

PSOTO3LC thru PSOT36LC

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, 8/20µs Level 1(Line-Ground) & Level 2(Line-Line)

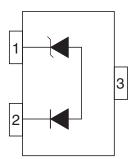
FEATURES

- ✓ ESD Protection > 40 kilovolts
- ✓ 500 Watts Peak Pulse Power per Line (tp = 8/20µs)
- ✓ 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

PINCONFIGURATION





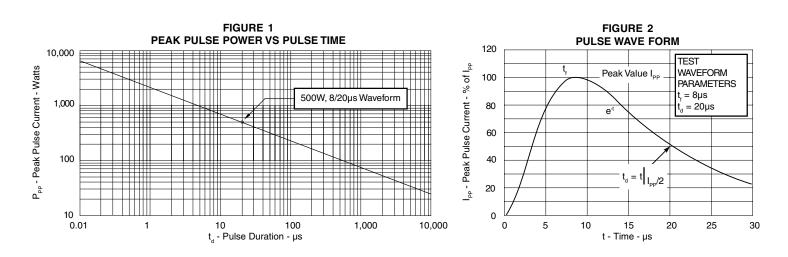
DEVICE CHARACTERISTICS

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	TJ	-55°C to 150°C	°C				
Storage Temperature	T _{STG}	-55°C to 150°C	C°				

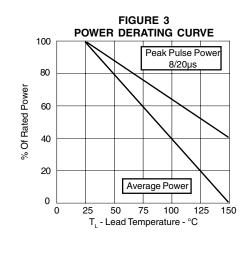
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified								
PART NUMBER (Note 1)	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE (See Note 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE	
		V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

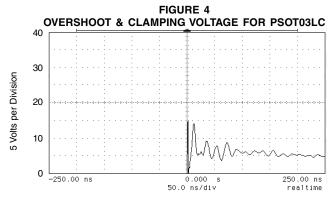
Note 1: Positive potential is applied from pin 1 to 2; pin 2 is ground.

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

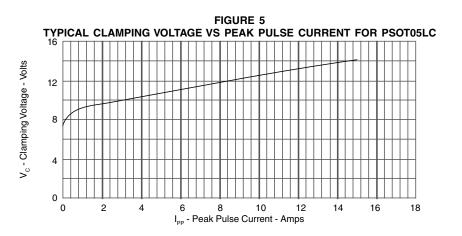


GRAPHS





ESD Test Pulse: 7 kilovolt, 1/30ns (waveform)



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 8/20µs waveform and ESD protection > 40 kilovolts.

BIDIRECTIONAL COMMON-MODE CONFIGRUATION (Figure 1)

Two PSOTxxLC devices, when used in paralell, 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 CONFIGRUATION (Figure 1)

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

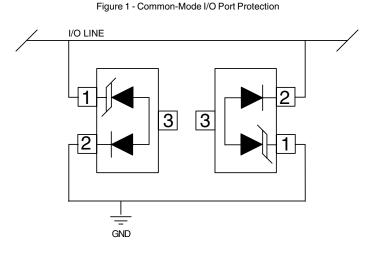
Circuit connectivity is as follows:

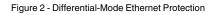
- ✓ I/O Line 1 is connected to Device 1, Pin 1.
- ✓ I/O Line 1 is connect to Device 2, Pin 2.
- ✓ I/O Line 2 is connected to Device 1, Pin 1.
- ✓ I/O Line 2 is connect to Device 2, Pin 2.
- ✓ Device 1 & 2, Pin 3 is not connected.

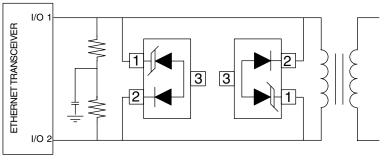
CIRCUIT BOARD LAYOUT RECOMMENDATIONS

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.







PSOTO3LC thru PSOT36LC

PACKAGE OUTLINE & DIMENSIONS

PACKAGEOUTLINE	SOT-23						
A $ -$							
B S /	P	ACKAG	EDIME	INSION	JS		
		MILLIM	ETERS		CHES		
	DIM	MIN	MAX	MIN	MAX		
	А	2.80	3.04	0.1102	0.1197		
	В	1.20	1.40	0.0472	0.0551		
	С	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		
	Н	0.013	0.100	0.0005	0.0040		
	J	0.085	0.177	0.0034	0.0070		
	К	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		
MOUNTINGPAD	NOTES						
0.037" (0.95mm)	 Dimensioning and tolerances per ANSI Y14.5M, 1985. Controlling Dimension: Inches Pin 3 is the cathode (Unidirectional Only). Dimensions are exclusive of mold flash and metal burrs. 						
0.033" (0.85mm) + + + + + + + + + + + + + + + + + +		TAPE & REEL ORDERING NOMENCLATURE					
		 Surface mount product is taped and reeled in accordance with EIA-481. Suffix -T7 = 7 Inch Reel - 3,000 pieces per 8mm tape, i.e., <i>PSOT05LC-T7</i>. Suffix -T13 = 13 Inch Reel - 10,000 pieces per 8mm tape, i.e., <i>PSOT05LC-T13</i>. 					
─ ─ 0.033" (0.85mm)							
	Outli	ne & Dimen	sions: Rev	1 - 11/01,	06012		

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