

## STANDARD CAPACITANCE TVS ARRAY

### APPLICATIONS

- ✓ Cellular Phones
- ✓ MP3 Players
- ✓ Personal Digital Assistant (PDA)
- ✓ Notebooks
- ✓ Digital Cameras

### IEC COMPATIBILITY (EN61000-4)

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

### FEATURES

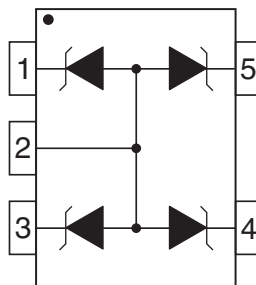
- ✓ 100 Watts Peak Pulse Power per Line (tp=8/20µs)
- ✓ Available in Multiple Voltages
- ✓ Up to Four (4) Lines of Protection
- ✓ ESD Protection > 25 kilovolts
- ✓ Low Clamping Voltage
- ✓ RoHS Compliant in Lead-Free Versions

### MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SC-70-5L Package
- ✓ Available in Tin-Lead or Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:
  - Tin-Lead - Sn/Pb, 85/15: 240-245°C
  - Pure-Tin - Sn, 100: 260-270°C
- ✓ Weight 7 milligrams (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

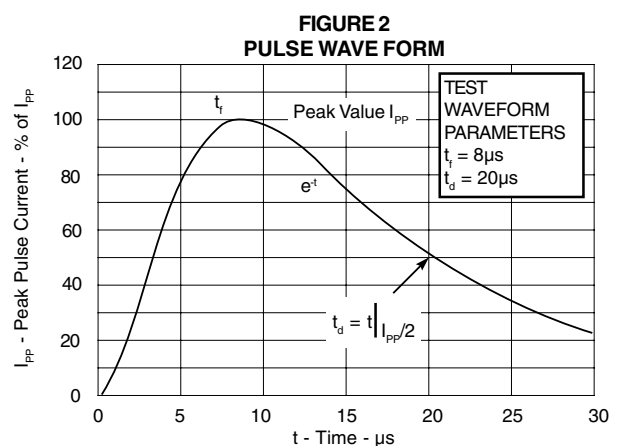
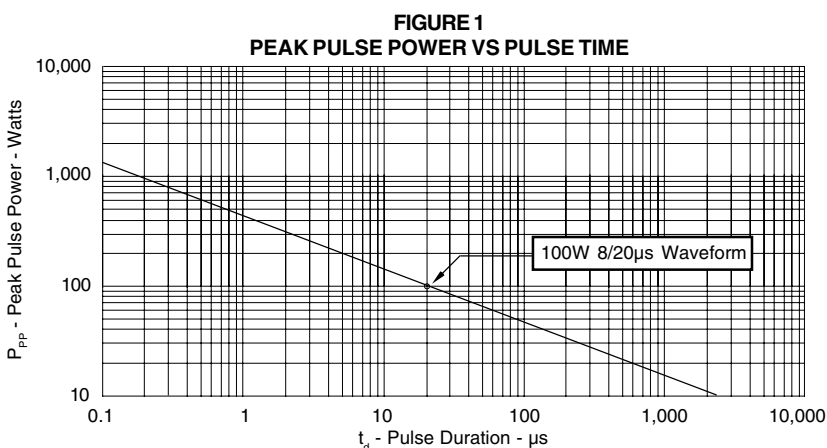


**DEVICE CHARACTERISTICS**

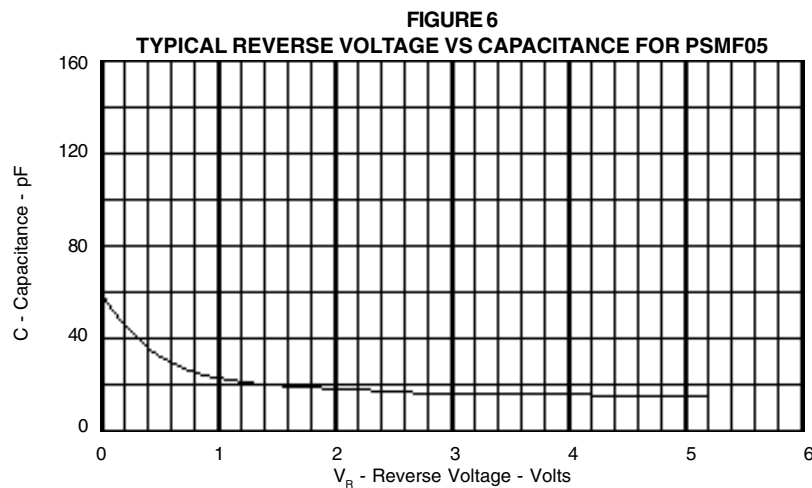
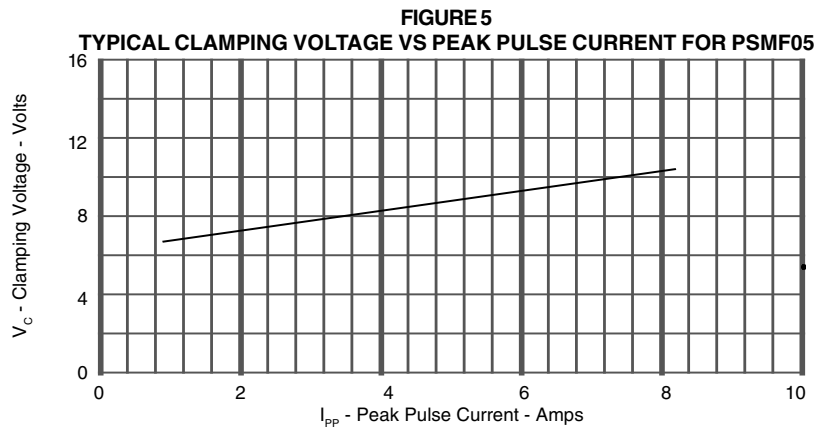
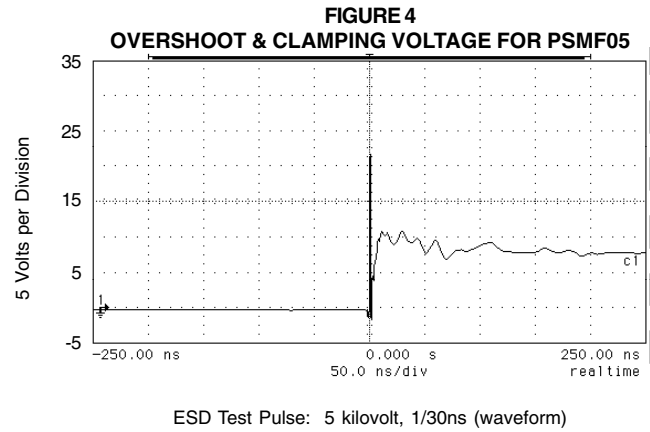
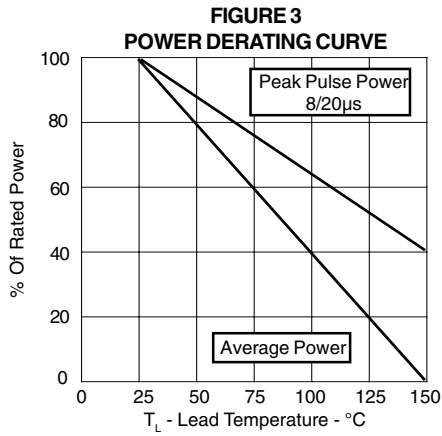
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	100	Watts
Operating Temperature	$T_J$	-55°C to 150°C	°C
Storage Temperature	$T_{STG}$	-55°C to 150°C	°C
Forward Voltage @ 1A, 8/20μs	$V_{FP}$	1.5	Volts

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER	DEVICE MARKING CODE	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE (See Note 1)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	MAXIMUM CAPACITANCE
		$V_{WM}$ VOLTS	@ 1mA $V_{(BR)}$ VOLTS	@ $I_p = 1A$ $V_C$ VOLTS	@ 8/20μs $V_C @ I_{PP}$	@ $V_{WM}$ $I_D$ μA	@ 0V, 1 MHz $C_J$ pF
PSMF05	05	5.0	6.0	9.5	12.0V @ 9.0A	10	60
PSMF12	12	12.0	13.3	15.0	22.0V @ 5.0A	1	30
PSMF15	15	15.0	16.7	-	33.0V @ 3.0A	1	25
PSMF24	24	24.0	26.7	-	55.5V @ 1.8A	1	20

**Note 1:** Test between pins 1 to 2, 3 to 2, 4 to 2 and 5 to 2.



GRAPHS



## APPLICATION NOTE

The PSMF Series are TVS arrays designed to protect I/O or data lines from the damaging effects of ESD or EFT. This product provides unidirectional protection, with a surge capability of 200 Watts  $P_{pp}$  per line for an 8/20 $\mu$ s waveform and ESD protection > 25 kilovolts.

### UNIDIRECTIONAL COMMON-MODE CONFIGURATION (Figure 1)

The PSMF Series provides up to four (4) lines of protection in a common-mode configuration as depicted in Figure 1. Circuit connectivity is as follows:

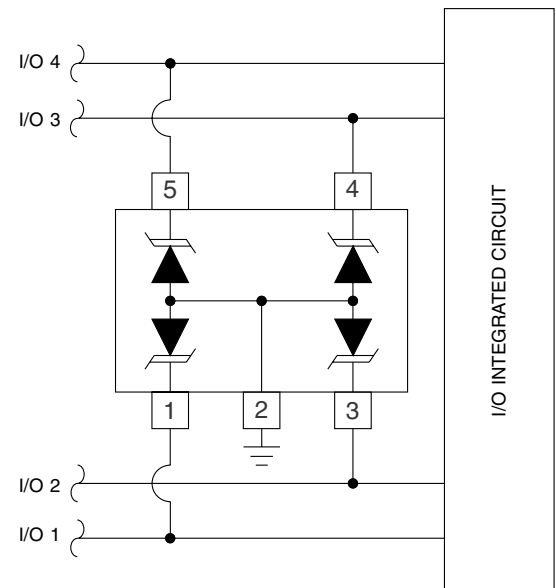
- ✓ I/O 1 is connected to Pin 1.
- ✓ I/O 2 is connected to Pin 3.
- ✓ I/O 3 is connected to Pin 4.
- ✓ I/O 4 is connected to Pin 5.
- ✓ Pin 2 is connected to ground.

### 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

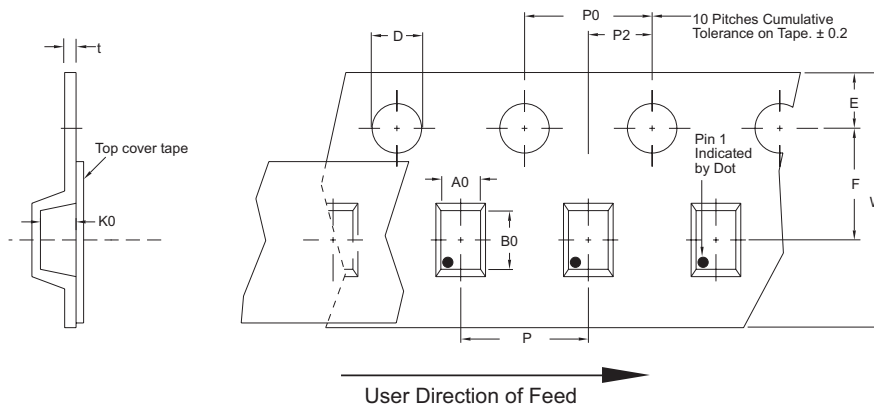


**PACKAGE OUTLINE & DIMENSIONS**

<p style="text-align: center;"><b>PACKAGE OUTLINE</b></p>	<p style="text-align: center;"><b>SC70-5L</b></p> <p style="text-align: center;"><b>PACKAGE DIMENSIONS</b></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">DIM</th> <th colspan="2">MILLIMETERS</th> <th colspan="2">INCHES</th> </tr> <tr> <th>MIN</th> <th>MAX</th> <th>MIN</th> <th>MAX</th> </tr> </thead> <tbody> <tr><td>A</td><td>1.90</td><td>2.15</td><td>0.074</td><td>0.084</td></tr> <tr><td>B</td><td>1.15</td><td>1.35</td><td>0.045</td><td>0.055</td></tr> <tr><td>C</td><td>0.80</td><td>1.00</td><td>0.031</td><td>0.040</td></tr> <tr><td>D</td><td>0.15</td><td>0.30</td><td>0.006</td><td>0.012</td></tr> <tr><td>E</td><td>0.65 BSC</td><td>-</td><td>0.0255 BSC</td><td>-</td></tr> <tr><td>F</td><td>1.30 BSC</td><td>-</td><td>0.0512 BSC</td><td>-</td></tr> <tr><td>G</td><td>0.80</td><td>1.10</td><td>0.031</td><td>0.043</td></tr> <tr><td>J</td><td>0.08</td><td>0.25</td><td>0.003</td><td>0.010</td></tr> <tr><td>K</td><td>1.90</td><td>2.15</td><td>0.074</td><td>0.084</td></tr> <tr><td>L</td><td>0</td><td>0.10</td><td>0</td><td>0.004</td></tr> <tr><td>M</td><td>0.26</td><td>0.46</td><td>0.010</td><td>0.018</td></tr> </tbody> </table>	DIM	MILLIMETERS		INCHES		MIN	MAX	MIN	MAX	A	1.90	2.15	0.074	0.084	B	1.15	1.35	0.045	0.055	C	0.80	1.00	0.031	0.040	D	0.15	0.30	0.006	0.012	E	0.65 BSC	-	0.0255 BSC	-	F	1.30 BSC	-	0.0512 BSC	-	G	0.80	1.10	0.031	0.043	J	0.08	0.25	0.003	0.010	K	1.90	2.15	0.074	0.084	L	0	0.10	0	0.004	M	0.26	0.46	0.010	0.018
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Tape & Reel Specifications (Dimensions in millimeters)

Reel Dia.	Tape Width	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	2.25 ± 0.10	2.34 ± 0.10	1.22 ± 0.10	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



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