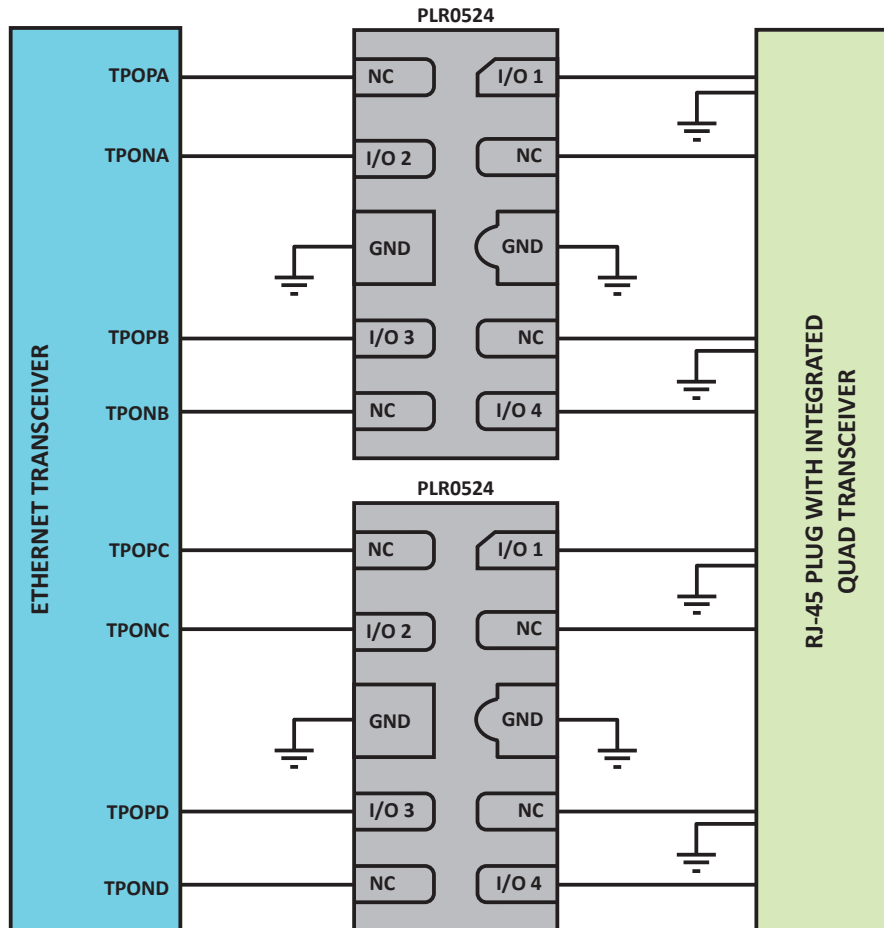


1.6GHz per Division
Indicative Representation of Insertion Loss for PLR0524P

APPLICATION INFORMATION

GIGABIT ETHERNET APPLICATION

The PLR0524 is used as secondary protection where there are integrated magnetics in the RJ-45 connector.



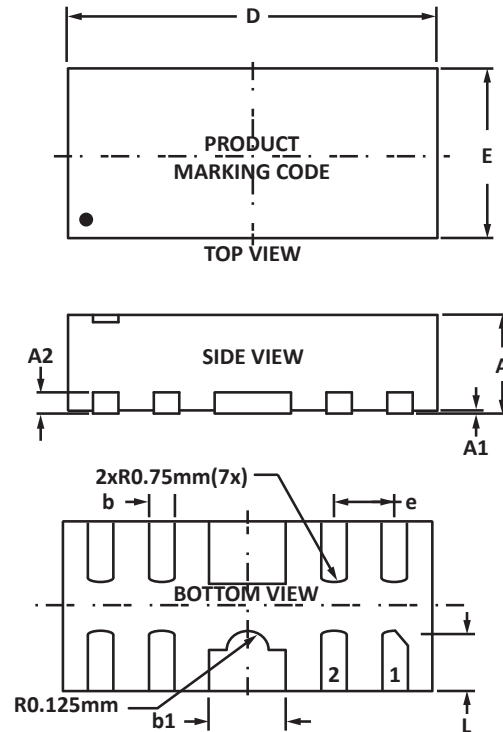
DFN-10S1 PACKAGE INFORMATION

OUTLINE DIMENSIONS

| DIM | MILLIMETERS | | INCHES | |
|-----|--------------|------|---------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.65 | 0.018 | 0.026 |
| A1 | 0.00 | 0.05 | 0.000 | 0.002 |
| A2 | 0.13 | 0.21 | 0.005 | 0.008 |
| b | 0.15 | 0.25 | 0.006 | 0.010 |
| b1 | 0.35 | 0.45 | 0.014 | 0.018 |
| D | 2.40 | 2.60 | 0.094 | 0.102 |
| E | 0.89 | 1.12 | 0.035 | 0.044 |
| e | 0.50 Nominal | | 0.020 Nominal | |
| L | 0.36 | 0.46 | 0.014 | 0.018 |

NOTES

1. Controlling dimension: millimeters.

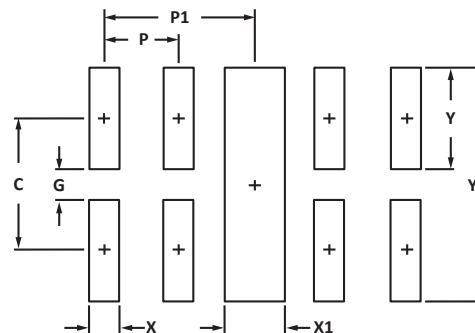


PAD LAYOUT

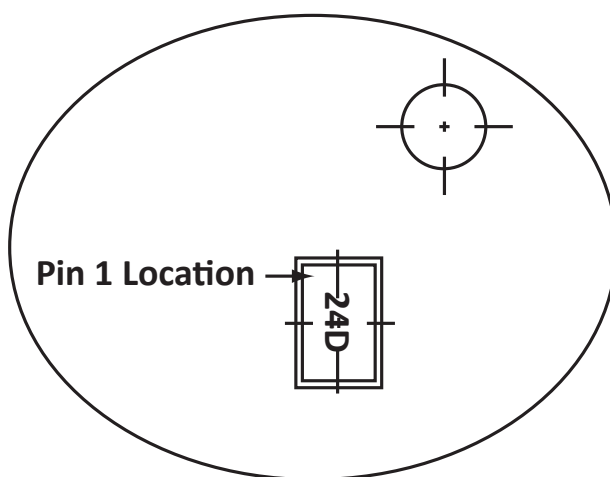
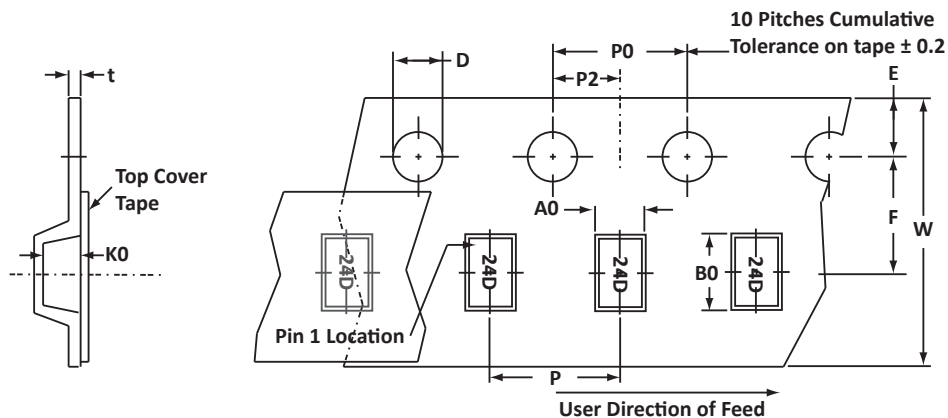
| DIM | MILLIMETERS | INCHES |
|-----|-------------|---------|
| | NOMINAL | NOMINAL |
| C | 0.875 | 0.34 |
| G | 0.20 | 0.008 |
| P | 0.50 | 0.020 |
| P1 | 1.00 | 0.039 |
| X | 0.25 | 0.010 |
| X1 | 0.46 | 0.018 |
| Y | 0.675 | 0.027 |
| Y1 | 1.55 | 0.061 |

NOTES

1. Controlling dimension: millimeters.



TAPE AND REEL



Exploded View

SPECIFICATIONS

| REEL DIA. | TAPE WIDTH | A0 | B0 | K0 | D | E | F | W | P0 | P2 | P | tmax |
|------------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|
| 178mm (7") | 8mm | 1.20 ± 0.10 | 2.70 ± 0.10 | 0.75 ± 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.
- Marking on Part - marking code (see page 2).

ORDERING INFORMATION

| BASE PART NUMBER | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------|-----------------|-------------|----------|-----------|----------|
| PLR0524 | 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 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.

CONTACT US

Corporate Headquarters

2929 South Fair Lane
Tempe, Arizona 85282
USA

By Telephone

General: 602-431-8101
Sales: & Marketing: 602-414-5109
Customer Service: 602-414-5114
Product Technical Support: 602-414-5107

By Fax

General: 602-431-2288

By E-mail:

Asia Sales: asiasales@protekdevices.com
Europe Sales: europesales@protekdevices.com
U.S. Sales: ussales@protekdevices.com
Distributor Sales: distysales@protekdevices.com
Customer Service: service@protekdevices.com
Technical Support: support@protekdevices.com

ProTek Devices (Asia Pacific) Pte. Ltd.

8 Ubi Road 2, #06-19
Zervex
Singapore - 408538
Tel: +65-67488312
Fax: +65-67488313

Web

www.protekdevices.com

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