

ULTRA LOW CAPACITANCE STEERING DIODE/THYRISTOR



DFN-10 PACKAGE

DESCRIPTION

The PLRT0504LC is an ultra low capacitance steering diode/Thyristor. This device is designed to protect computing applications such as HDMI, USB (1.0-3.0) and DVI interfaces, as well as telecommunications equipment/systems. The PLRT0504LC is available in a space saving DFN-10 package configuration.

This device meets IEC 61000-4-2, IEC 61000-4-4 and IEC61000-4-5 requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. The PLRT0504LC, 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 $\pm 15\text{kV}$, Contact $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 7A - 8/20 μs
- ESD Protection > 25 kilovolts
- Protects 4 Data Lines
- Low Leakage Current < 0.1 μA
- Ultra Low Capacitance: 0.3pF Typical (I/O to GND)
- RoHS Compliant
- REACH Compliant

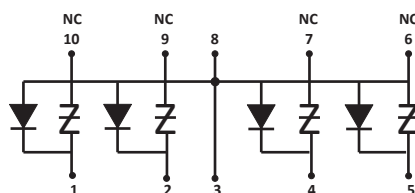
APPLICATIONS

- DVI Interface
- High-speed Data Line ESD Protection
- FireWire, SATA, PCIe Interfaces
- USB 1.0 - 3.0
- HDMI 1.4 - 2.0

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
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

CIRCUIT DIAGRAM



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

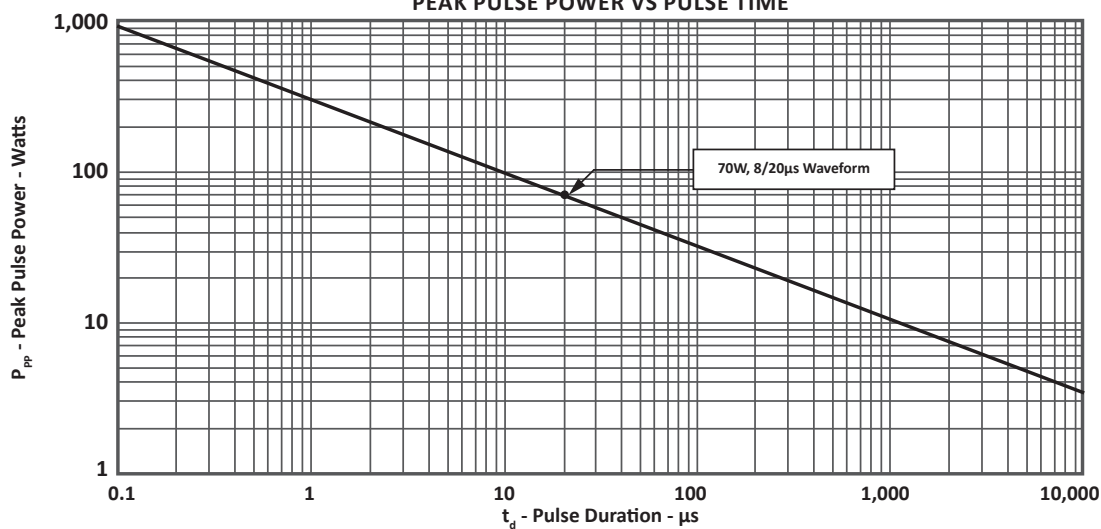
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 8/20μs) - See Figure 1	P _{PP}	70	Watts
Operating Temperature	T _L	-55 to 150	°C
Storage Temperature	T _{STG}	-55 to 150	°C
Peak Pulse Current	I _{PP}	7	Amps
ESD Voltage Level per IEC 61000-4-2 (Contact)	V _{ESD}	±10	kV
ESD Voltage Level per IEC 61000-4-2 (Air)	V _{ESD}	±25	kV

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	TYPICAL CLAMPING VOLTAGE 8/20μs @ I _p = 7A V _C VOLTS	MAXIMUM LEAKGE CURRENT @3.3V I _R μA	MAXIMUM CAPACITANCE I/O - GND (Note 2) f = 200MHz to 2.5GHz C pF	MAXIMUM CAPACITANCE I/O - GND (Note 2) f = 2.5GHz to 9GHz C pF	TYPICAL CUT-OFF FREQUENCY @ -3dB f _c GHz
PLRT0504LC	T5LC	5.0	6.2	10.0	0.05	0.7	0.6	16

NOTES

- Per IEC 61000-4-2 8kV Contact Discharge at 30ns.
- V_{bias} = 0Vdc, V_{osc} = 30mV_(RMS)

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


TYPICAL DEVICE CHARACTERISTICS

FIGURE 2
PULSE WAVE FORM

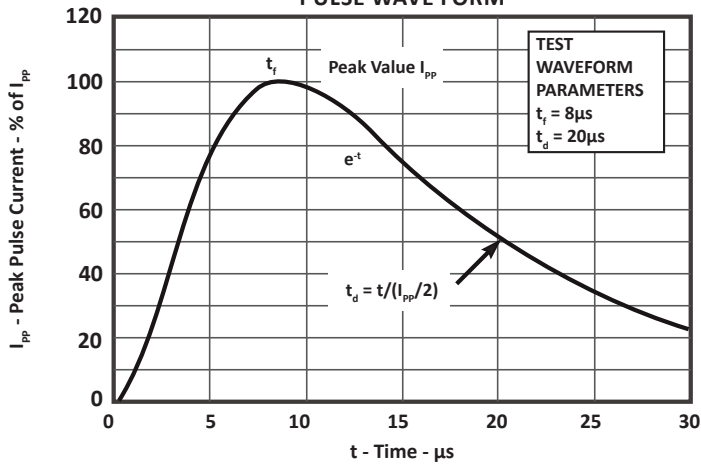


FIGURE 3
POWER DERATING CURVE

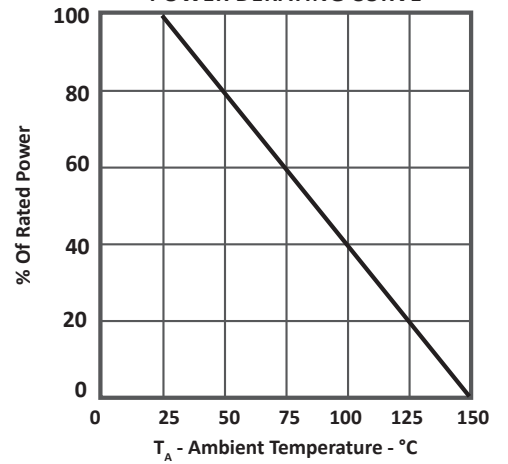
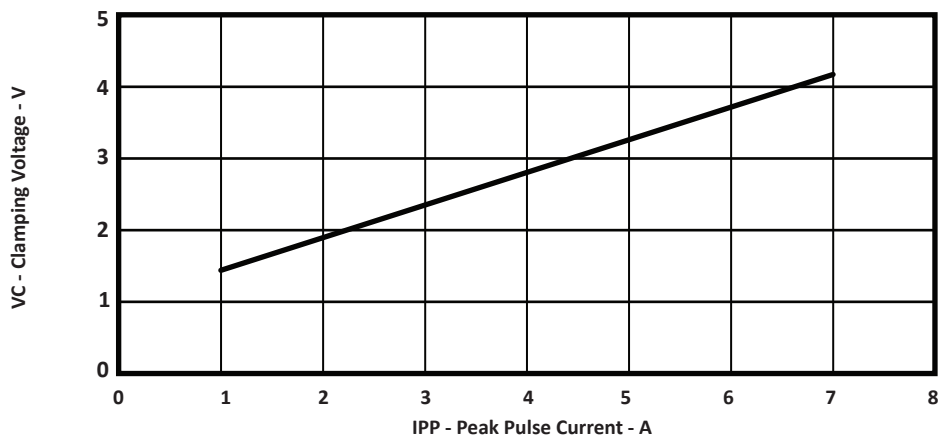


FIGURE 4
CLAMPING VOLTAGE VS IPP



TYPICAL DEVICE CHARACTERISTICS

FIGURE 5
CROSSTALK VS FREQUENCY

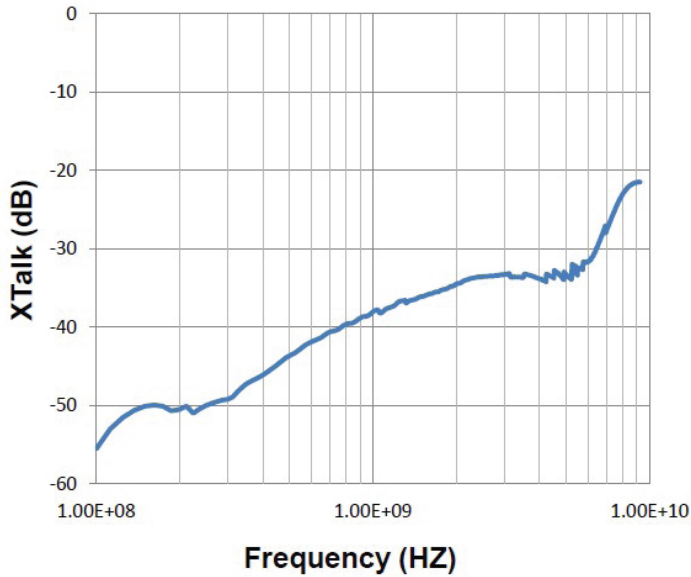


FIGURE 6
INSERTION LOSS VS FREQUENCY

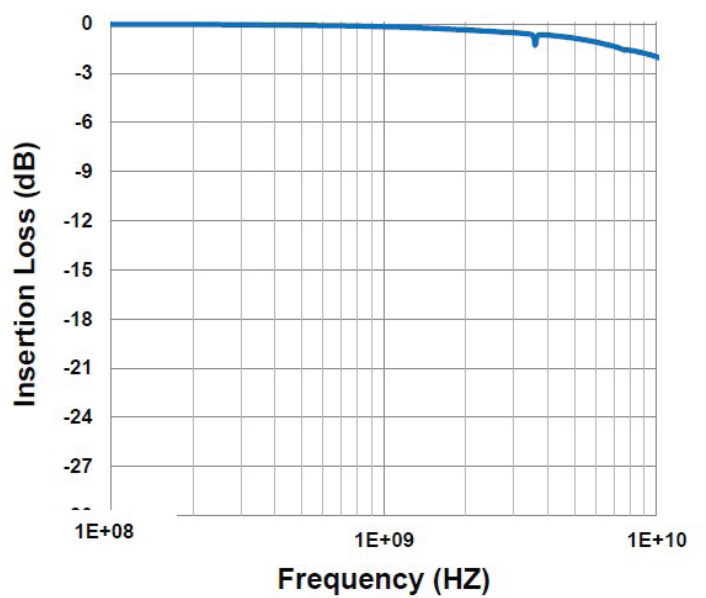
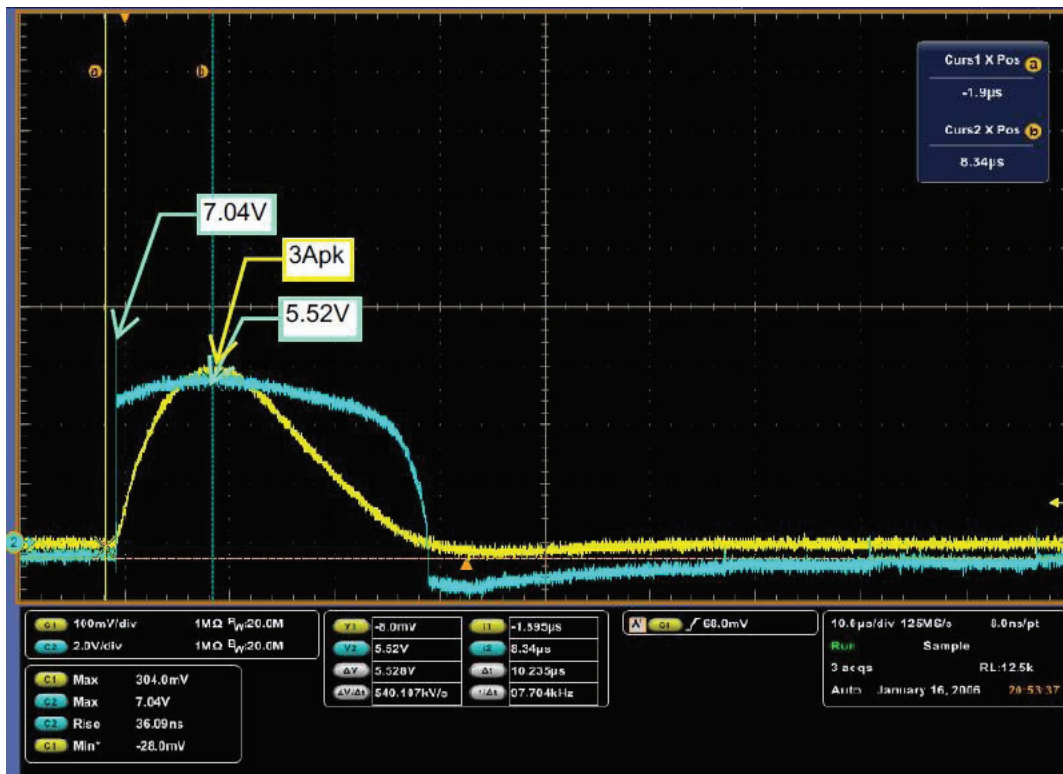


FIGURE 7
SURGE WAVEFORM

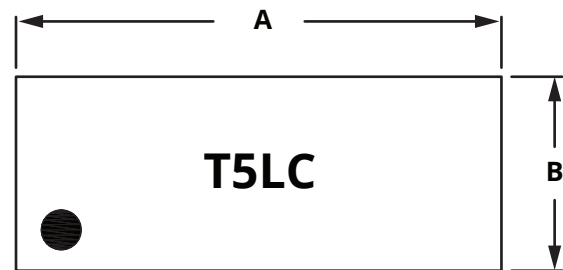
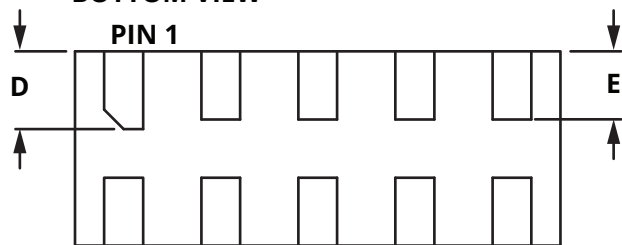
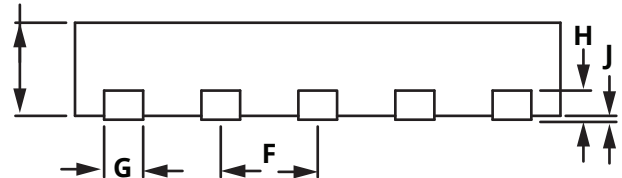


PACKAGE INFORMATION
OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.40	2.60	0.094	0.102
B	0.90	1.10	0.035	0.043
C	0.45	0.55	0.018	0.022
D	0.35	0.45	0.014	0.018
E	0.30	0.40	0.012	0.016
F	0.50		0.020	
G	0.15	0.25	0.006	0.010
H	0.15		0.006	
J	0.00	0.05	0.001	0.002

NOTES

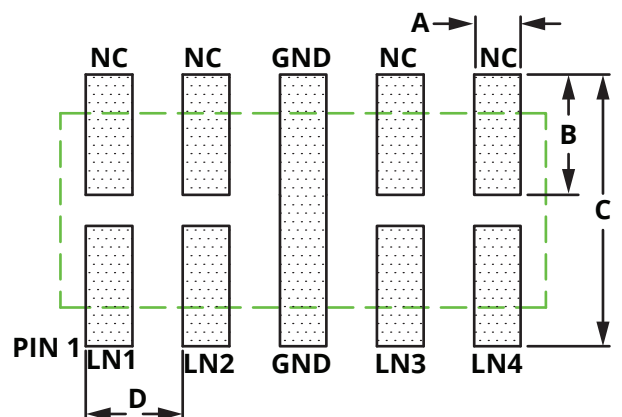
1. Controlling dimension: millimeters.

TOP VIEW

BOTTOM VIEW

SIDE VIEW

PAD LAYOUT

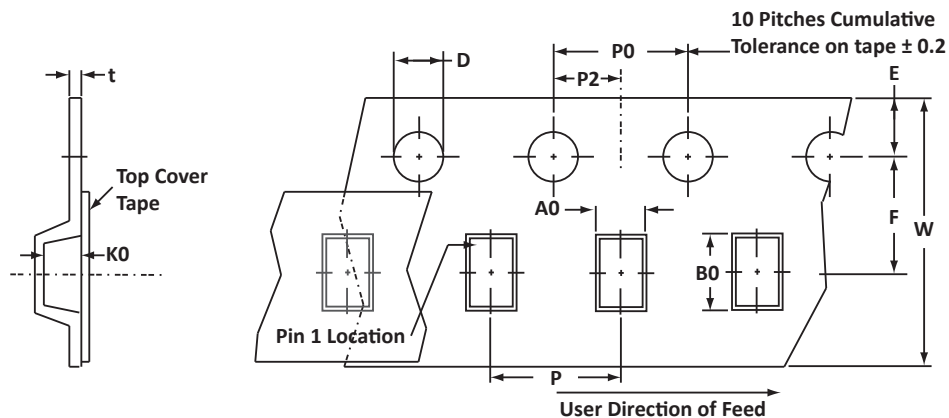
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	0.24	0.009
B	0.62	0.024
C	1.40	0.055
D	0.50	0.020

NOTES

1. Controlling dimension: millimeters.

PAD LAYOUT


TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	1.25 ± 0.05	2.80 ± 0.05	0.70 ± 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

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Marking on Part - marking code (see page 2).

ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PLRT0504LC	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 30 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection that include Transient Voltage Suppressor (TVS) Arrays, Steering Diode Array Hybrids, High-power Components and Modules, as well as Steering Diodes, EMI Filter/TVS Arrays and Thyristor Surge Suppressors. These components deliver circuit protection in electronic systems from numerous overvoltage events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices is an ISO 9001 certified company.

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