

**4 LINE UNIDIRECTIONAL TVSarray™**  
**PRODUCT PREVIEW**

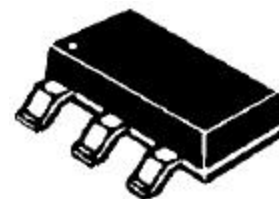
**DESCRIPTION**

This 6 pin 4 line unidirectional array is designed for use in applications where protection is required at the board level from voltage transients caused by electrostatic discharge (ESD) as defined by IEC 61000-4-2, electrical fast transients (EFT) per IEC 61000-4-4 and effects of secondary lighting.

These arrays are used to protect 4 discrete lines utilizing pins (1,3,4,6) with a common anode (pins 2,5) configuration. The SMS03 thru SMS24 product provides board level protection from static electricity and other induced voltage surges that can damage sensitive circuitry.

These Transient Voltage Suppressor (TVS) diode arrays protect 3.0/3.3 volt components such as DRAM's SRAM's CMOS, HCMOS, HSIC, and low voltage interfaces up to 24 volts. Because of the physical size, weight and protection capabilities, this product is ideal for use in but not limited to miniaturized electronic equipment such as hand held instruments, computers, computer peripherals and cell phones.

**TVS array™ SERIES**



**APPLICATIONS**

- EIA-RS232 data rates 19.6kbs
- EIA-RS422 data rates 10Mbps
- EIA-RS423 data rates 100kbs

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**FEATURES**

- Protects 3.0/3.3 up through 24 volt components
- Protects 4 unidirectional lines
- Provides electrically isolated protection
- SOT 23-6L Packaging

**PACKAGING**

- Tape & Reel per EIA Standard 481
- 3,000 pieces per 7 inch reel

**MAXIMUM RATINGS**

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Peak Pulse power 200 watts (8/20 μs Figure 1)
- SOT 23-6L Packaging

**MECHANICAL**

- Molded SOT23-6L Surface Mount
- Weight .014 grams (approximate)
- Body Marked with device number
- Part is symmetrical therefore pin one can be defined as either one of the four corner pins (for clarification see schematic on page 2)

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless otherwise specified**

| PART NUMBER | DEVICE MARKING | STAND OFF VOLTAGE | BREAKDOWN VOLTAGE      | CLAMPING VOLTAGE                  | CLAMPING VOLTAGE                  | STANDBY CURRENT | CAPACITANCE (f = 1 MHz) | TEMPERATURE COEFFICIENT OF V <sub>BR</sub> |
|-------------|----------------|-------------------|------------------------|-----------------------------------|-----------------------------------|-----------------|-------------------------|--|
|             |                | V <sub>WM</sub>   | V <sub>BR</sub> @ 1 mA | V <sub>C</sub> @ 1 Amp (FIGURE 2) | V <sub>C</sub> @ 5 Amp (FIGURE 2) |                 |                         |  |
|             |                | VOLTS             | VOLTS                  | VOLTS                             | VOLTS                             | μA              | pF                      | mV/°C                                      |
|             |                | MAX               | MIN                    | MAX                               | MAX                               | MAX             | TYP                     | MAX  |
| SMS03       | S3             | 3.3               | 4                      | 7.5                               | 11.5                              | 100             | 200                     | -3   |
| SMS05       | S5             | 5.0               | 6.0                    | 11                                | 14.5                              | 10              | 150                     | 3  |
| SMS12       | S12            | 12.0              | 13.3                   | 21                                | 27                                | 1               | 70                      | 10   |
| SMS15       | S15            | 15.0              | 16.7                   | 26                                | 33                                | 1               | 60                      | 13   |
| SMS24       | S24            | 24.0              | 26.7                   | 45                                | 56 *                              | 1               | 35                      | 30   |

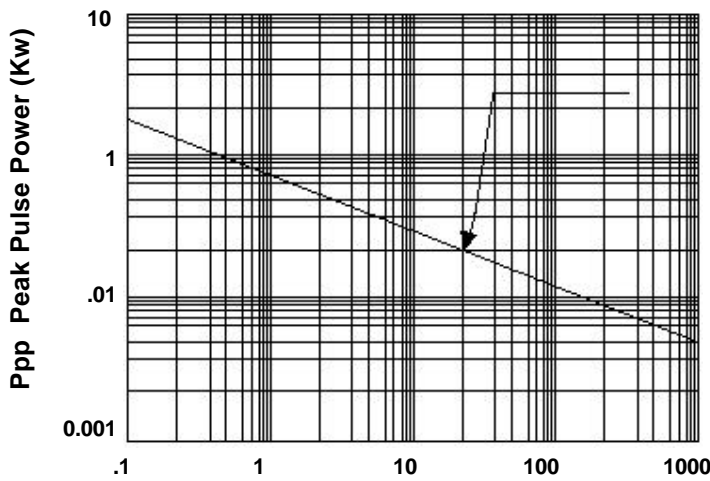
\* CLAMPING VOLTAGE @ 3.6 Amps

Note: Transient Voltage Suppressor (TVS) product is normally selected based on its stand off voltage V<sub>WM</sub>. Product selected voltage should be equal to or greater than the continuous peak operating voltage of the circuit to be protected.

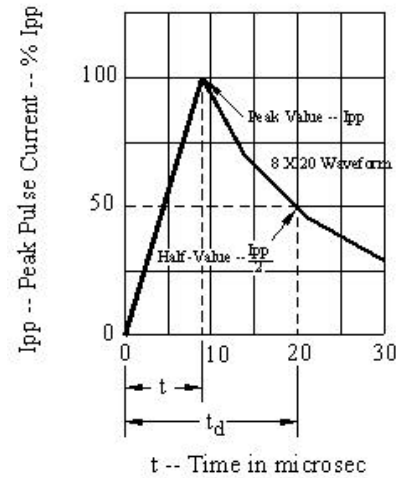
**SYMBOLS & DEFINITIONS**

| Symbol   | DEFINITION   |
|----------|--|
| $V_{WM}$ | Rated stand off voltage: Maximum dc voltage that can be applied over the operating temperature range. $V_{wm}$ must be selected to be equal or be greater than the operating voltage of the line to be protected |
| $V_{BR}$ | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current  |
| $V_C$    | Clamping Voltage: Maximum clamping voltage across the TVS device when subjected to a given peak pulse current at a pulse time of 20 $\mu s$ .  |
| $I_D$    | Standby Current: Leakage current at $V_{WM}$ .   |
| C        | Capacitance: Capacitance of the TVS as defined @ 0 volts at a frequency of 1 MHz and stated in Pico Farads.  |

**GRAPHS**

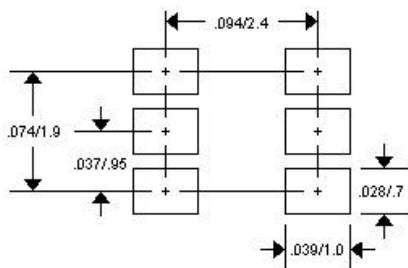


**FIGURE 1**  
Peak Pulse Power Vs Pulse Time  $t = \mu sec$



**FIGURE 2**  
Pulse Wave Form

**PACKAGING AND SCHEMATIC**



| DIM | DIMENSIONS MILLIMETERS |      |      | DIMENSIONS INCHES |      |      |
|-----|------------------------|------|------|-------------------|------|------|
|     | MIN                    | NOM  | MAX  | MIN               | NOM  | MAX  |
| A   | 2.70                   | 2.90 | 3.10 | .106              | .114 | .127 |
| A1  | 0.00                   | 0.10 | .000 | .000              | .004 | .004 |
| A2  | 1.00                   | 1.10 | 1.30 | .039              | .043 | .051 |
| B   | 0.35                   | 0.40 | 0.50 | .014              | .016 | .020 |
| C   | 0.10                   | 0.15 | 0.25 | .004              | .006 | .010 |
| D   | 1.50                   | 1.60 | 1.80 | .059              | .063 | .071 |
| E   | 1.70                   | 1.90 | 2.10 | .067              | .075 | .083 |
| F   | 2.60                   | 2.80 | 3.00 | .102              | .110 | .118 |
| G   | 0.20                   |      |      | .008              |      |      |

