

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, 8/20 μ s - Level 1(Line-Gnd) & Level 2(Line-Line)

FEATURES

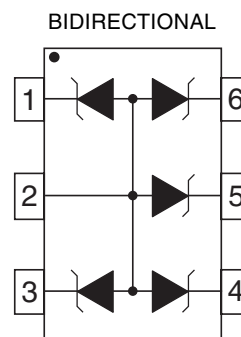
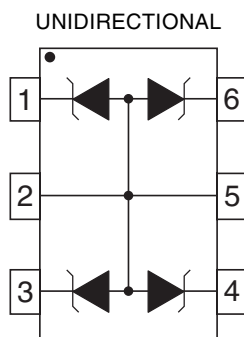
- ✓ 350 Watts Peak Pulse Power per Line (tp=8/20 μ s)
- ✓ Monolithic Design
- ✓ Available in Multiple Voltage Types Ranging From 5V to 24V
- ✓ Protect 4 Lines
- ✓ ESD Protection > 25 kilovolts
- ✓ Low Clamping Voltage
- ✓ Unidirectional & Bidirectional Configurations
- ✓ Low Leakage Current

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

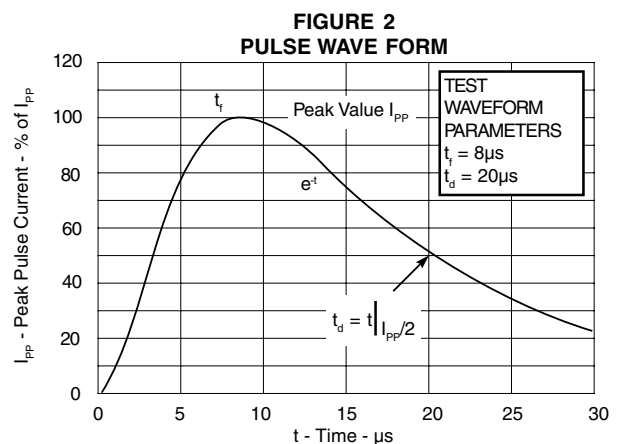
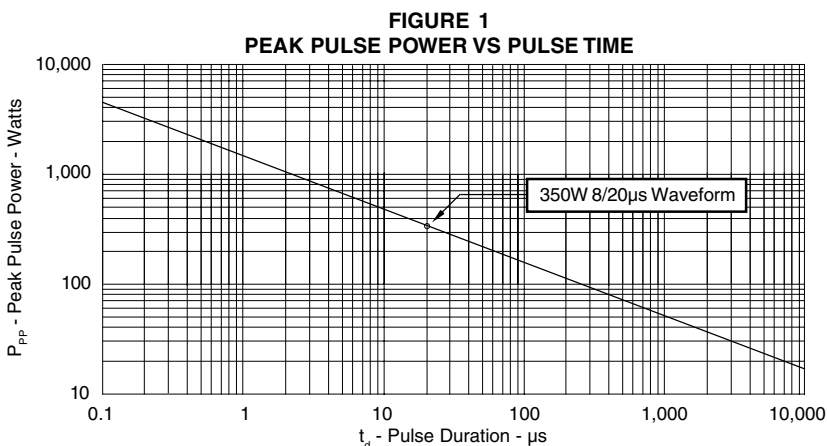


DEVICE CHARACTERISTICS

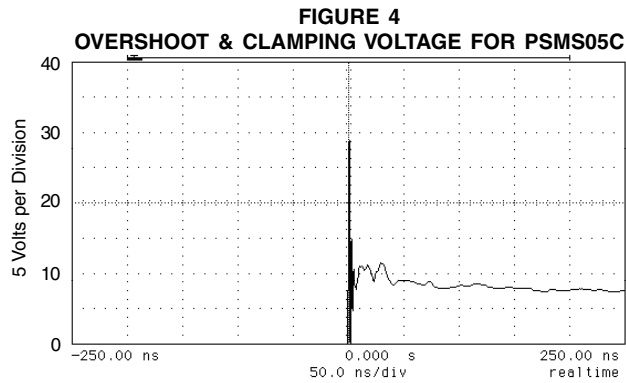
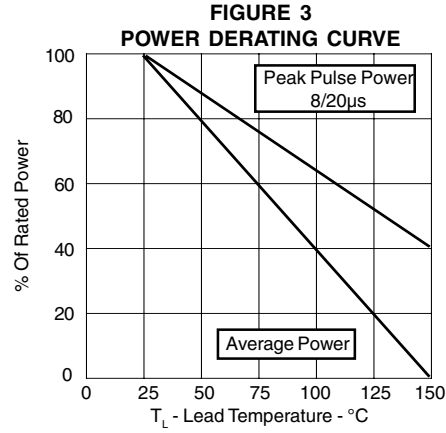
| MAXIMUM RATINGS @ 25°C Unless Otherwise Specified | | | |
|---|-----------|----------------|-------|
| PARAMETER | SYMBOL | VALUE | UNITS |
| Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1 | P_{PP} | 350 | Watts |
| Operating Temperature | T_J | -55°C to 150°C | °C |
| Storage Temperature | T_{STG} | -55°C to 150°C | °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) |
| | | | | | | | @ 0V, 1 MHz |
| | | V_{WM} VOLTS | @ 1mA $V_{(BR)}$ VOLTS | @ $I_p = 1A$ V_C VOLTS | @ 8/20 μs $V_C @ I_{PP}$ | @ V_{WM} I_D μA | 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 |

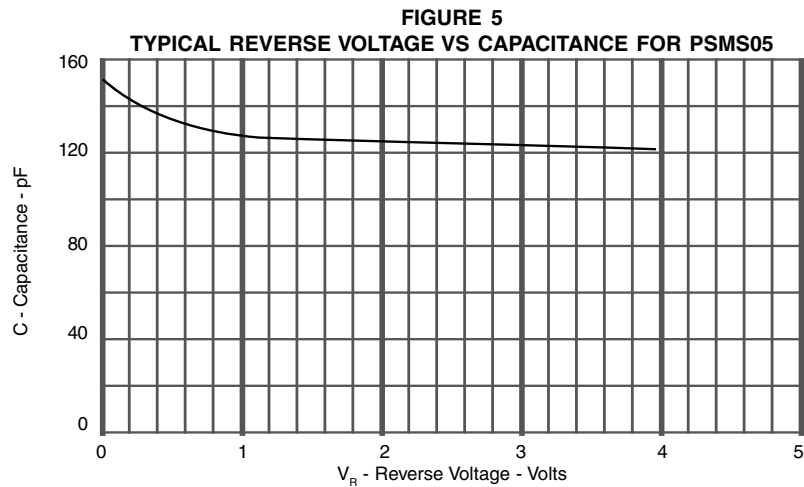
- Note 1:** Part numbers with an additional "C" suffix are bidirectional devices, i.e., PSMS05C.
Note 2: *Unidirectional Only:* Test between pin 1 to 2 or 5, 4 to 2 or 5, 6 to 2 or 5, 3 to 2 or 5.
Note 3: *Bidirectional Only:* Test between pin 5 to 1 or 3 or 4 or 6. Electrical characteristics apply in both directions.
Note 4: *Unidirectional Only:* Capacitance measured between pins 1, 3, 4, 6, to 2.



GRAPHS



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



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 8/20 μ s 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 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 - Unidirectional Configuration
Common-Mode I/O Port Protection

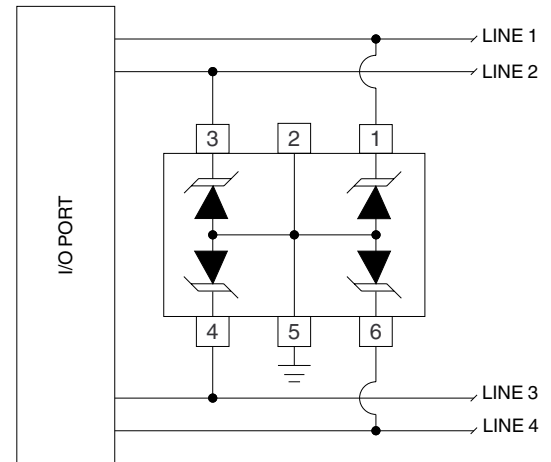
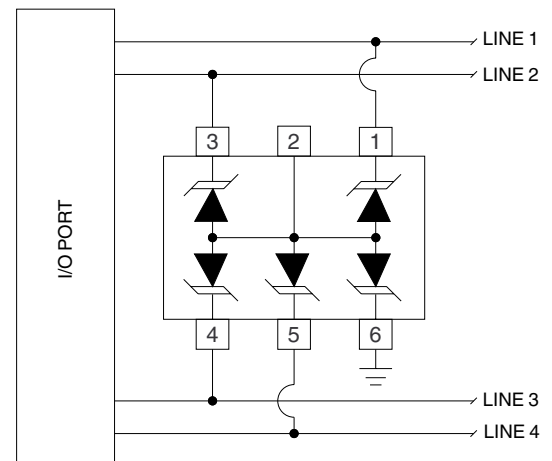
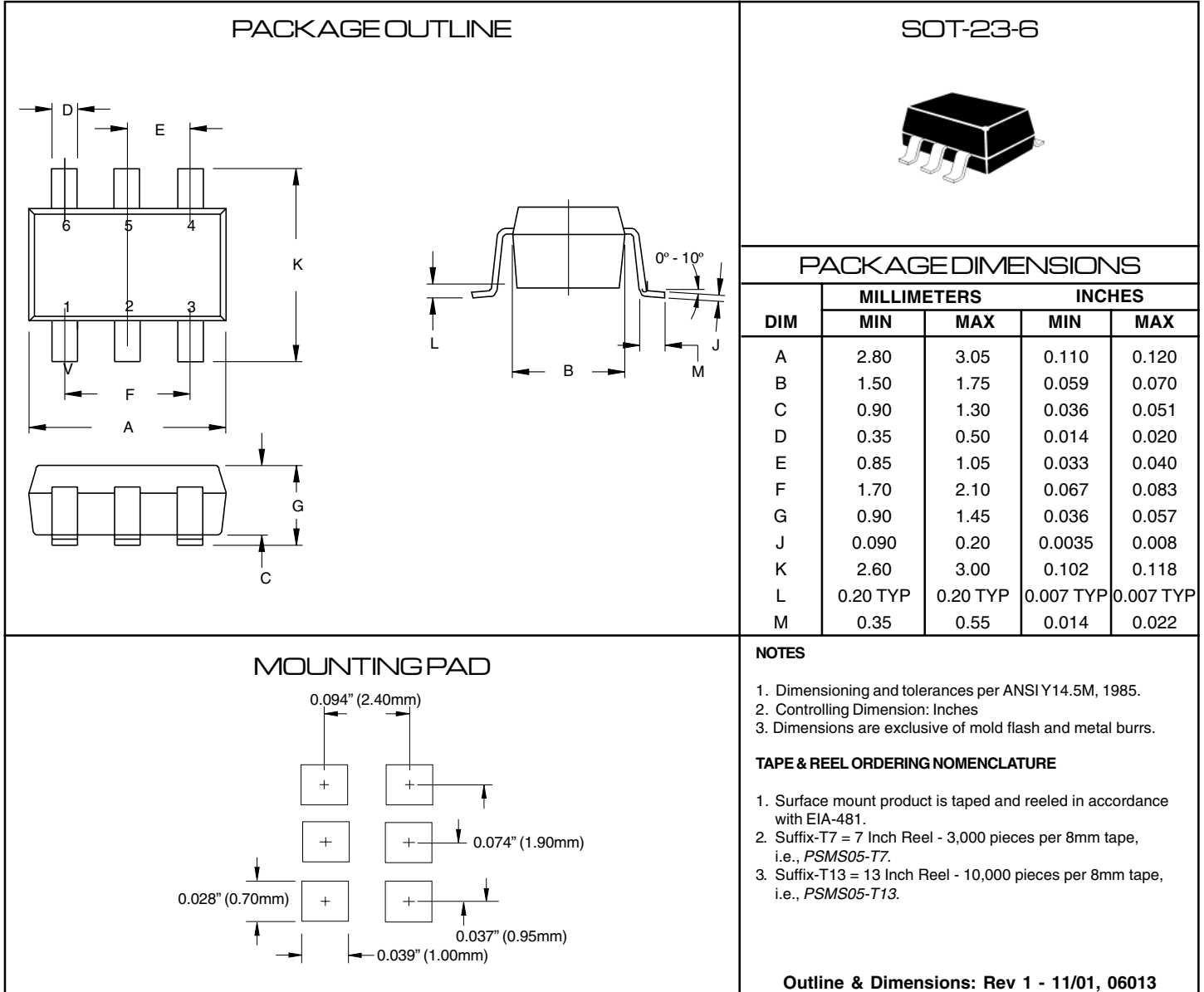


Figure 2 - Bidirectional Configuration
Common-Mode I/O Port Protection



PACKAGE OUTLINE & DIMENSIONS



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