

## ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY



**DFN-10 PACKAGE**

### DESCRIPTION

The PLR0514LC is an ultra low capacitance, 4-channel steering diode/TVS array. This device is designed to protect computing applications such as Gigabit Ethernet, HDMI (2.0 & 4K), USB(1.0-3.1) and DVI interfaces as well as telecommunication equipment and systems. The PLR0514LC is available in the space-saving DFN-10 package configuration.

This device meets the IEC 61000-4-2 (ESD), 61000-4-4 (EFT) 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): Contact  $\pm 8\text{kV}$ , Air  $\pm 15\text{kV}$
- Compatible with IEC 61000-4-4 (EFT)
- Compatible with IEC 61000-4-5 (Surge)
- Protects 4 Lines
- Ultra Low Capacitance
- Low Clamping Voltage
- 5V Low Operating Voltage
- Optimized Package for High Speed Data Line PCB Layout
- RoHS Compliant
- REACH Compliant

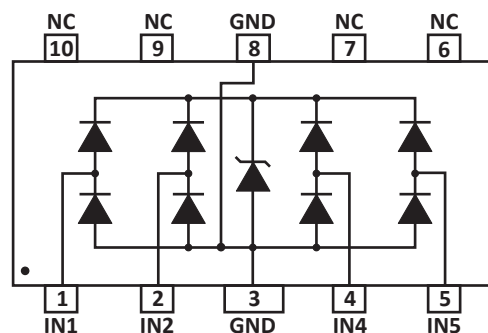
### APPLICATIONS

- HDMI, HDMI 2.0, HDMI 4K
- Display Ports
- Gigabit Ethernet
- USB(1.0 - 3.1)
- VGA
- Set-top Box
- Flat Panel Monitors/Smart TV
- Laptops & Desktops
- UHD
- DVI Ports

### 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



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

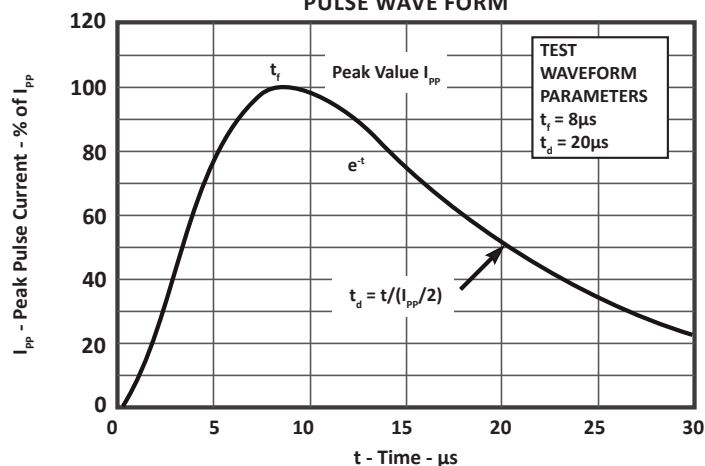
| PARAMETER             | SYMBOL    | VALUE      | UNITS |
|-----------------------|-----------|------------|-------|
| Peak Pulse Current    | $I_{PP}$  | 3          | Amps  |
| Operating Temperature | $T_L$     | -55 to 125 | °C    |
| Storage Temperature   | $T_{STG}$ | -55 to 150 | °C    |
| ESD Pulse - Contact   | -         | ±15        | kV    |
| ESD Pulse - Air       | -         | ±25        | kV    |

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

| PART NUMBER | DEVICE MARKING | RATED STAND-OFF VOLTAGE (Note 1) | MINIMUM BREAKDOWN VOLTAGE (Note 1) | MAXIMUM CLAMPING VOLTAGE (Note 1) (Fig. 2) | MAXIMUM LEAKAGE CURRENT (Note 1) | MAXIMUM LEAKAGE CURRENT (Note 1) | MAXIMUM CAPACITANCE I/O - I/O | MAXIMUM CAPACITANCE I/O - GND (Note 2) |
|-------------|----------------|----------------------------------|------------------------------------|--|----------------------------------|----------------------------------|-------------------------------|--|
|             |                | $V_{WM}$<br>VOLTS                | @ 1mA<br>$V_{(BR)}$<br>VOLTS       | @ $I_p = 1A$<br>$V_C$<br>VOLTS             | @ $V_{WM}$<br>$I_D$<br>$\mu A$   | @ 3.0V<br>$I_D$<br>nA            | @ 0V, 1MHz<br>$C_J$<br>pF     | @ 0V, 1MHz<br>$C_J$<br>pF              |
| PLR0514LC   | P14            | 5.0                              | 6.0                                | 12   | 1.0                              | 70                               | 0.6                           | 0.8                                    |

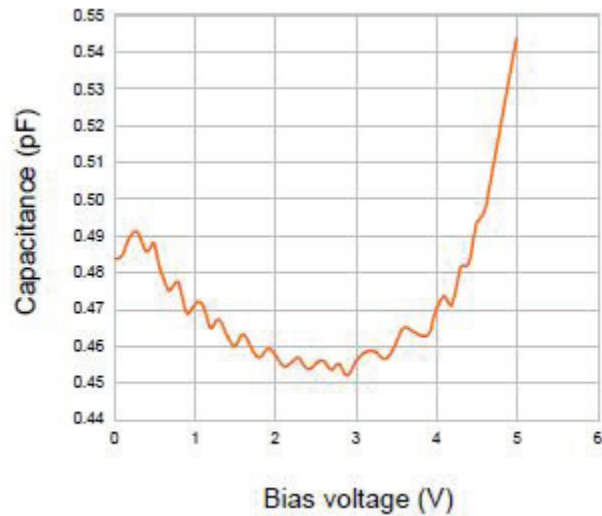
**NOTES**

1. I/O to ground.
2. Guaranteed by design.

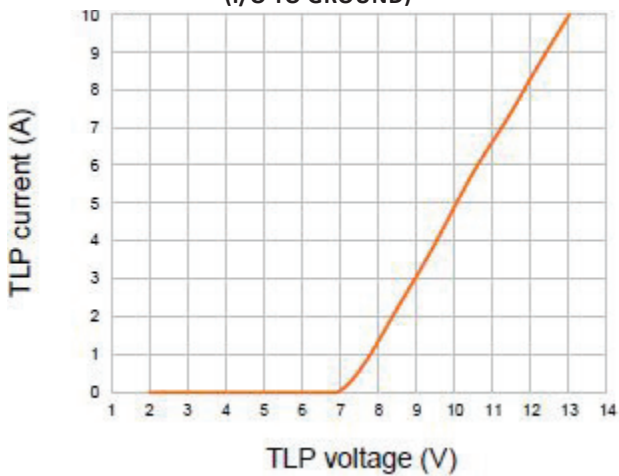
**FIGURE 1  
PULSE WAVE FORM**


**TYPICAL DEVICE CHARACTERISTICS**

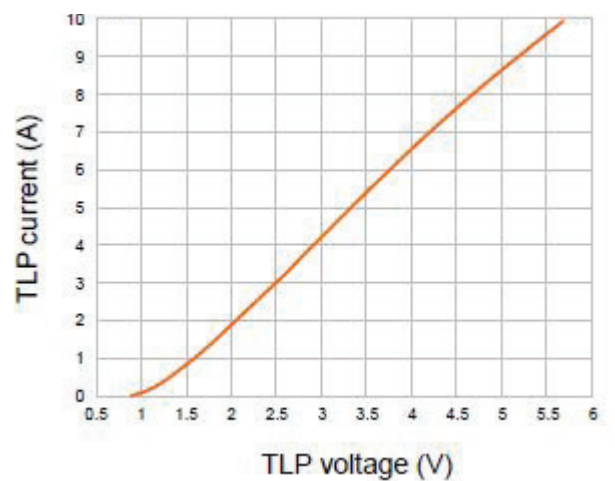
**FIGURE 2**  
**CAPACITANCE VS TYP. REVERSE BIAS VOLTAGE**



**FIGURE 3**  
**POSITIVE TRANSMISSION LINE PULSE**  
**(I/O TO GROUND)**



**FIGURE 4**  
**NEGATIVE TRANSMISSION LINE PULSE**  
**(I/O TO GROUND)**

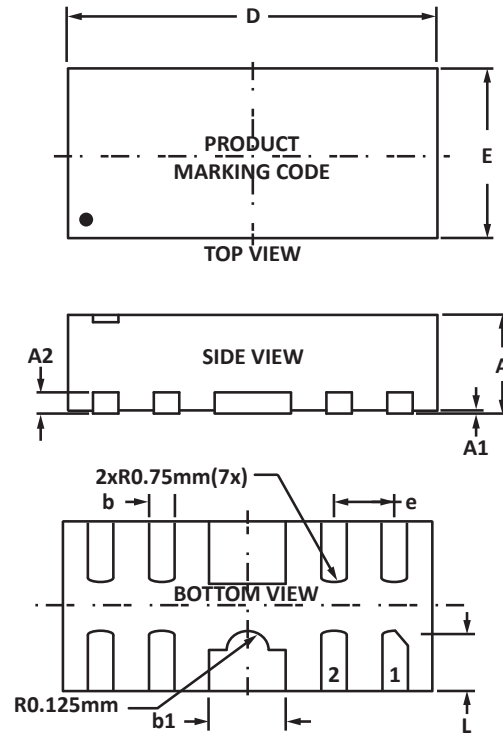


**PACKAGE INFORMATION**
**OUTLINE DIMENSIONS**

| DIM | MILLIMETERS  |      | INCHES        |       |
|-----|--------------|------|---------------|-------|
|     | MIN          | MAX  | MIN           | MAX   |
| A   | 0.47         | 0.60 | 0.019         | 0.024 |
| 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   | 0.90         | 1.10 | 0.035         | 0.043 |
| e   | 0.50 Nominal |      | 0.020 Nominal |       |
| L   | 0.35         | 0.43 | 0.014         | 0.017 |

**NOTES**

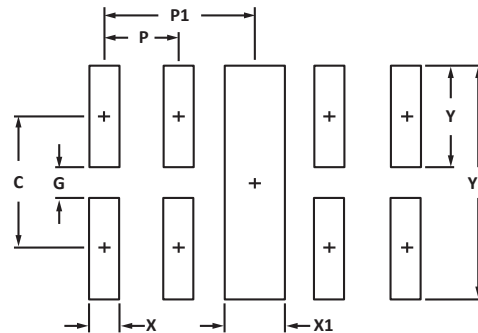
1. Controlling dimension: millimeters.


**PAD LAYOUT**

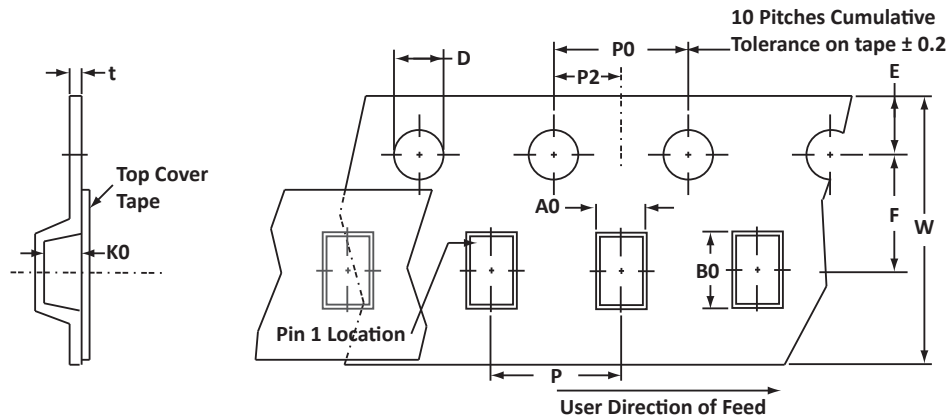
| DIM | MILLIMETERS | INCHES  |
|-----|-------------|---------|
|     | NOMINAL     | NOMINAL |
| C   | 0.875       | 0.34    |
| G   | 0.20        | 0.008   |
| P   | 0.50        | 0.020   |
| P1  | 1.00        | 0.039   |
| X   | 0.25        | 0.010   |
| X1  | 0.46        | 0.018   |
| Y   | 0.675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

1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T73 = 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 |
|------------------|-----------------|-------------|----------|-----------|----------|
| PLR0514LC        | n/a             | -T73        | 3,000    | 7"        | n/a      |

This device is only available in a Lead-Free configuration.

## COMPANY INFORMATION

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### 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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