

ULTRA LOW CAPACITANCE TVS ARRAY

APPLICATIONS

- ✓ Ethernet - 10/100 Base T
- ✓ Cellular Phones
- ✓ FireWire
- ✓ Audio/Video Inputs
- ✓ Portable Electronics

IEC COMPATIBILITY (EN61000-4)

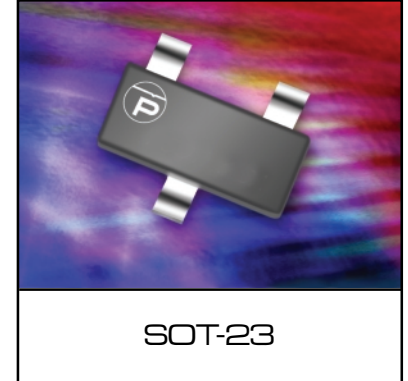
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 12A, 8/20 μ s - Level 1(Line-Ground) & Level 2(Line-Line)

FEATURES

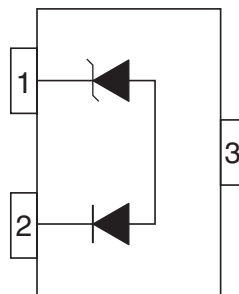
- ✓ ESD Protection > 40 kilovolts
- ✓ 500 Watts Peak Pulse Power per Line ($t_p = 8/20\mu$ s)
- ✓ Low Clamping Voltage
- ✓ Available in Multiple Voltage Types Ranging from 3V to 36V
- ✓ **ULTRA LOW CAPACITANCE: 5pF**

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SOT-23
- ✓ Weight 14 milligrams (Approximate)
- ✓ Flammability rating UL 94V-0
- ✓ 8mm Tape and Reel Per EIA Standard 481
- ✓ Device Marking: Marking Code



PIN CONFIGURATION



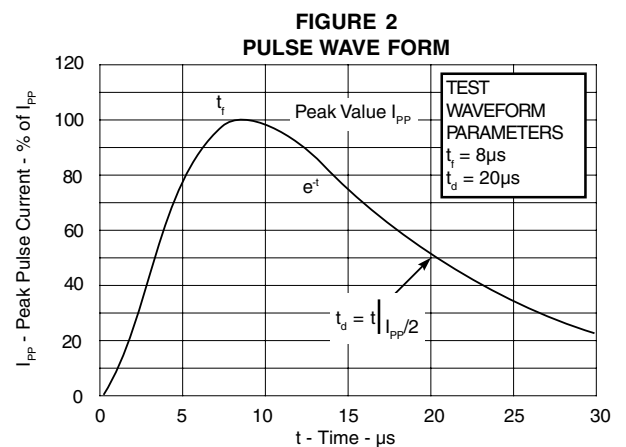
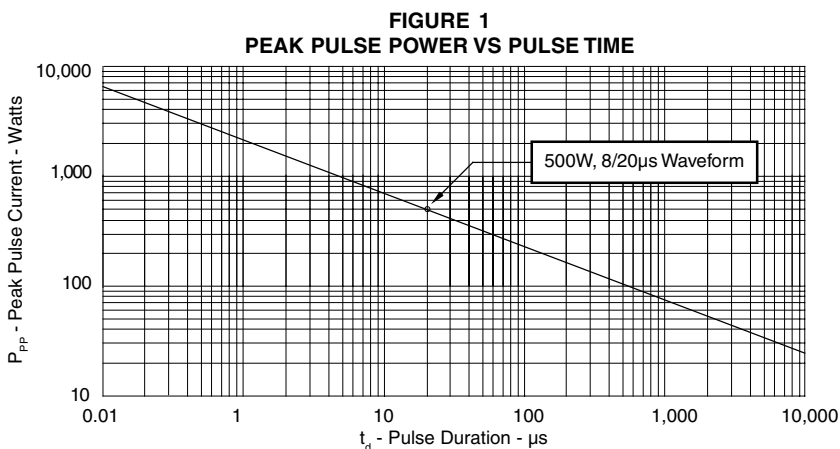
DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power - $t_p = 8/20\mu s$ (See Figure 1)	P_{PP}	500	W
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

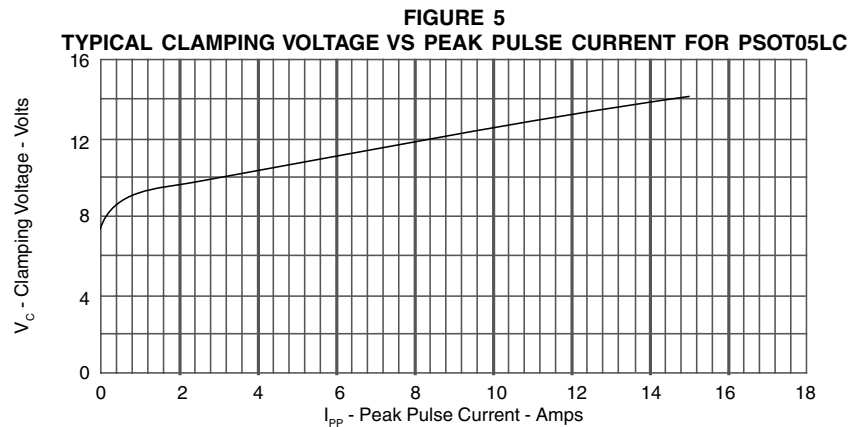
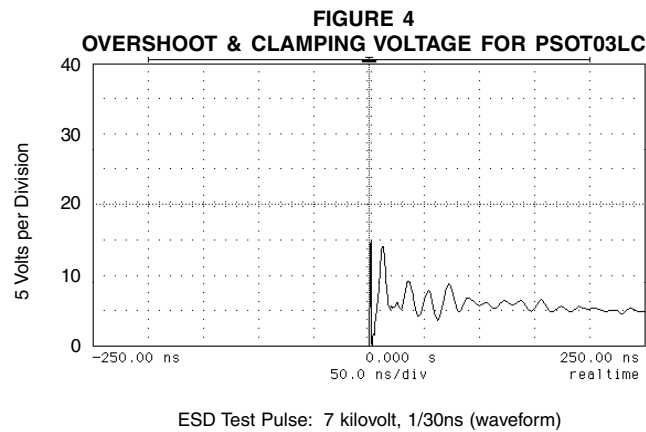
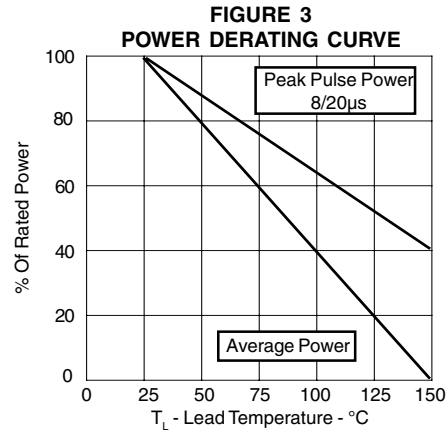
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Note 1)	DEVICE MARKING	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE (See Note 2) @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_P = 1A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ 8/20 μs V_C @ I_{PP}	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	TYPICAL CAPACITANCE @ 0V, 1 MHz C pF
PSOT03LC	03L	3.3	4.0	7.0	10.9V @ 43.0A	125	5
PSOT05LC	05L	5.0	6.0	9.8	13.5V @ 42.0A	20	5
PSOT08LC	08L	8.0	8.5	13.4	16.9V @ 34.0A	10	5
PSOT12LC	12L	12.0	13.3	19.0	25.9V @ 21.0A	1	5
PSOT15LC	15L	15.0	16.7	24.0	30.0V @ 17.0A	1	5
PSOT24LC	24L	24.0	26.7	43.0	49.0V @ 12.0A	1	5
PSOT36LC	36L	36.0	40.0	51.0	76.8V @ 9.0A	1	5

Note 1: Positive potential is applied from pin 1 to 2; pin 2 is ground.

Note 2: Do not test or surge from pin 2 to 1. PIV typically greater than 100V for the rectifier diode.



GRAPHS



APPLICATION NOTE

The PSOTxxLC Series are low capacitance TVS arrays designed to protect I/O or data lines from the damaging effects of ESD or EFT. This product series provides unidirectional & bidirectional protection, with a surge capability of 500 Watts P_{PP} per line for an 8/20 μ s waveform and ESD protection > 40 kilovolts.

BIDIRECTIONAL COMMON-MODE CONFIGURATION (Figure 1)

Two PSOTxxLC devices, when used in parallel, provide protection in a common-mode configuration as depicted in Figure 1.

Circuit connectivity is as follows:

- ✓ I/O Line is connected to Device 1, Pin 1.
- ✓ I/O Line is connect to Device 2, Pin 2.
- ✓ Device 1, Pin 2 is connected to ground.
- ✓ Device 2, Pin 1 is connected to ground.
- ✓ Device 1 & 2, Pin 3 is not connected.

BIDIRECTIONAL DIFFERENTIAL-MODE CONFIGURATION (Figure 1)

In addition, two PSOTxxLC devices, when used in parallel, provide protection in a differential-mode configuration for Ethernet applications as depicted in Figure 2.

Circuit connectivity is as follows:

- ✓ I/O Line 1 is connected to Device 1, Pin 1.
- ✓ I/O Line 1 is connect to Device 2, Pin 2.
- ✓ I/O Line 2 is connected to Device 1, Pin 1.
- ✓ I/O Line 2 is connect to Device 2, Pin 2.
- ✓ Device 1 & 2, Pin 3 is not connected.

CIRCUIT BOARD LAYOUT RECOMMENDATIONS

Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following guidelines are recommended:

- ✓ The protection device should be placed near the input terminals or connectors, the device will divert the transient current immediately before it can be coupled into the nearby traces.
- ✓ The path length between the TVS device and the protected line should be minimized.
- ✓ All conductive loops including power and ground loops should be minimized.
- ✓ The transient current return path to ground should be kept as short as possible to reduce parasitic inductance.
- ✓ Ground planes should be used whenever possible. For multilayer PCBs, use ground vias.

Figure 1 - Common-Mode I/O Port Protection

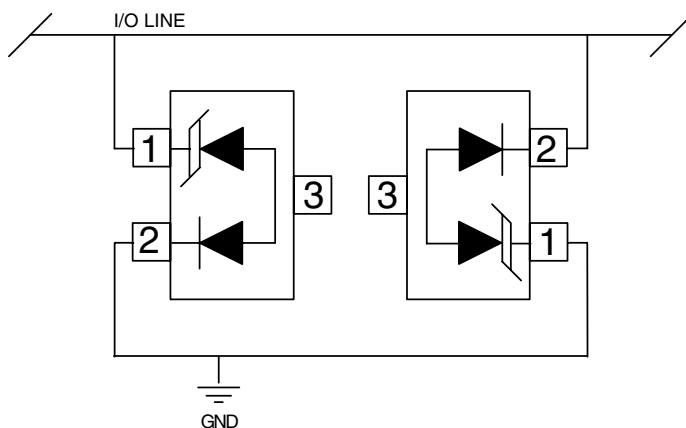
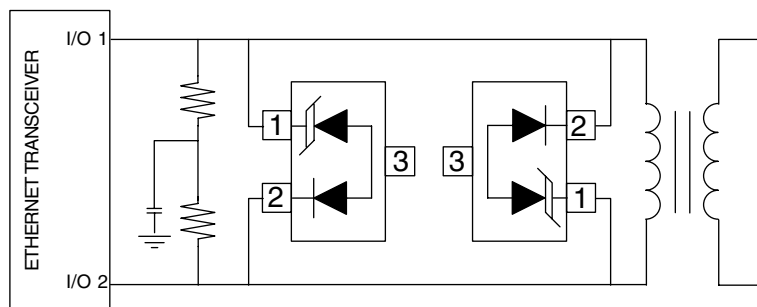

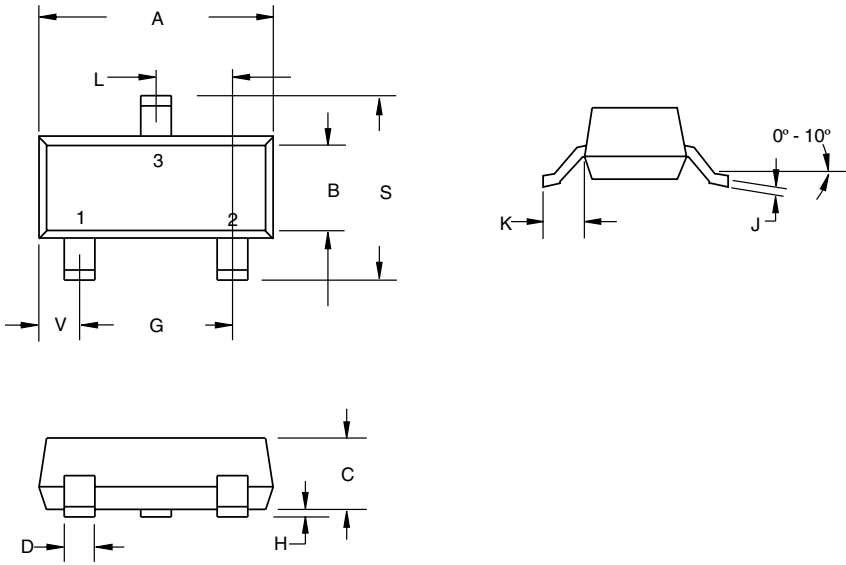
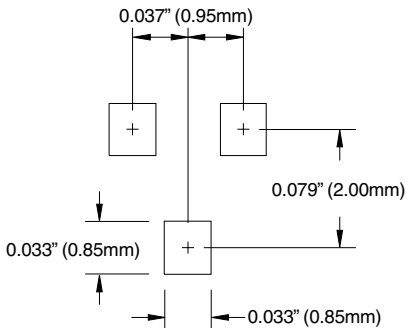


Figure 2 - Differential-Mode Ethernet Protection



PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE	SOT-23				
					
	PACKAGE DIMENSIONS				
	DIM	MILLIMETERS		INCHES	
		MIN	MAX	MIN	MAX
	A	2.80	3.04	0.1102	0.1197
	B	1.20	1.40	0.0472	0.0551
	C	0.89	1.11	0.0350	0.0440
	D	0.37	0.50	0.0150	0.0200
	G	1.78	2.04	0.0701	0.0807
	H	0.013	0.100	0.0005	0.0040
	J	0.085	0.177	0.0034	0.0070
	K	0.45	0.60	0.0180	0.0236
	L	0.89	1.02	0.0350	0.0401
	S	2.10	2.50	0.0830	0.0984
	V	0.45	0.60	0.0177	0.0236

MOUNTING PAD	
	NOTES <ol style="list-style-type: none"> 1. Dimensioning and tolerances per ANSI Y14.5M, 1985. 2. Controlling Dimension: Inches 3. Pin 3 is the cathode (Unidirectional Only). 4. Dimensions are exclusive of mold flash and metal burrs.
TAPE & REEL ORDERING NOMENCLATURE <ol style="list-style-type: none"> 1. Surface mount product is taped and reeled in accordance with EIA-481. 2. Suffix -T7 = 7 Inch Reel - 3,000 pieces per 8mm tape, i.e., PSOT05LC-T7. 3. Suffix -T13 = 13 Inch Reel - 10,000 pieces per 8mm tape, i.e., PSOT05LC-T13. 	
Outline & Dimensions: Rev 1 - 11/01, 06012	

COPYRIGHT © ProTek Devices 2003

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice (except JEDEC).

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice, and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance, ProTek assumes no responsibility with respect to the selection or specifications of such products.

ProTek Devices

2929 South Fair Lane, Tempe, AZ 85282

Tel: 602-431-8101 Fax: 602-431-2288

E-Mail: sales@protekdevices.com

Web Site: www.protekdevices.com