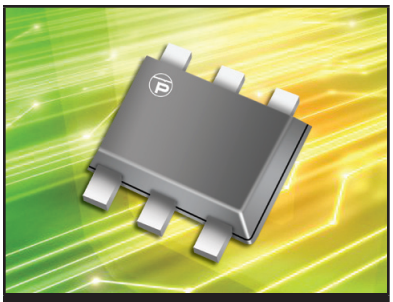
# MULTI-LINE LOW CAPACITANCE TVS ARRAY



SOT-563 PACKAGE

## DESCRIPTION

The MSMF05LCC is a 5 Volt, low capacitance, multi-line TVS array. This device is designed to protect wireless telecommunications and portable electronic applications from the damaging effects of ESD and EFT. The MSMF05LCC is available in a 5 line unidirectional or 4 line bidirectional configuration with a working voltage of 5 Volts and a minimum breakdown voltage of 6 Volts. This device is rated at 25 Watts peak pulse power, which is sufficient protection for tertiary type lightning threats at key interface locations.

Packaged in a miniature SOT-563, the MSMF05LCC meets IEC 61000-4-2 (ESD) and 61000-4-4 (EFT) immunity requirements. Each device should be placed near a connector to provide the best protection against transients.

## FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- 25 Watts Peak Pulse Power per Line(tp = 8/20µs)
- Monolithic Design
- Available in 5 Volts
- Low Clamping Voltage
- ESD Protection > 25 kilovolts
- Low Leakage Current
- Low Capacitance: 9pF
- Protects 4 Bidirectional Lines & 5 Unidirectional Lines
- RoHS Compliant
- REACH Compliant

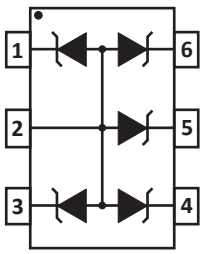
## APPLICATIONS

- Communication Systems
- SMART Phones
- Portable Electronics
- Video Interfaces

## MECHANICAL CHARACTERISTICS

- Molded JEDEC SOT-563 Package
- Approximate Weight: 3 milligrams
- Lead-Free Nickel Paladium Gold Plating
- Solder Reflow Temperature - 260-270°C
- Flammability Rating UL 94V-0
- 8mm Tape and Reel per EIA Standard 481

## PIN CONFIGURATION



## TYPICAL DEVICE CHARACTERISTICS

| MAXIMUM RATINGS @ 25°C Unless Otherwise Specified | | | |
|---|---|---|---|
| PARAMETER | SYMBOL | VALUE | UNITS |
| Peak Pulse Power (tp = 8/20µs) - See Figure 1 | $P_{PP}$ | 25 | Watts |
| Operating Temperature | $T_L$ | -55 to 150 | °C |
| Storage Temperature | $T_{STG}$ | -55 to 150 | °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 $V_{WM}$ VOLTS | MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS | MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ $I_P$ = 2A $V_C$ VOLTS | MAXIMUM LEAKAGE CURRENT @$V_{WM}$ $I_D$ µA | TYPICAL CAPACITANCE (Note 1) @0V, 1MHz C pF |
| MSMF05LCC | 5LC | 5.0 | 6.0 | 12.0 | 1 | 9 |

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

## TYPICAL DEVICE CHARACTERISTICS

**FIGURE 1**
**PEAK PULSE POWER VS PULSE TIME**

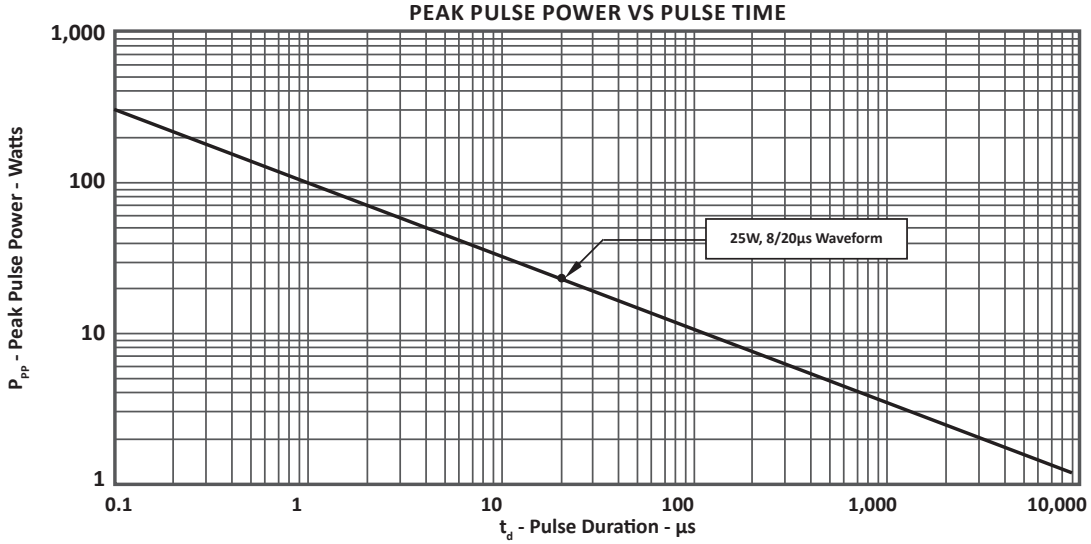



**FIGURE 2**
**PULSE WAVE FORM**

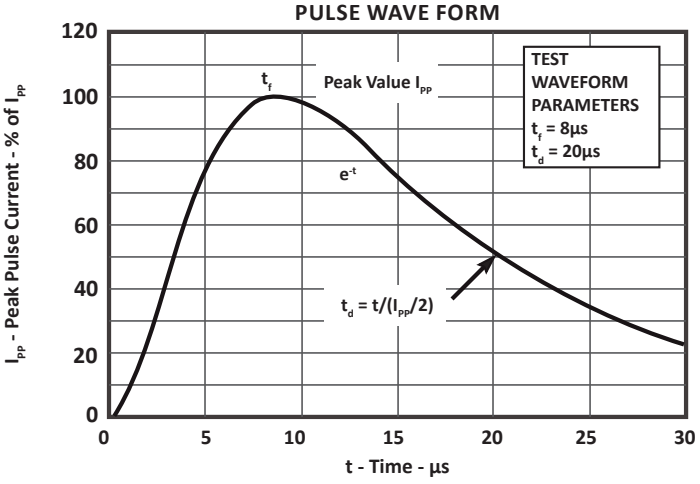
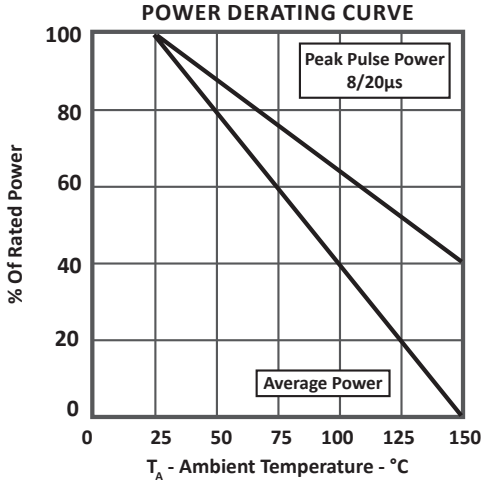


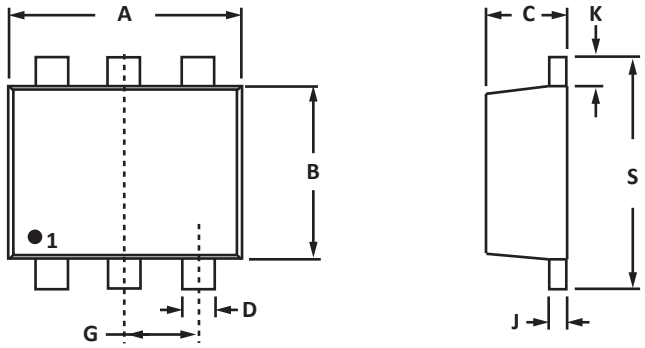

**FIGURE 3**
**POWER DERATING CURVE**



## SOT-563 PACKAGE INFORMATION

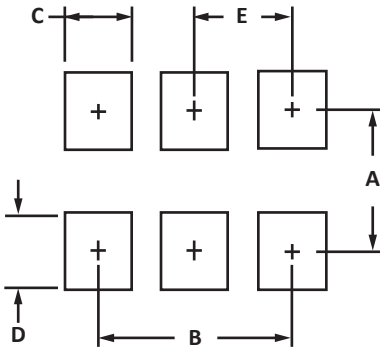
| OUTLINE DIMENSIONS | | | | |
|---|---|---|---|---|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 1.50 | 1.70 | 0.059 | 0.067 |
| B | 1.10 | 1.30 | 0.043 | 0.051 |
| C | 0.50 | 0.60 | 0.020 | 0.024 |
| D | 0.17 | 0.27 | 0.007 | 0.011 |
| G | 0.50 BSC | | 0.020 BSC | |
| J | 0.08 | 0.18 | 0.003 | 0.007 |
| K | 0.10 | 0.30 | 0.004 | 0.012 |
| S | 1.50 | 1.70 | 0.059 | 0.067 |

**NOTES**
1. Controlling dimension: inches.
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
3. Dimensions are exclusive of mold flash and metal burrs.

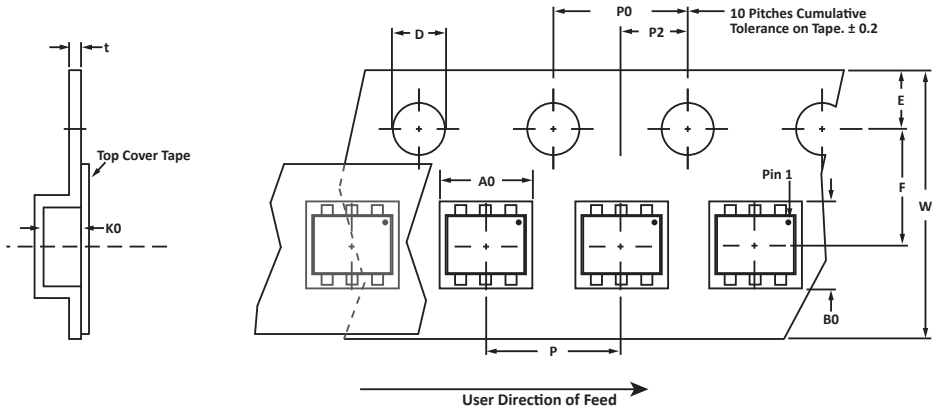



| PAD LAYOUT DIMENSIONS | | |
|---|---|---|
| DIM | MILLIMETERS | INCHES |
| | NOMINAL | NOMINAL |
| A | 1.40 | 0.055 |
| B | 1.02 | 0.040 |
| C | 0.30 | 0.012 |
| D | 0.51 | 0.020 |
| E | 0.51 | 0.020 |

**NOTES**
1. Controlling dimension: inches.



## TAPE AND REEL




| SPECIFICATIONS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

**NOTES**
1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T7 = 7" Reel - 3,000 pieces per 8mm tape.
4. Suffix - T13 = 13" Reel - 10,000 pieces per 8mm tape.
5. Marking on Part - marking code (see page 2) and pin one defined by dot on package.

Package outline, pad layout and tape specifications per document number 06051.R3 3/11.

| ORDERING INFORMATION | | | | | |
|---|---|---|---|---|---|
| BASE PART NUMBER | LEADFREE SUFFIX | TAPE SUFFIX | QTY/REEL | REEL SIZE | TUBE QTY |
| MSMF05LCC | -P | -T7 | 3,000 | 7" | n/a |
| MSMF05LCC | -P | -T13 | 10,000 | 13" | n/a |

## COMPANY INFORMATION

**COMPANY PROFILE**

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

**CONTACT US**

**Corporate Headquarters**
2929 South Fair Lane
Tempe, Arizona 85282
USA

**By Telephone**
General: 602-431-8101
Sales: 602-414-5109
Customer Service: 602-414-5114

**By Fax**
General: 602-431-2288

**By E-mail:**
Sales: sales@protekdevices.com
Customer Service: service@protekdevices.com
Technical Support: support@protekdevices.com

**Web**
www.protekdevices.com
www.protekanalog.com

COPYRIGHT © ProTek Devices 2007 - This literature is subject to all applicable copyright laws and is not for resale in any manner.

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice.

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 makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ProTek assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability without limitation special, consequential or incidental damages.

LIFE SUPPORT POLICY: ProTek Devices products are not authorized for use in life support systems without written consent from the factory.