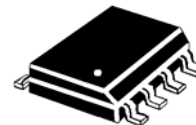


### DESCRIPTION

This TRANSIENT VOLTAGE SUPPRESSOR (TVS) array is packaged in an SO-8 configuration giving protection to 4 unidirectional or bi-directional data or interface lines. It is designed for use in applications where protection is required at the board level from voltage transients caused by electrostatic discharge (ESD) as defined in IEC 61000-4-2, electrical fast transients (EFT) per IEC 61000-4-4 and effects of secondary lightning. These TVS arrays have peak pulse power ratings of 300 watts (SMDA) and 500 watts (SMDB) for an 8/20  $\mu$ sec pulse. They are suitable for protection of sensitive circuitry consisting of TTL, CMOS, DRAM's, SRAM's, HCMOS, HSIC and low-voltage interfaces from 3.3 volts to 24 volts

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

### APPEARANCE



### FEATURES

- Protects 3.0/3.3 volt up to 24 volt components
- Protects 4 unidirectional or bidirectional lines
- Provides electrically-isolated protection
- RoHS Compliant devices available by adding "e3" suffix

### PACKAGING

- Tape & Reel per EIA Standard 481
- 13 inch reel; 2,500 pieces (STANDARD)
- Carrier tubes; 95 pcs (OPTIONAL)

### MAXIMUM RATINGS

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- SMDA Peak Pulse Power: 300 watts (Fig. 1 and 2)
- SMDB Peak Pulse Power: 500 watts (Fig. 1 and 2)
- Pulse Repetition Rate: <.01%

### MECHANICAL

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL 94V-0 flammability classification
- TERMINALS: Tin-Lead or RoHS Compliant annealed matte-Tin plating solderable per MIL-STD-750 method 2026
- WEIGHT: 0.066 grams (approximate)
- MARKING: MSC Logo, device marking code\*, date code
- Pin #1 defined by dot on top of package

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

| PART NUMBER | DEVICE MARKING CODE * | STAND OFF VOLTAGE<br>$V_{WM}$ | BREAKDOWN VOLTAGE<br>$V_{BR}$ | CLAMPING VOLTAGE<br>$V_C$ | CLAMPING VOLTAGE<br>$V_C$ | STANDBY (LEAKAGE) CURRENT<br>$I_D$<br>@ $V_{WM}$ | CAPACITANCE<br>$f = 1 \text{ MHz}$<br>$C$ | TEMPERATURE COEFFICIENT<br>of $V_{BR}$<br>$\alpha_{VBR}$ |
|-------------|-----------------------|-------------------------------|-------------------------------|---------------------------|---------------------------|--------------------------------------------------|-------------------------------------------|----------------------------------------------------------|
|             |                       | VOLTS                         | VOLTS                         | VOLTS                     | VOLTS                     | $\mu A$                                          | pF                                        | mV/°C                                                    |
|             |                       | MAX                           | MIN                           | MAX                       | MAX                       | MAX                                              | TYP                                       | TYP                                                      |
| SMDA03      | SDK                   | 3.3                           | 4                             | 7                         | 9                         | 200                                              | 600                                       | -3                                                       |
| SMDA03C     | SDL                   | 3.3                           | 4                             | 7                         | 9                         | 400                                              | 300                                       | -5                                                       |
| SMDB03      | PDK                   | 3.3                           | 4                             | 7                         | 9                         | 200                                              | 600                                       | -3                                                       |
| SMDB03C     | PDL                   | 3.3                           | 4                             | 7                         | 9                         | 400                                              | 300                                       | -5                                                       |
| SMDA05      | SDA                   | 5.0                           | 6                             | 9.8                       | 11                        | 20                                               | 400                                       | 3                                                        |
| SMDA05C     | SDB                   | 5.0                           | 6                             | 9.8                       | 11                        | 40                                               | 200                                       | 1                                                        |
| SMDB05      | PDA                   | 5.0                           | 6                             | 9.8                       | 11                        | 20                                               | 400                                       | 3                                                        |
| SMDB05C     | PDB                   | 5.0                           | 6                             | 9.8                       | 11                        | 40                                               | 200                                       | 1                                                        |
| SMDA12      | SDC                   | 12.0                          | 13.3                          | 19                        | 24                        | 1                                                | 185                                       | 10                                                       |
| SMDA12C     | SDD                   | 12.0                          | 13.3                          | 19                        | 24                        | 1                                                | 95                                        | 8                                                        |
| SMDB12      | PDC                   | 12.0                          | 13.3                          | 19                        | 24                        | 1                                                | 185                                       | 10                                                       |
| SMDB12C     | PDD                   | 12.0                          | 13.3                          | 19                        | 24                        | 1                                                | 95                                        | 8                                                        |
| SMDA15      | SDE                   | 15.0                          | 16.7                          | 24                        | 30                        | 1                                                | 140                                       | 13                                                       |
| SMDA15C     | SDF                   | 15.0                          | 16.7                          | 24                        | 30                        | 1                                                | 70                                        | 11                                                       |
| SMDB15      | PDE                   | 15.0                          | 16.7                          | 24                        | 30                        | 1                                                | 140                                       | 13                                                       |
| SMDB15C     | PDF                   | 15.0                          | 16.7                          | 24                        | 30                        | 1                                                | 70                                        | 11                                                       |
| SMDA24      | SDG                   | 24.0                          | 26.7                          | 43                        | 55                        | 1                                                | 90                                        | 30                                                       |
| SMDA24C     | SDH                   | 24.0                          | 26.7                          | 43                        | 55                        | 1                                                | 45                                        | 28                                                       |
| SMDB24      | PDG                   | 24.0                          | 26.7                          | 43                        | 55                        | 1                                                | 90                                        | 30                                                       |
| SMDB24C     | PDH                   | 24.0                          | 26.7                          | 43                        | 55                        | 1                                                | 45                                        | 28                                                       |

Note: Transient Voltage Suppressor (TVS) product is normally selected based on its stand off voltage  $V_{WM}$ . Product selected voltage should be equal to or greater than the continuous peak operating voltage of the circuit to be protected. Part numbers with a C suffix are bi-directional devices.

\* Device marking has an e3 suffix added for the RoHS Compliant options, e.g. SDKe3, SDLe3, SDCe3, SDEe3, PDHe3, etc.

## SYMBOLS & DEFINITIONS

| Symbol   | Definition                                                                                                                                                                                                  |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $V_{WM}$ | 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: 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 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 picofarads.                                                                                                  |

## GRAPHS

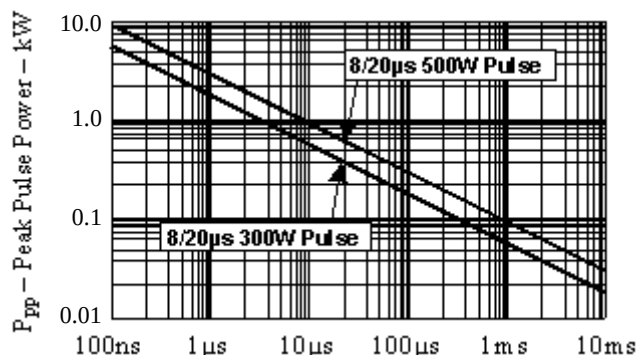


**Figure 1**  
Peak Pulse Power vs Pulse Time

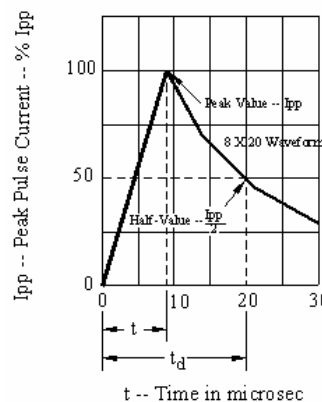
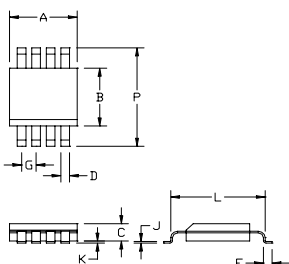


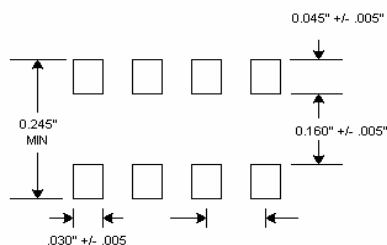
**Figure 2**  
Pulse Wave Form

## OUTLINE AND SCHEMATIC

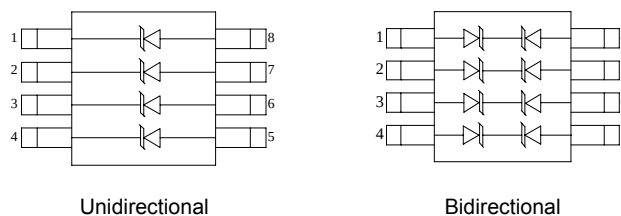


| DIM | INCHES    |       | MILLIMETERS |      |
|-----|-----------|-------|-------------|------|
|     | MIN       | MAX   | MIN         | MAX  |
| A   | 0.188     | 0.197 | 4.77        | 5.00 |
| B   | 0.150     | 0.158 | 3.81        | 4.01 |
| C   | 0.053     | 0.069 | 1.35        | 1.75 |
| D   | 0.011     | 0.021 | 0.28        | 0.53 |
| F   | 0.016     | 0.050 | 0.41        | 1.27 |
| G   | 0.050 BSC |       | 1.27 BSC    |      |
| J   | 0.006     | 0.010 | 0.15        | 0.25 |
| K   | 0.005     | 0.008 | 0.10        | 0.20 |
| L   | 0.189     | 0.206 | 4.80        | 5.23 |
| P   | 0.228     | 0.244 | 5.79        | 6.19 |

**OUTLINE**



**PAD LAYOUT**



Unidirectional

Bidirectional

**SCHEMATIC**

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