

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

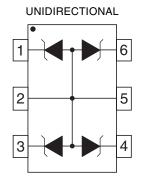
FEATURES

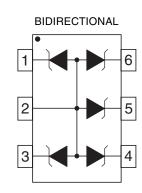
- ✓ 350 Watts Peak Pulse Power per Line (tp=8/20µs)
- ✓ Monolithic Design
- ✔ Available in Multiple Voltage Types Ranging From 5V to 24V
- ✔ Protect 4 Lines
- ✓ ESD Protection > 25 kilovolts
- ✓ Low Clamping Voltage
- ✓ Unidirectional & Bidirectional Configurations
- ✓ Low Leakage Current

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





DEVICE CHARACTERISTICS

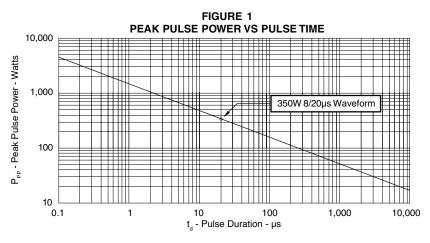
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified						
PARAMETER	SYMBOL	VALUE	UNITS			
Peak Pulse Power (t _p = 8/20μs) - See Figure 1	$P_{_{PP}}$	350	Watts			
Operating Temperature	T_{J}	-55°C to 150°C	°C			
Storage Temperature	T _{STG}	-55°C to 150°C	℃			

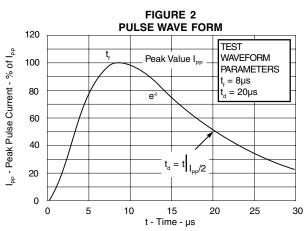
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (See Notes 1-3)	DEVICE MARKING	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE (See Note 4)
		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	PRH	5.0	6.0	9.8	21.0V @ 17.0A	20	150
PSMS05C	PRL	5.0	6.0	9.8	21.0V @ 17.0A	20	150
PSMS12	PRI	12.0	13.3	19	29.2V @ 12.0A	1	80
PSMS12C	PRM	12.0	13.3	19	29.2V @ 12.0A	1	80
PSMS15	PRJ	15.0	16.7	24	34.6V @ 10.0A	1	50
PSMS15C	PRN	15.0	16.7	24	34.6V @ 10.0A	1	50
PSMS24	PRK	24.0	26.7	40	58.3V @ 6.0A	1	40
PSMS24C	PRO	24.0	26.7	40	58.3V @ 6.0A	1	40

Note 1: Part numbers with an additional "C" suffix are bidirectional devices, i.e., PSMS05<u>C.</u> **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.

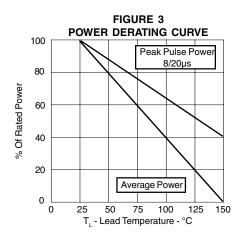
Note 4: Unidirectional Only: Capacitance measured between pins 1, 3, 4, 6, to 2.

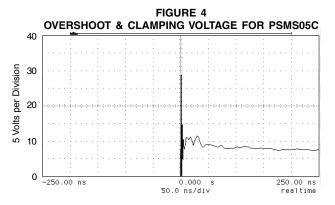




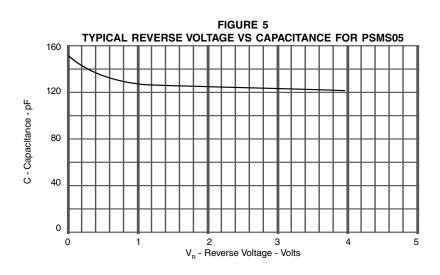
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GRAPHS





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.

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

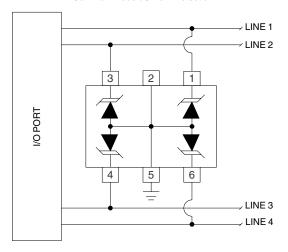
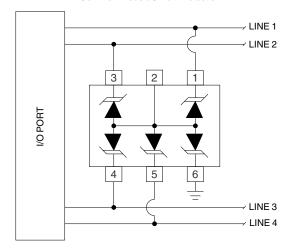


Figure 2 - Bidirectional Configuration Common-Mode I/O Port Protection



PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE G C

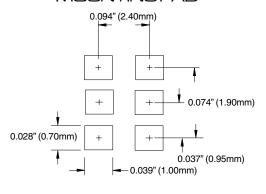
SOT-23-6



PACKAGE DIMENSIONS

	MILLIM	ETERS	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	
Е	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



- 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

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