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PROTEK DEVICES
Only One Name Means ProTek'Tion™

PLR0504FN5

ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY

DFN-5

DESCRIPTION

The PLR0504FN5 is an ultra low capacitance steering diode/TVS array. 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 PLR0504FN5 is available in a space saving DFN-5 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 PLR0504FN5, 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 (Surge): 3A - 8/20µs
- ESD Protection > 25 kilovolts
- Protects 4 Data Lines
- Low Leakage Current < 0.1µA
- Ultra Low Capacitance: 0.3pF Typical (I/O to GND)
- RoHS Compliant
- REACH Compliant

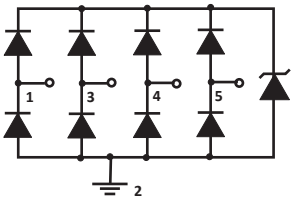
APPLICATIONS

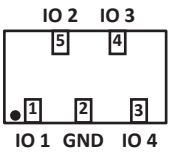
- DVI Interface
- High-speed Data Line ESD Protection
- FireWire, SATA, PCIe Interfaces
- USB 1.0 - 3.0
- HDMI 1.4 - 2.0

MECHANICAL CHARACTERISTICS

- Molded DFN-5 Package
- Approximate Weight: 5 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 & PIN CONFIGURATION





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}	20	Watts
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Peak Pulse Current	I_{PP}	3	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 = 3A V_C VOLTS	TYPICAL DYNAMIC RESISTANCE (Note 2) R_{DYN} OHMS I/O TO GND	TYPICAL DYNAMIC RESISTANCE (Note 2) R_{DYN} OHMS GND TO I/O	MAXIMUM LEAKGE CURRENT @V_R I_R nA 3.6V	MAXIMUM LEAKGE CURRENT @V_R I_R nA 5.0V	MAXIMUM CAPACITANCE I/O - GND (Note 3) f = 200MHz to 2.5GHz C pF	MAXIMUM CAPACITANCE I/O - GND (Note 3) f = 2.5GHz to 9GHz C pF	TYPICAL CUT-OFF FREQUENCY @ -3dB fc GHz
PLR0504FN5	42	5.0	6.0	6.0	0.68	0.65	50	500	0.5	0.4	18

NOTES
1. Per IEC 61000-4-2 8kV Contact Discharge at 30ns.
2. TLP @ 100ns
3. V_{bias} = 0Vdc, V_{OSC} = 30m$V_{(RMS)}$

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
CROSSTALK VS FREQUENCY

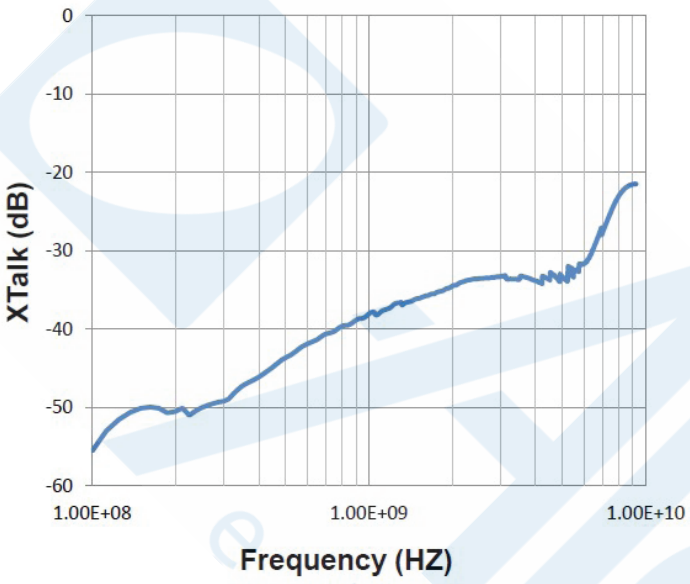


FIGURE 2
INSERTION LOSS VS FREQUENCY

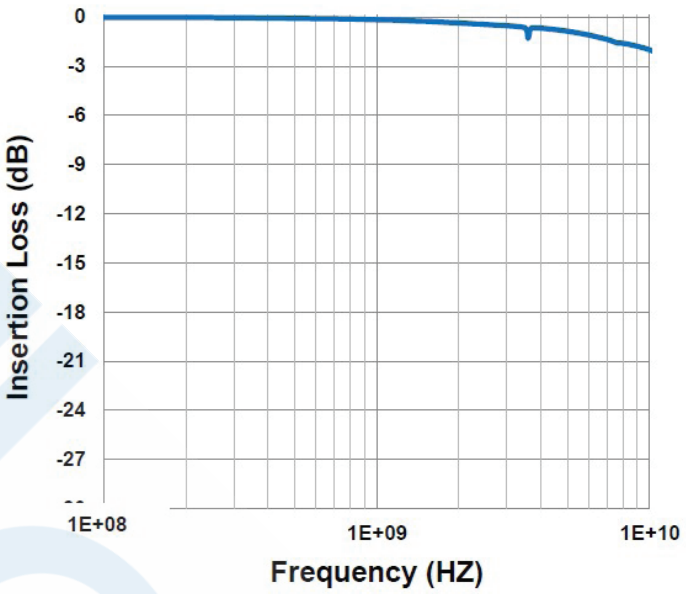
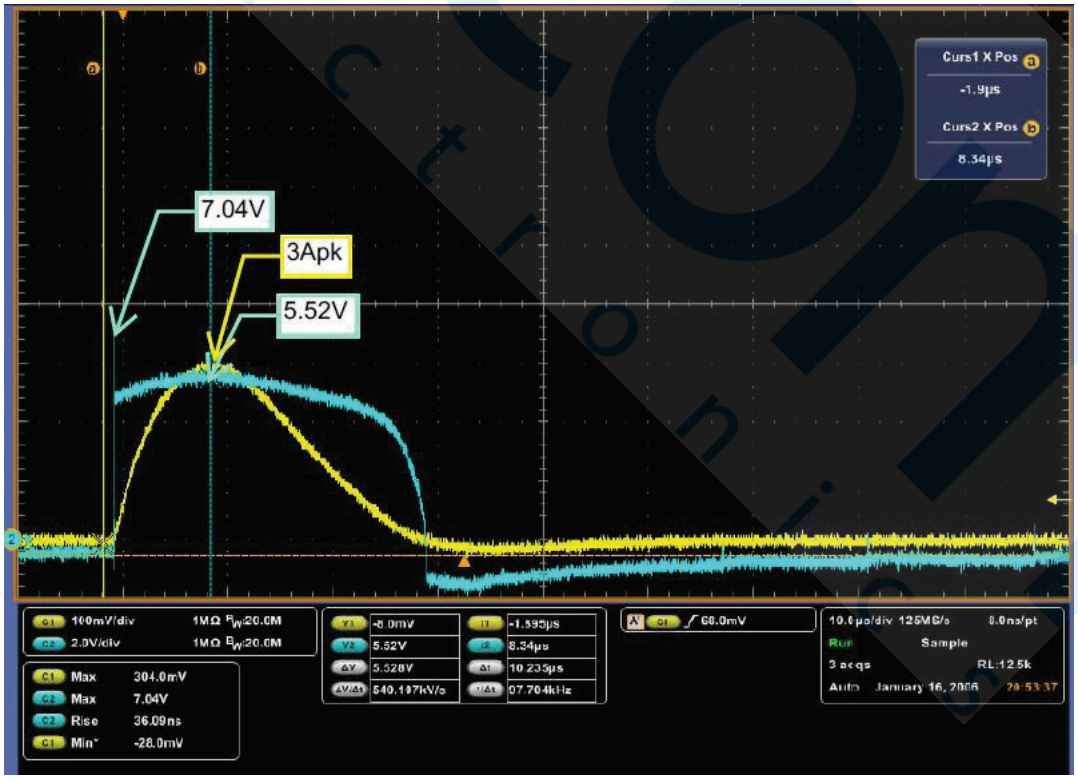


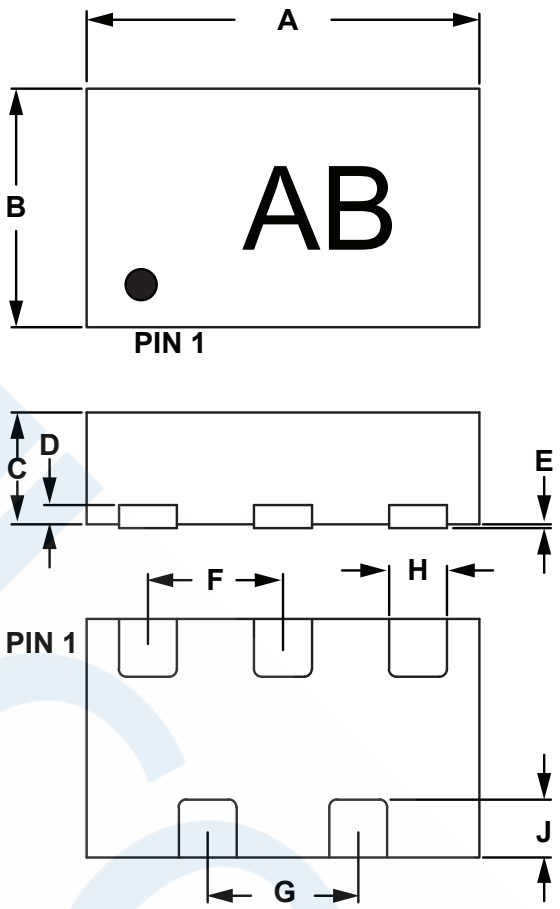
FIGURE 3
SURGE WAVEFORM



PACKAGE INFORMATION

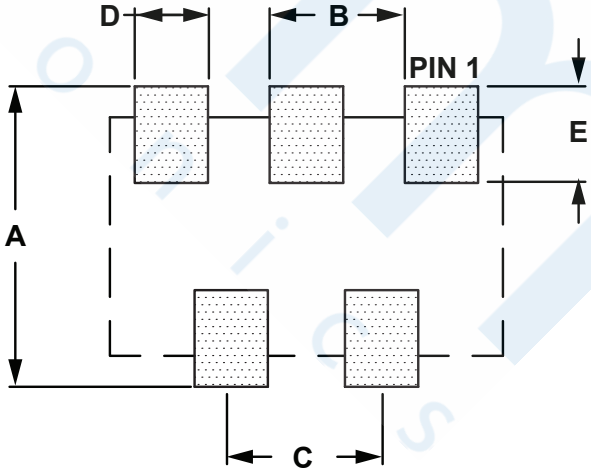
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.20	1.40	0.048	0.055
B	0.70	0.90	0.0275	0.0354
C	0.36	0.40	0.0141	0.0157
D	0.08		0.003	
E	0.02		0.001	
F	0.45		0.0178	
G	0.50		0.0196	
H	0.16	0.24	0.006	0.009
J	0.20	0.30	0.0078	0.0118

NOTES
1. Controlling dimension: millimeters

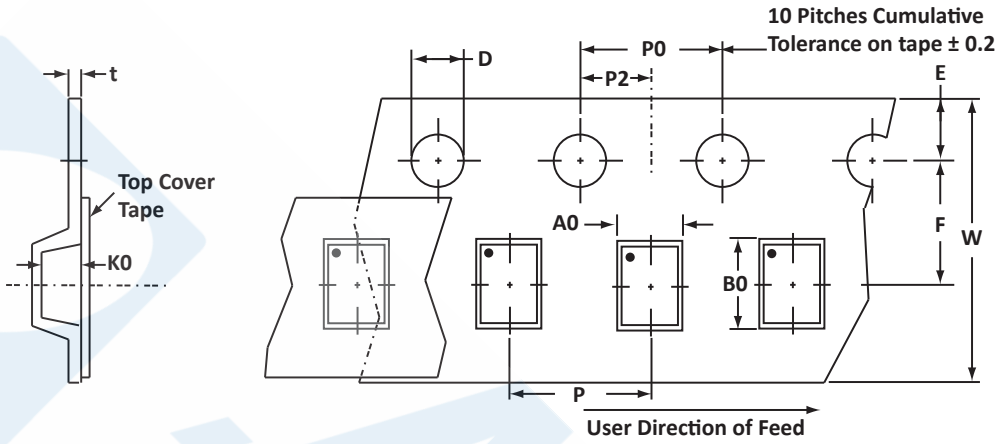


PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
A	1.2	0.047
B	0.50	0.0196
C	0.50	0.0196
D	0.20	0.0078
E	0.45	0.0177

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	0.92 ± 0.05	1.42 ± 0.05	0.52	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. 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
PLR0504FN5	n/a	-T76	6000	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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