

## STANDARD TVS ARRAY

### APPLICATIONS

- ✓ Computer Notebooks
- ✓ Communication Systems & Cellular Phones
- ✓ Printers
- ✓ Personal Digital Assistant (PDA)
- ✓ Video Equipment

### IEC COMPATIBILITY (EN61000-4)

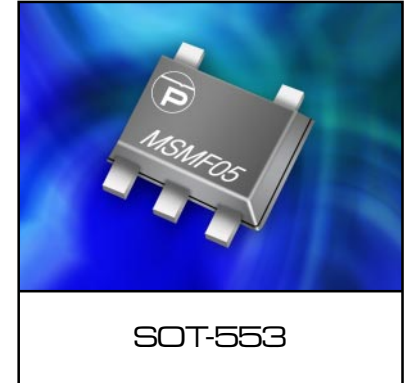
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

### FEATURES

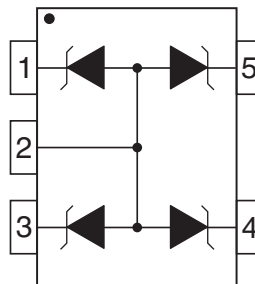
- ✓ 100 Watts Peak Pulse Power per Line ( $t_p=8/20\mu s$ )
- ✓ Monolithic Structure
- ✓ Available in 4 Voltage Types: 5V to 24V
- ✓ Low Clamping Voltage
- ✓ ESD Protection > 40 kilovolts
- ✓ Low Leakage Current
- ✓ Protects Three (3) Bidirectional Lines and Four (4) Unidirectional Lines
- ✓ RoHS Compliant in Lead-Free Versions

### MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SOT-553 Package
- ✓ Weight 3 milligrams (Approximate)
- ✓ Available in Lead-Free Nickel-Paladium-Gold Plating
- ✓ Solder Reflow Temperature:  
Nickel-Paladium-Gold (Ni/Pd/Au) Sn/Ag/Cu: 260-270°C
- ✓ Flammability Rating UL 94V-0
- ✓ 8mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Marking Code & Pin One Defined By Dot on Top of Package



### PIN CONFIGURATION

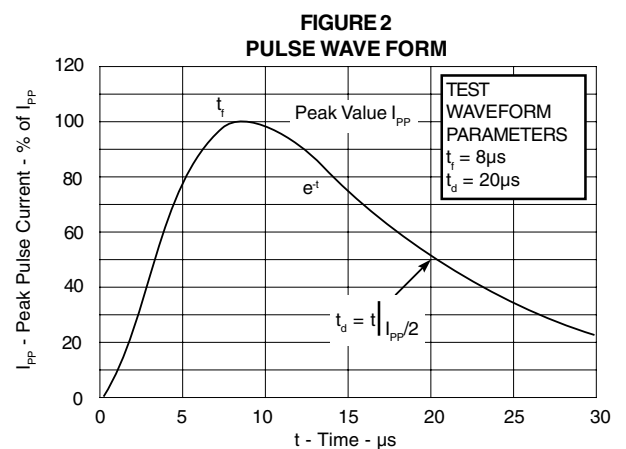
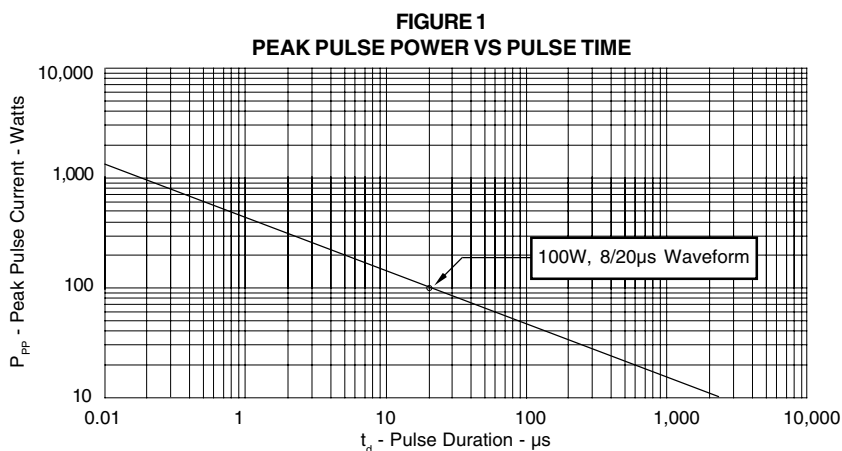


## DEVICE CHARACTERISTICS

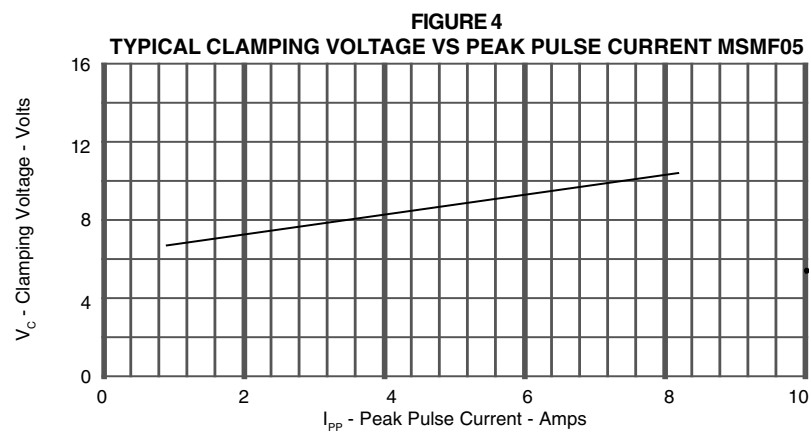
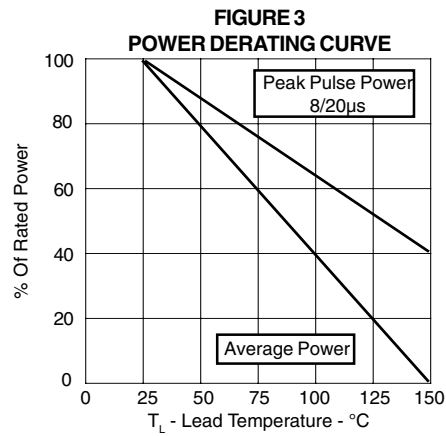
| MAXIMUM RATINGS @ 25°C Unless Otherwise Specified     |           |                |       |
|-------------------------------------------------------|-----------|----------------|-------|
| PARAMETER                                             | SYMBOL    | VALUE          | UNITS |
| Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1 | $P_{PP}$  | 100            | Watts |
| Operating Temperature                                 | $T_J$     | -55°C to 150°C | °C    |
| Storage Temperature                                   | $T_{STG}$ | -55°C to 150°C | °C    |
| Maximum Forward Voltage @ 10mA                        | $V_F$     | 1.0            | V     |

| ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified |                |                         |                              |                                       |                                |                                  |
|-----------------------------------------------------------------------|----------------|-------------------------|------------------------------|---------------------------------------|--------------------------------|----------------------------------|
| PART NUMBER                                                           | DEVICE MARKING | RATED STAND-OFF VOLTAGE | MINIMUM BREAKDOWN VOLTAGE    | MAXIMUM CLAMPING VOLTAGE (See Fig. 2) | MAXIMUM LEAKAGE CURRENT        | TYPICAL CAPACITANCE (See Note 1) |
|                                                                       |                | $V_{WM}$<br>VOLTS       | @ 1mA<br>$V_{(BR)}$<br>VOLTS | @ 8/20 $\mu s$<br>$V_C @ I_{PP}$      | @ $V_{WM}$<br>$I_D$<br>$\mu A$ | 0V @ 1 MHz<br>C<br>pF            |
| MSMF05                                                                | A              | 5.0                     | 6.0                          | 12.0V @ 9.0A                          | 1                              | 40                               |
| MSMF12                                                                | C              | 12.0                    | 13.3                         | 23.8V @ 4.2A                          | 1                              | 20                               |
| MSMF15                                                                | E              | 15.0                    | 16.7                         | 33.3V @ 3.0A                          | 1                              | 15                               |
| MSMF24                                                                | G              | 24.0                    | 26.7                         | 55.5V @ 1.8A                          | 1                              | 10                               |

**Note 1:** Pins 1, 3, 4, 5 or 6 to pin 2.



## GRAPHS



## PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

Top view of the SOT-553 package. Dimensions A and B define the overall width and height. Pins 1, 2, 3, 4, and 5 are labeled. Pin 1 is the cathode. Dimension G is the distance from the center of pin 1 to the center of pin 2. Dimension D is the distance between pins 2 and 3. Dimension C is the distance from the center of pin 1 to the center of pin 4.

Side view of the SOT-553 package. Dimension K is the height of the package. Dimension J is the width of the package. Dimension S is the length of the package. Dimension C is the distance from the center of pin 1 to the center of pin 4.

SOT-553

3D perspective view of the SOT-553 package, showing its surface-mount design with three leads.

PACKAGE DIMENSIONS

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 1.50        | 1.70 | 0.059     | 0.067 |
| B   | 1.10        | 1.30 | 0.043     | 0.051 |
| C   | 0.50        | 0.60 | 0.020     | 0.024 |
| D   | 0.17        | 0.27 | 0.007     | 0.011 |
| G   | 0.50 BSC    | -    | 0.020 BSC | -     |
| J   | 0.08        | 0.16 | 0.003     | 0.007 |
| K   | 0.10        | 0.30 | 0.004     | 0.012 |
| S   | 1.50        | 1.70 | 0.059     | 0.067 |

MOUNTING PAD

| TYPICAL |             |        |
|---------|-------------|--------|
| DIM     | Millimeters | Inches |
| 1       | 0.30        | 0.012  |
| 2       | 1.02        | 0.040  |
| 3       | 0.51        | 0.020  |
| 4       | 1.40        | 0.055  |
| 5       | 0.51        | 0.020  |

Diagram of the mounting pad layout. Dimension 1 is the pad width. Dimension 2 is the pad length. Dimension 3 is the pad offset. Dimension 4 is the pad spacing. Dimension 5 is the pad thickness.

NOTES

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/BULK 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., *MSMF05-T7*.
3. Suffix -T13 = 13 Inch Reel - 10,000 pieces per 8mm tape, i.e., *MSMF05-T13*.
4. Suffix -P = Lead-Free, Nickel-Palladium-Gold Plating, i.e., *MSMF05-P-T7*.

Outline & Dimensions: Rev 1 - 9/05, 06050

Tape & Reel Specifications (Dimensions in millimeters)

| Reel Dia.  | Tape Width | A0          | B0          | K0          | D           | E           | F           | W           | P0          | P2          | P           | tmax |
|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| 178mm (7") | 8mm        | 1.78 ± 0.05 | 1.78 ± 0.05 | 0.69 ± 0.05 | 1.50 ± 0.10 | 1.75 ± 0.10 | 3.50 ± 0.05 | 8.00 ± 0.30 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | 0.25 |

