

ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



DFN-10 PACKAGE

DESCRIPTION

The PLR0504PLCN is an ultra low capacitance steering diode/TVS array for 5.0V systems. The 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 PLR0504PLCN is available in the space-saving DFN-10 package configuration and is rated at 250 Watts peak pulse power per line for an 8/20 μ s waveshape.

The device meets and/or exceeds the IEC 61000-4-2 (ESD), 61000-4-4 (EFT) and 61000-4-5 (Surge) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. The PLR-0504PLCN, 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): Contact ± 8 kV, Air ± 15 kV
- Compatible with IEC 61000-4-4 (EFT): 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 16A - 8/20 μ s
- 250 Watts Peak Pulse Power per Line (tp = 8/20 μ s)
- ESD Protection > 25 kilovolts
- Low Leakage Current < 0.5 μ A
- Protects 4 Lines
- Ultra Low Capacitance: 1.5pF Max (I/O to GND), 1.37pF Typ 0Vdc
- RoHS Compliant
- REACH Compliant

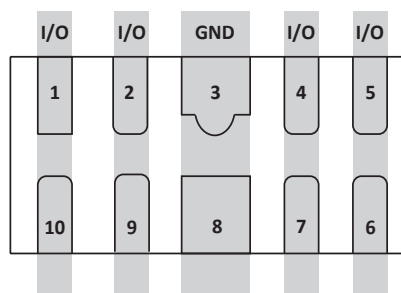
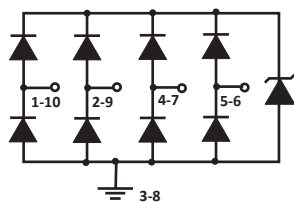
APPLICATIONS

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

MECHANICAL CHARACTERISTICS

- Molded 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

PIN CONFIGURATION



Note: Pin pairs 1-10, 2-9, 3-8, 4-7 and 5-6 must be connected via their PCB lines for full function/operation, as shown.

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

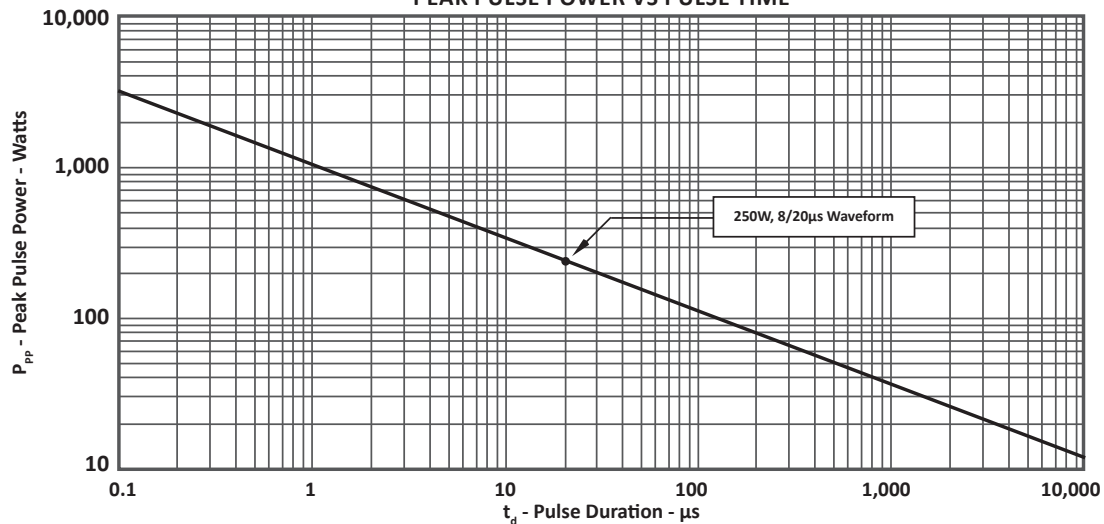
PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_L	-55 to 150	°C
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	250	W

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE (Note 1) V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE (Note 1) @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Note 1) (Fig. 2) @ $I_p = 1A$ V_c VOLTS	MAXIMUM CLAMPING VOLTAGE (Note 1) (Fig. 2) @ $I_p = 16A$ V_c VOLTS	MAXIMUM LEAKAGE CURRENT (Note 1) @ V_{WM} I_D μA	MAXIMUM CAPACITANCE (Note 1) @ 0V, 1MHz C pF
PLR0504PLCN	504N	5.0	6.0	8.0	15.6	0.5	1.5

NOTES

1. I/O to ground.

**FIGURE 1
PEAK PULSE POWER VS PULSE TIME**


TYPICAL DEVICE CHARACTERISTICS

FIGURE 2
PULSE WAVE FORM

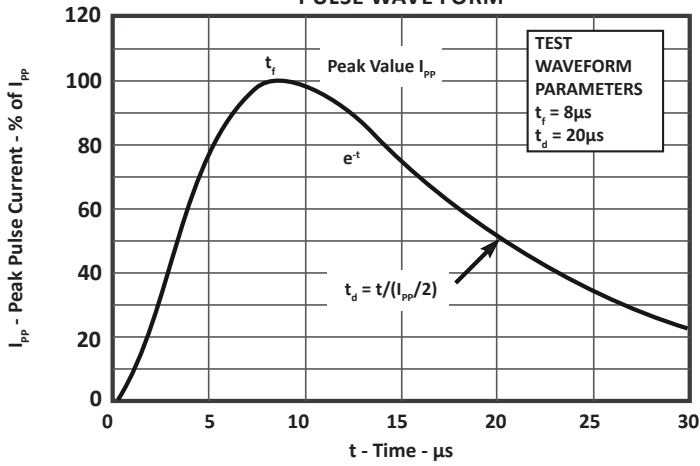


FIGURE 3
POWER DERATING CURVE

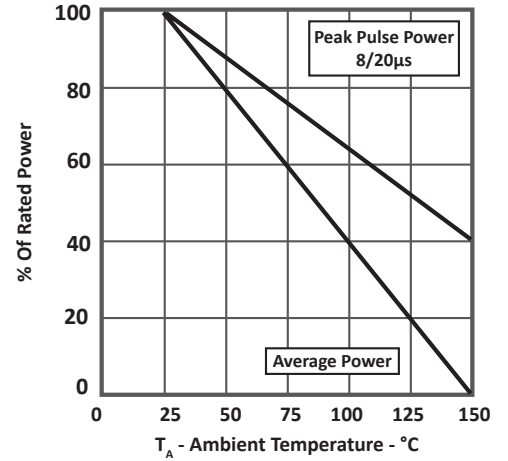
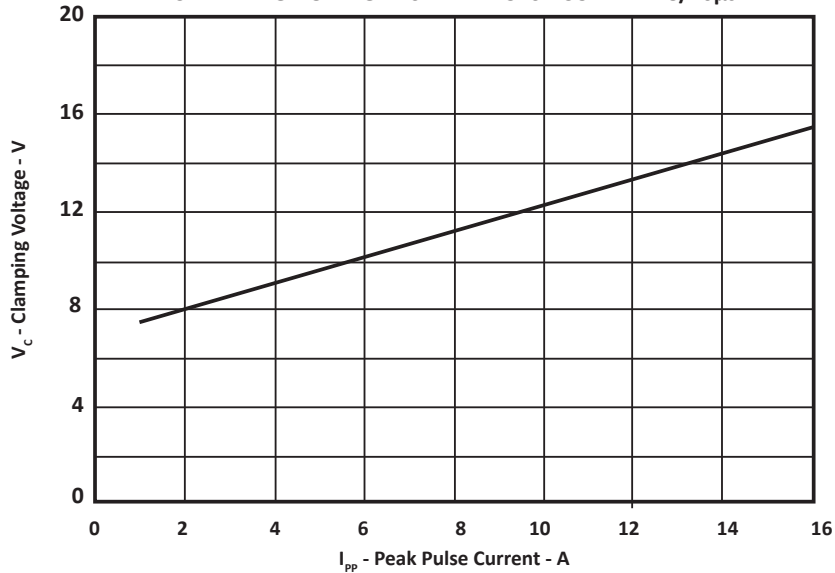


FIGURE 4
CLAMPING VOLTAGE VS PEAK PULSE CURRENT 8/20 μs



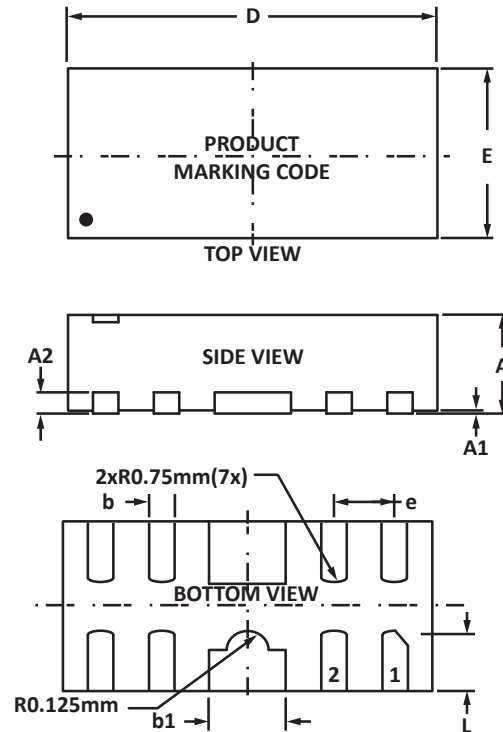
DFN-10 PACKAGE INFORMATION

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.

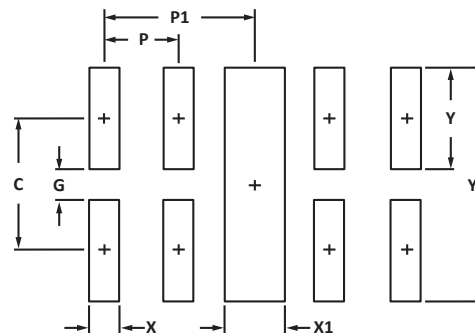


PAD LAYOUT

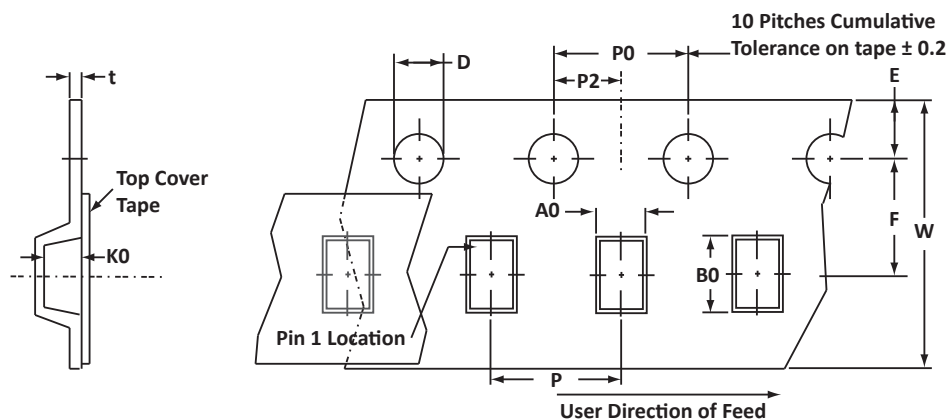
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
C	0.875	0.34
G	0.20	0.008
P	0.50	0.020
P1	1.00	0.039
X	0.25	0.010
X1	0.46	0.018
Y	0.675	0.027
Y1	1.55	0.061

NOTES

1. Controlling dimension: millimeters.



TAPE AND REEL



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 - T73 = 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
PLR0504PLCN	n/a	-T73	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 LED wafer die for ESD protection and related high frequency products.

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