

PSMS05 thru PSMS24C

STANDARD CAPACITANCE TVS ARRAY

APPLICATIONS

- ✓ Ethernet 10 Base T
- ✓ Cellular Phones
- ✓ Handheld Electronics
- ✔ FireWire & USB Interfaces

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-Gnd) & Level 2(Line-Line)

SOT-23-6

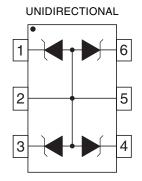
FEATURES

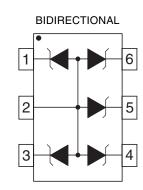
- ✓ 350 Watts Peak Pulse Power per Line (tp=8/20µs)
- ✓ Monolithic Design
- ✔ Available in Multiple Voltage Types Ranging From 5V to 24V
- ✔ Protect 4 Lines
- ✓ ESD Protection > 25 kilovolts
- ✓ Low Clamping Voltage
- ✓ Unidirectional & Bidirectional Configurations
- ✓ Low Leakage Current

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SOT-23-6 Package
- ✓ Weight 0.6 grams (Approximate)
- ✓ Flammability rating UL 94V-0
- ✓ 8mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Marking Code & Pin One Defined By DOT on Package

PIN CONFIGURATIONS





PSMS05 thru PSMS24C

DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified						
PARAMETER	SYMBOL	VALUE	UNITS			
Peak Pulse Power (t _p = 8/20μs) - See Figure 1	$P_{_{PP}}$	350	Watts			
Operating Temperature	T _J	-55°C to 150°C	℃			
Storage Temperature	$T_{\mathtt{STG}}$	-55°C to 150°C	℃			

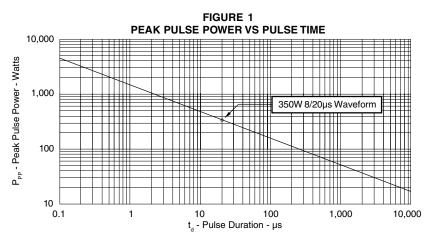
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (See Notes 1-3)	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE (See Note 4)
		V _{wM} VOLTS	@ 1mA V _(BR) VOLTS	@ I _P = 1A V _C VOLTS	@8/20μs V _C @ Ι _{ΡΡ}	@ V _{wм} Ι _□ μΑ	@0V, 1 MHz C _j pF
PSMS05 PSMS05C PSMS12 PSMS12C PSMS15 PSMS15C	PRH PRL PRI PRM PRJ PRN	5.0 5.0 12.0 12.0 15.0 15.0	6.0 6.0 13.3 13.3 16.7 16.7	9.8 9.8 19 19 24 24	21.0V @ 17.0A 21.0V @ 17.0A 29.2V @ 12.0A 29.2V @ 12.0A 34.6V @ 10.0A 34.6V @ 10.0A	20 20 1 1 1 1	150 150 80 80 50 50
PSMS24 PSMS24C	PRK PRO	24.0 24.0	26.7 26.7	40 40	58.3V @ 6.0A 58.3V @ 6.0A	1 1	40 40

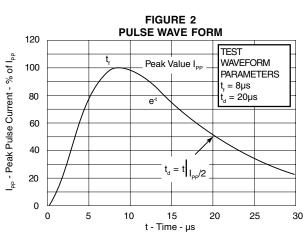
Note 1: Part numbers with an additional "C" suffix are bidirectional devices, i.e., PSMS05C.

Note 2: Unidirectional Only: Test between pin 1 to 2 or 5, 4 to 2 or 5, 6 to 2 or 5, 3 to 2 or 5.

Note 3: Bidirectional Only: Test between pin 5 to 1 or 3 or 4 or 6. Electrical characteristics apply in both directions.

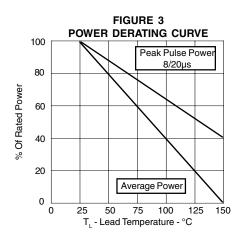
Note 4: Unidirectional Only: Capacitance measured between pins 1, 3, 4, 6, to 2.

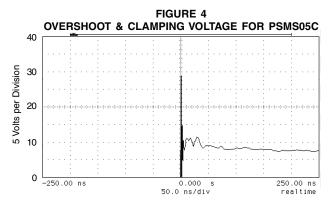




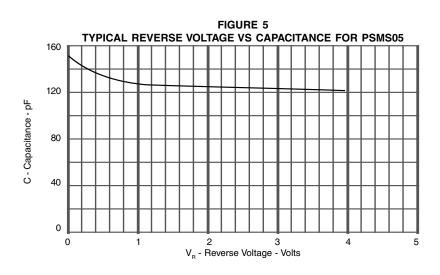
www.protekdevices.com

GRAPHS





ESD Test Pulse: 25 kilovolt, 1/30ns (waveform)



PSMS05 thru PSMS24C

APPLICATION NOTE

The PSMS Series are TVS arrays designed to protect I/O or data lines from the damaging effects of ESD or EFT. This product series provides both unidirectional and bidirectional protection, with a surge capability of 350 Watts P_{pp} per line for an 8/20µs waveform and ESD protection > 25 kilovolts.

UNIDIRECTIONAL COMMON-MODE CONFIGURATION (Figure 1)

The PSMS Series provides up to four (4) lines of protection in a common-mode configuration as depicted in Figure 1.

Circuit connectivity is as follows:

- ✓ Line 1 is connected to Pin 1.
- ✓ Line 2 is connected to Pin 3.
- ✓ Line 3 is connected to Pin 4.
- ✓ Line 4 is connected to Pin 6.
- Pin 5 is connected to ground.
- ✔ Pin 2 is not connected.

BIDIRECTIONAL COMMON-MODE CONFIGURATION (Figure 2)

The PSMSxxC Series provides up to four (4) lines of protection in a common-mode configuration as depicted in Figure 2.

Circuit connectivity is as follows:

- ✓ Line 1 is connected to Pin 1.
- ✓ Line 2 is connected to Pin 3.
- ✓ Line 3 is connected to Pin 4.
- ✓ Line 4 is connected to Pin 5.
- Pin 6 is connected to ground.
- ✔ Pin 2 is not connected.

LINE 2

LINE 3

I INF 4

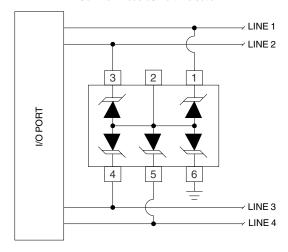
Figure 1 - Unidirectional Configuration Common-Mode I/O Port Protection

CIRCUIT BOARD LAYOUT RECOMMENDATIONS

Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following quidelines 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 2 - Bidirectional Configuration Common-Mode I/O Port Protection



www.protekdevices.com

PSMS05

PSMS240

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE G C

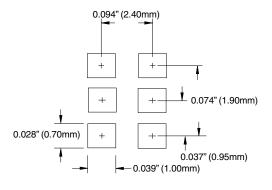
SOT-23-6



PACKAGE DIMENSIONS

	MILLIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	2.80	3.05	0.110	0.120	
В	1.50	1.75	0.059	0.070	
С	0.90	1.30	0.036	0.051	
D	0.35	0.50	0.014	0.020	
Ε	0.85	1.05	0.033	0.040	
F	1.70	2.10	0.067	0.083	
G	0.90	1.45	0.036	0.057	
J	0.090	0.20	0.0035	0.008	
K	2.60	3.00	0.102	0.118	
L	0.20 TYP	0.20 TYP	0.007 TYP	0.007 TYP	
М	0.35	0.55	0.014	0.022	

MOUNTINGPAD



NOTES

- 1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
- 2. Controlling Dimension: Inches
- 3. Dimensions are exclusive of mold flash and metal burrs.

TAPE & REEL ORDERING NOMENCLATURE

- 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., PSMS05-T7.
- 3. Suffix-T13 = 13 Inch Reel 10,000 pieces per 8mm tape, i.e., PSMS05-T13.

Outline & Dimensions: Rev 1 - 11/01, 06013

COPYRIGHT © ProTek Devices 2003SPECIFICATIONS: 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