

## HIGH POWERED MULTI-LINE LOW CAPACITANCE TVS ARRAY



### DESCRIPTION

The PLC01-6 is a high powered multi-line low capacitance transient voltage suppressor array that provides board level protection for Bellcore 1089, standard TTL and CMOS bus line applications against the damaging effects of ESD, tertiary lightning and switching transients.

This device has a peak pulse power rating of 1500 Watts for an 10/1000 $\mu$ s waveshape. The PLC01-6 meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.

### 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): 48A, 8/20 $\mu$ s -L3(Line-Gnd), L4(Line-Line) & L1(Power)
- 1,500 Watts Peak Pulse Power per Line (tp = 10/1000 $\mu$ s)
- Low Clamping Voltage
- 100A (10/1000 $\mu$ s) per Bellcore 1089 (Intra-Building)
- 200A (10/160 $\mu$ s) per FCC Part 68
- ESD Protection > 25 kilovolts
- Bidirectional Configuration
- Protects 1 Line
- RoHS Compliant
- REACH Compliant

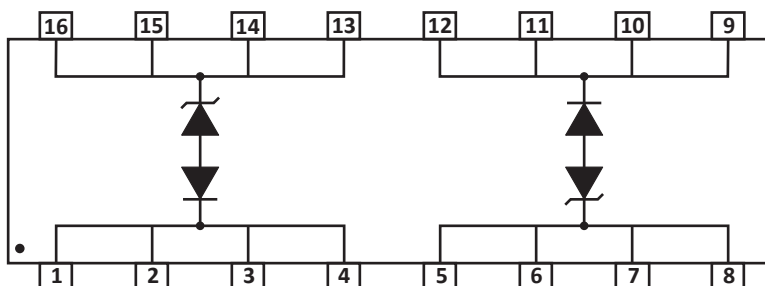
### APPLICATIONS

- T1/E1 Line Cards
- Telecommunications Equipment
- xDSL, USB, SCSI & Ethernet Interfaces
- Cellular Base Stations
- Data & Bus Lines for FCC Part 68 Applications

### MECHANICAL CHARACTERISTICS

- Molded JEDEC SO-16 (Wide Body) Package
- Approximate Weight: 0.5 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- 16mm 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 |
|--|-----------|------------|-------|
| Operating Temperature                                    | $T_L$     | -55 to 150 | °C    |
| Storage Temperature                                      | $T_{STG}$ | -55 to 150 | °C    |
| Peak Pulse Power ( $t_p = 10/1000\mu s$ ) - See Figure 1 | $P_{PP}$  | 1,500      | Watts |

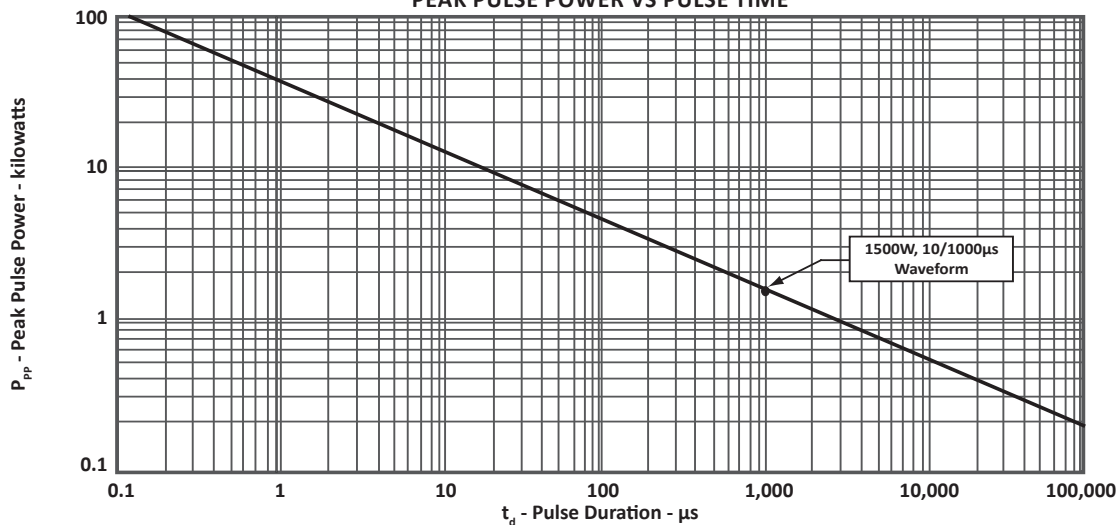
**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

| PART NUMBER (Note 1) | RATED STAND-OFF VOLTAGE<br>$V_{WM}$<br>VOLTS | MINIMUM BREAKDOWN VOLTAGE<br>@1mA<br>$V_{(BR)}$<br>VOLTS | MAXIMUM CLAMPING VOLTAGE (Note 2)<br>@ $I_p = 100A$<br>$V_C$<br>VOLTS | MAXIMUM CLAMPING VOLTAGE (Note 3)<br>@ $I_p = 200A$<br>$V_C$<br>VOLTS | MAXIMUM LEAKAGE CURRENT<br>@ $V_{WM}$<br>$I_D$<br>$\mu A$ | TYPICAL CAPACITANCE<br>@0V, 1MHz<br>C<br>pF |
|----------------------|--|--|---|---|---|---|
| PLC01-6              | 6.0  | 8.0  | 15.0  | 16.0  | 25  | 50  |

**NOTES**

1. Electrical characteristics apply from pins 13-16 to 1-4 and 5-8 to 9-12 - see pin configuration.
2.  $V_C$  tested at 10/1000 $\mu s$  impulse waveform.
3. 10/160 $\mu s$  impulse waveform per FCC Part 68.

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



TYPICAL DEVICE CHARACTERISTICS

FIGURE 2  
PULSE WAVEFORM

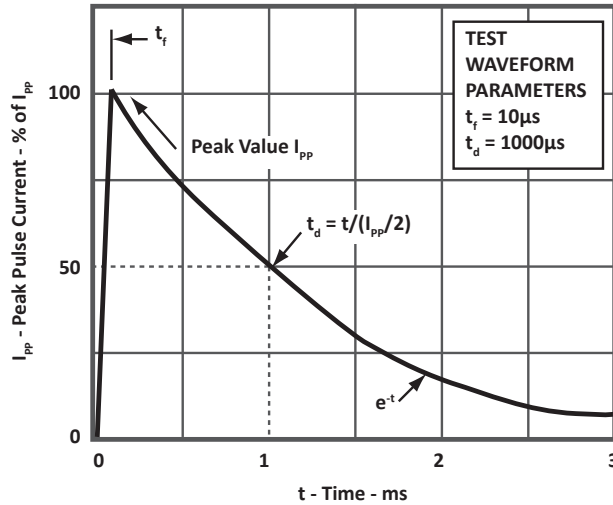


FIGURE 3  
PULSE WAVEFORM

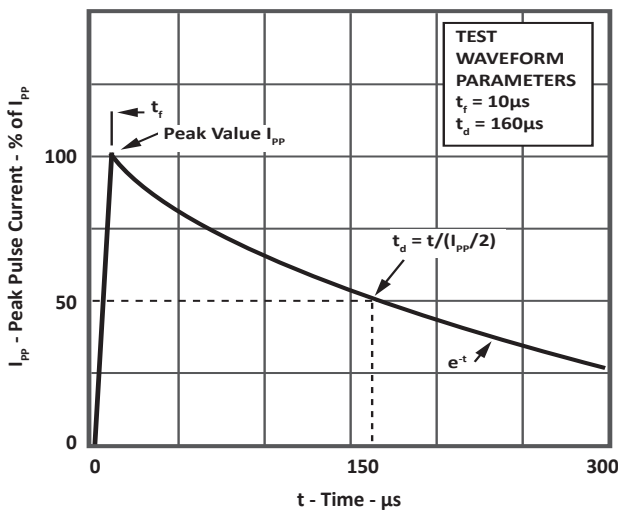
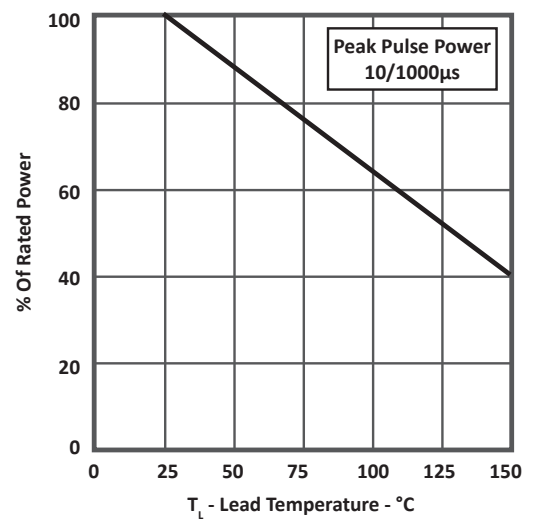
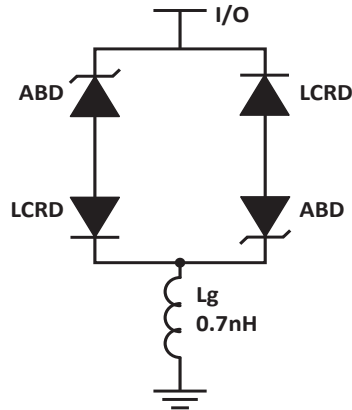


FIGURE 4  
POWER DERATING CURVE



## SPICE MODEL

FIGURE 1  
SPICE MODEL



LCABD - Low Capacitance Avalanche Breakdown Diode (TVS)  
 LCRD: Low Capacitance Rectifier Diode  
 Lg - Lead Inductance

| TABLE 1 - SPICE PARAMETERS |         |          |       |
|----------------------------|---------|----------|-------|
| PARAMETER                  | UNIT    | ABD(TVS) | LCRD  |
| BV                         | V       | 8.0      | 200   |
| IBV                        | $\mu$ A | 1        | 0.01  |
| $C_{jo}$                   | pF      | 9000     | 50    |
| $I_s$                      | A       | 1E-13    | 1E-15 |
| Vj                         | V       | 0.6      | 0.6   |
| M                          | -       | 0.33     | 0.33  |
| N                          | -       | 1        | 1     |
| $R_s$                      | Ohms    | 0.005    | 0.31  |
| TT                         | s       | 1E-8     | 5E-9  |
| EG                         | eV      | 1.11     | 1.11  |

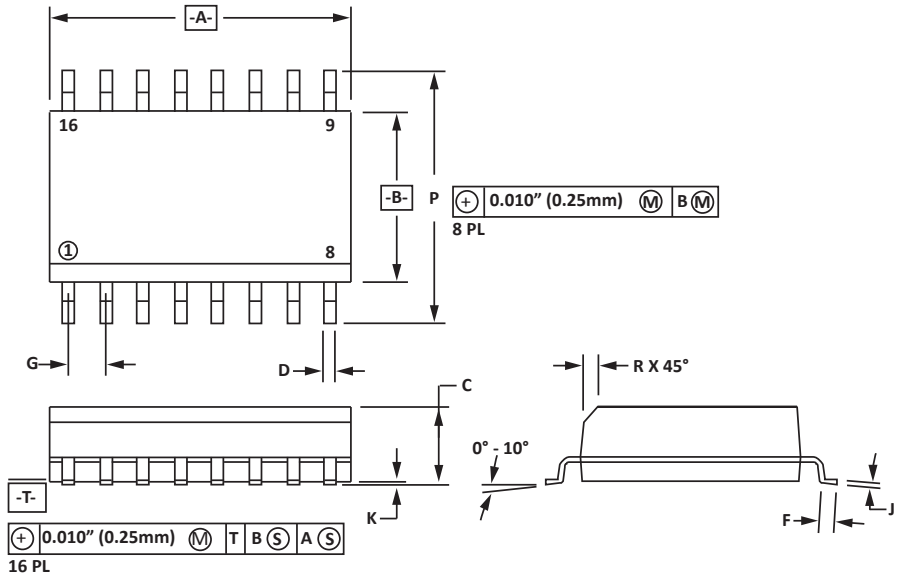
## SO-16WB PACKAGE INFORMATION

## OUTLINE DIMENSIONS

| DIM | MILLIMETERS |       | INCHES   |       |
|-----|-------------|-------|----------|-------|
|     | MIN         | MAX   | MIN      | MAX   |
| A   | 10.15       | 10.45 | 0.400    | 0.411 |
| B   | 7.40        | 7.60  | 0.292    | 0.299 |
| C   | 2.23        | 2.65  | 0.093    | 0.104 |
| D   | 0.35        | 0.49  | 0.014    | 0.019 |
| F   | 0.50        | 0.90  | 0.020    | 0.035 |
| G   | 1.27 BSC    |       | 0.05 BSC |       |
| J   | 0.25        | 0.32  | 0.010    | 0.012 |
| K   | 0.10        | 0.25  | 0.004    | 0.008 |
| P   | 10.05       | 10.55 | 0.395    | 0.415 |
| R   | 0.25        | 0.50  | 0.010    | 0.019 |

## NOTES

- T = Seating plane and datum surface.
- Dimensions "A" and "B" are datum.
- Dimensions "A" and "B" do not include mold protrusion.
- Maximum mold protrusion is 0.015" (0.380mm) per side.
- Dimensioning and tolerances per ANSI Y14.5M, 1982.
- Dimensions are exclusive of mold flash and metal burrs.

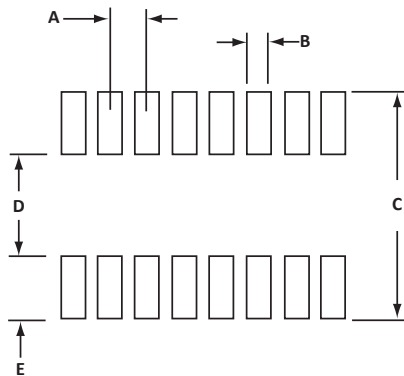


## PAD LAYOUT DIMENSIONS

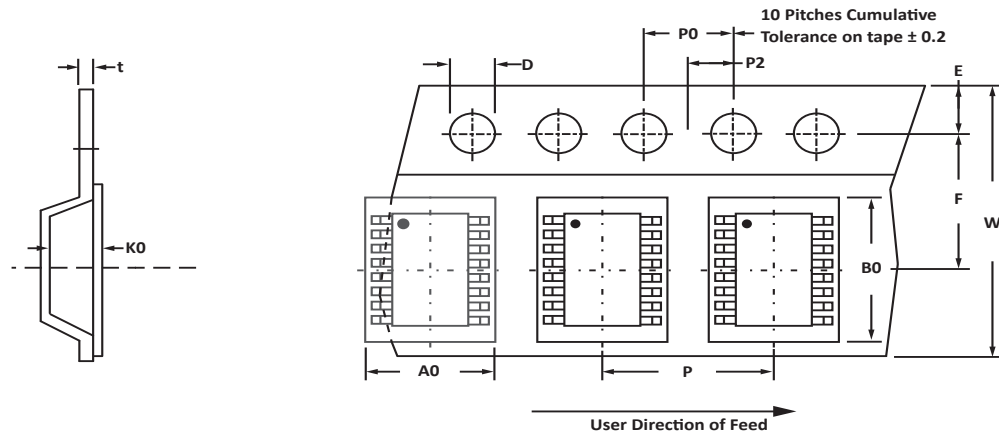
| DIM | MILLIMETERS |      | INCHES |       |
|-----|-------------|------|--------|-------|
|     | MIN         | MAX  | MIN    | MAX   |
| A   | 1.14        | 1.40 | 0.045  | 0.055 |
| B   | 0.64        | 0.89 | 0.025  | 0.035 |
| C   | 10.67       | -    | 0.420  | -     |
| D   | 8.13        | 8.38 | 0.320  | 0.330 |
| E   | 1.02        | 1.27 | 0.040  | 0.050 |

## NOTES

- Controlling dimension: inches.



## TAPE AND REEL



## SPECIFICATIONS

| REEL DIA.   | TAPE WIDTH | A0           | B0           | K0          | D           | E           | F           | W            | P0          | P2          | P           | tmax |
|-------------|------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|------|
| 330mm (13") | 16mm       | 10.80 ± 0.10 | 10.70 ± 0.10 | 3.30 ± 0.10 | 1.50 ± 0.10 | 1.75 ± 0.10 | 3.50 ± 0.05 | 16.00 ± 0.30 | 4.00 ± 0.12 | 2.00 ± 0.10 | 8.00 ± 0.10 | 0.25 |

## NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix - T13 = 13" Reel - 1,000 pieces per 16mm tape.
- Bulk product shipped in tubes of 37 pieces per tube.
- Marking on Part - part number, date code, logo and pin one defined by dot on top of package.

## ORDERING INFORMATION

| BASE PART NUMBER | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
|------------------|-----------------|-------------|----------|-----------|----------|
| PLC01-6          | -LF             | -T13        | 1,000    | 13"       | 37       |

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

## COMPANY INFORMATION

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### 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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