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): 6A - 8/20µs
- ESD Protection > 25 kilovolts
- **Ultra Low Clamping Voltage: 9V @6A**
- **Low Leakage Current < 0.5µA**
- Protects 4 Lines
- Ultra Low Capacitance : 0.6pF Typical(I/O to GND)
- RoHS Compliant
- REACH Compliant

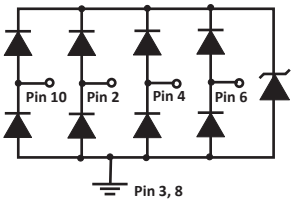
APPLICATIONS

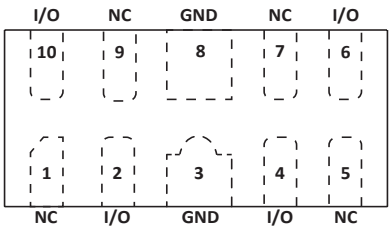
- Gigabit Ethernet
- DVI Interface
- High-Speed Data Line ESD Protection
- FireWire, SATA & PCIe Interfaces
- IEEE 1394 to 3.2Gbps
- USB 1.0, USB 2.0 & USB 3.0
- HDMI 1.4 & 2.0 Interfaces

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





TOP VIEW

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Current	I_{PP}	6	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}	50	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 CLAMPING VOLTAGE (Fig. 2) @ I_P = 6A 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	8.5	9.0	0.5	0.7

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified			
TYPICAL DIFFERENTIAL REVERSE RESISTANCE R_{DIFF-R} OHMS	TYPICAL DIFFERENTIAL FOWARD RESISTANCE R_{DIFF-F} OHMS	MAXIMUM TRIGGER VOLTAGE V_{TRIG} VOLTS	MAXIMUM HOLDING VOLTAGE V_H VOLTS
0.25	0.35	9.5	5.5

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

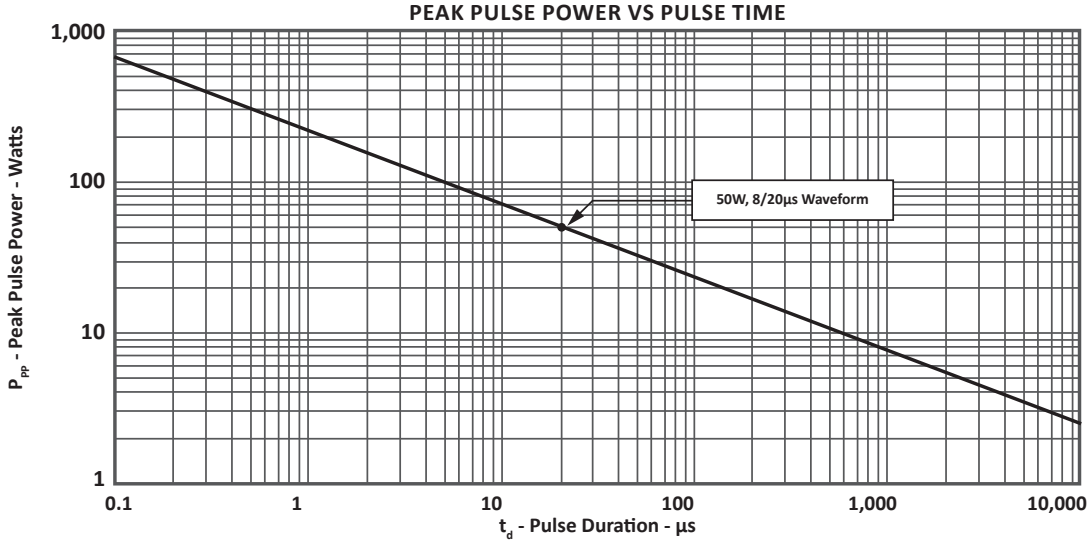
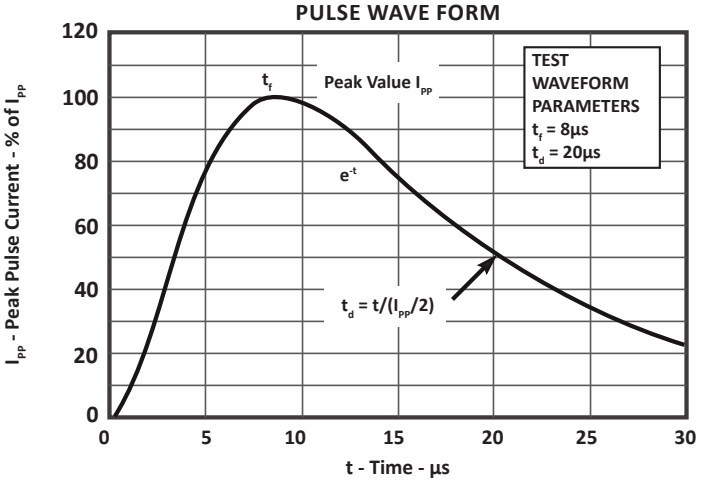


FIGURE 2
PULSE WAVE FORM



TYPICAL DEVICE CHARACTERISTICS

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

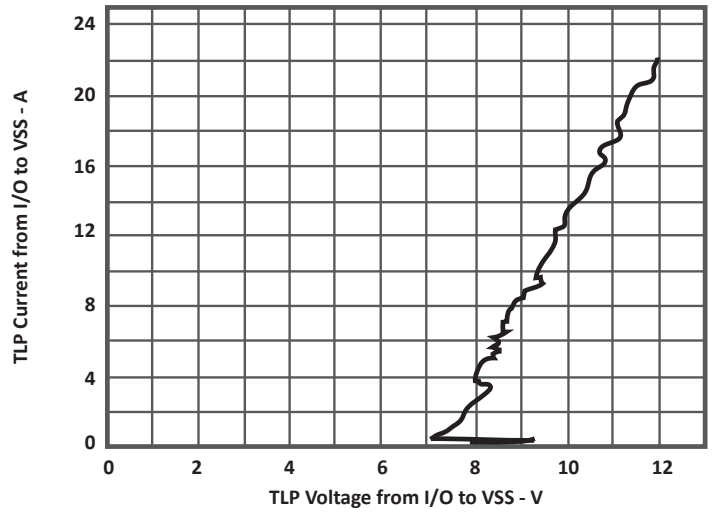
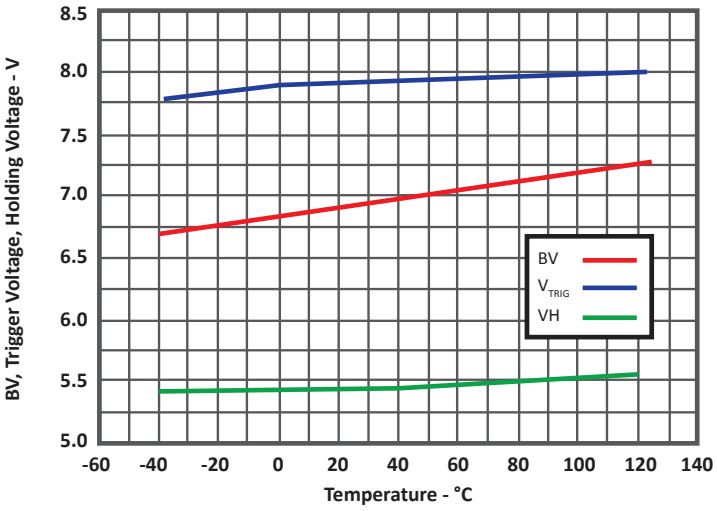


FIGURE 4
BV, TRIGGER VOLTAGE, HOLDING VOLTAGE
VS. TEMPERATURE



TYPICAL DEVICE CHARACTERISTICS

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

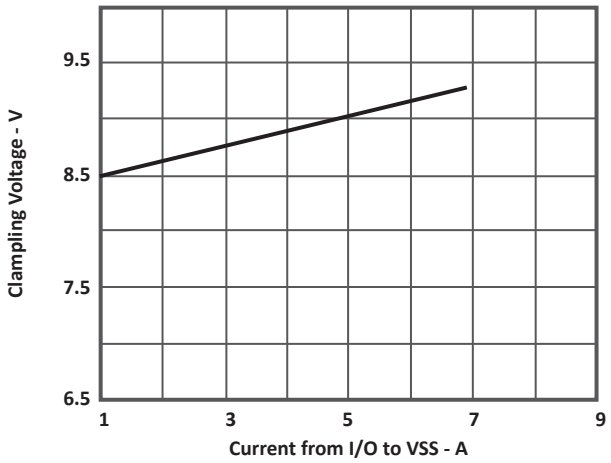
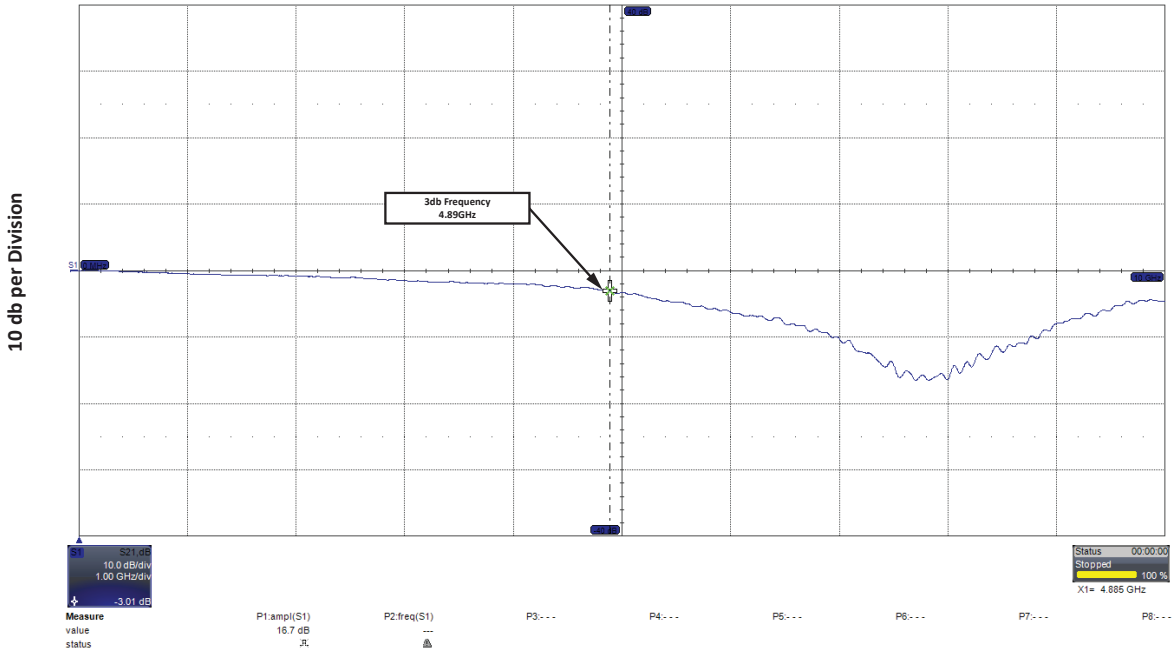


FIGURE 6
INSERTION LOSS

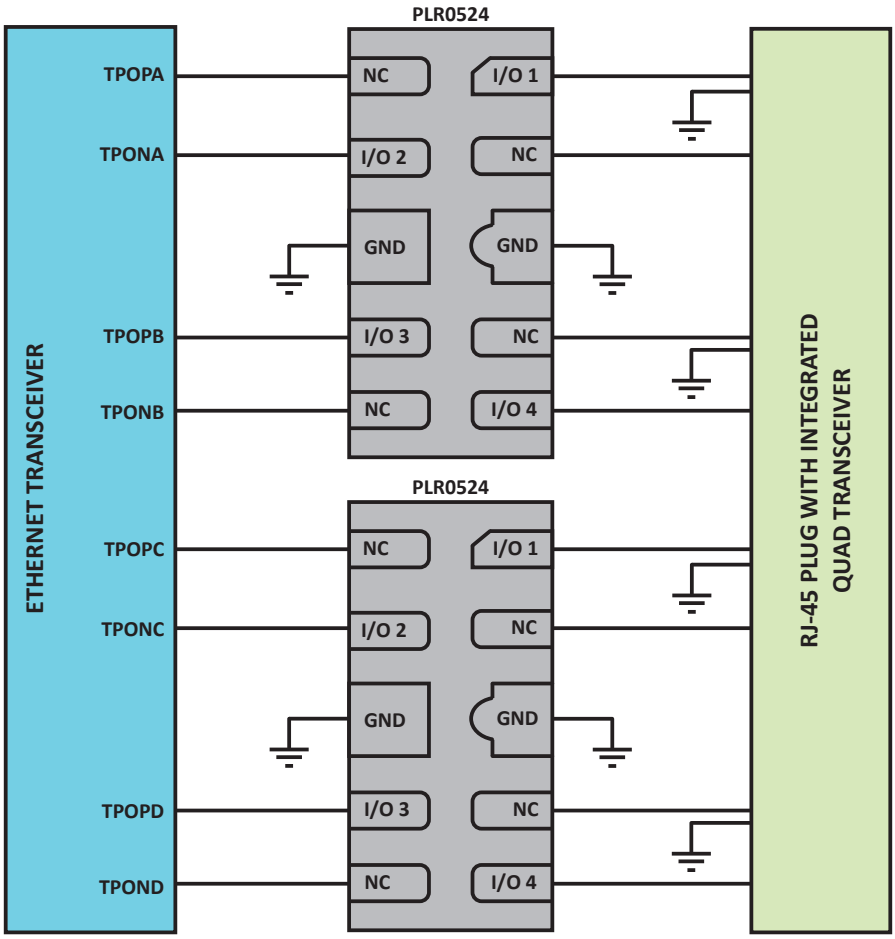


1.6GHz per Divison
Indicative Representation of Insertion Loss for PLR0524P

APPLICATION INFORMATION

GIGABIT ETHERNET APPLICATION

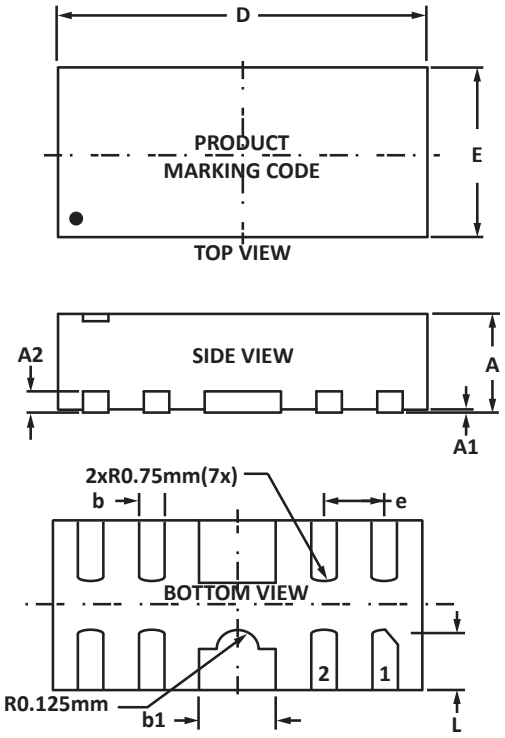
The PLR0524 is used as secondary protection where there are integrated magnetics in the RJ-45 connector.



DFN-10S1 PACKAGE INFORMATION

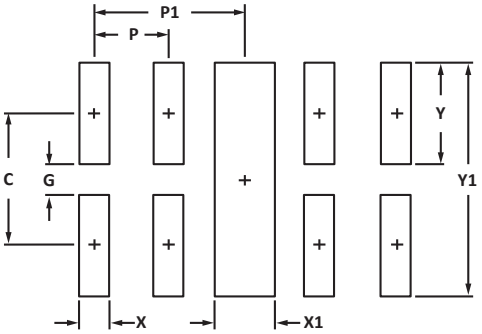
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.56	0.65	0.022	0.026
A1	0.00	0.05	0.000	0.002
A2	0.13	0.203	0.005	0.008
b	0.15	0.25	0.006	0.010
b1	0.35	0.45	0.014	0.018
D	2.40	2.60	0.094	0.102
E	0.90	1.10	0.035	0.043
e	0.50 Nominal		0.020 Nominal	
L	0.36	0.46	0.014	0.018

NOTES
1. Controlling dimension: millimeters.

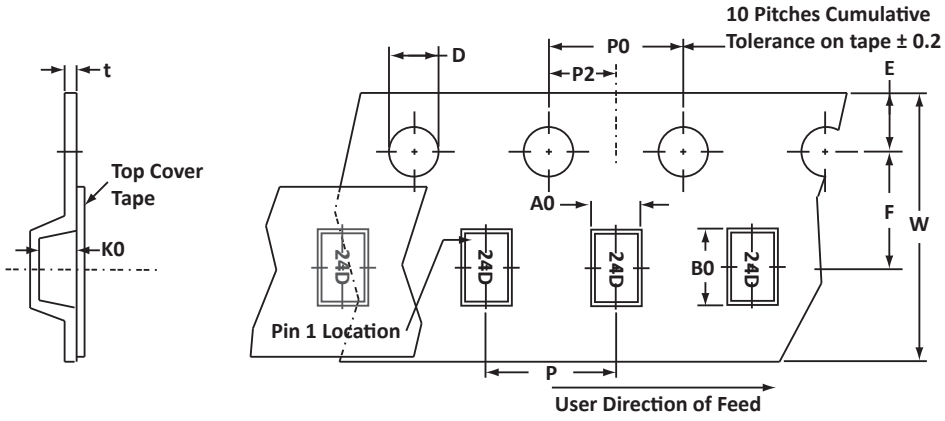


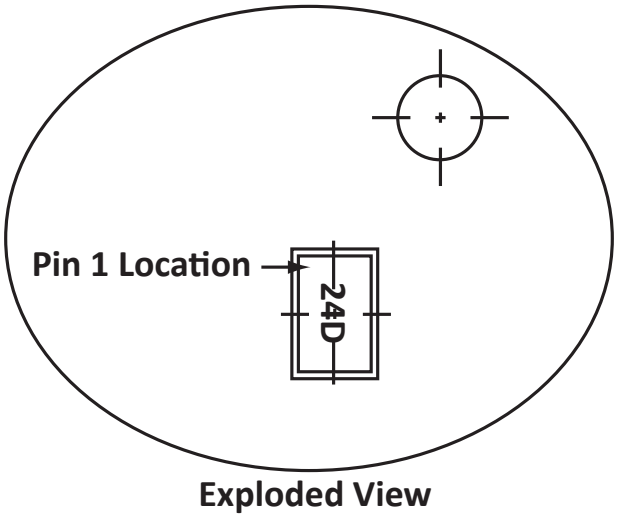
PAD LAYOUT		
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
C	0.875	0.34
G	0.20	0.008
P	0.50	0.020
P1	1.00	0.039
X	0.20	0.008
X1	0.40	0.016
Y	0.675	0.027
Y1	1.55	0.061

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
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).

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.

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