

# SurgX® ESD Suppressors

## Surface Mount Transient Voltage Suppressors

SOT23ESD-A

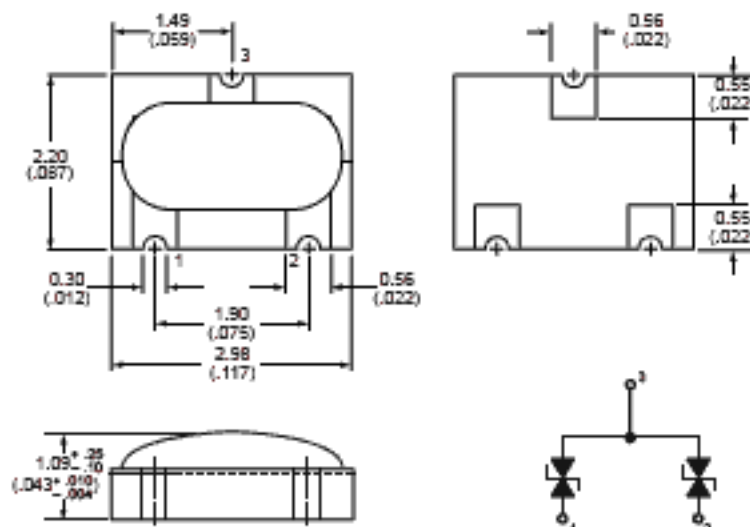
### A Unique Approach to ESD Protection

SurgX® suppressors by Bussmann provide electrostatic discharge (ESD) protection in mobile communications, data processing, and many other electronic applications. They are ideally suited for low voltage, high data rate micro-processor-based circuits. The SurgX products utilize unique polymer-based materials for the suppression of the fast transient voltages caused by ESD, in conformance with IEC 61000-4-2 and MIL-STD-883C.

#### Features:

- Ultra-low Capacitance & Leakage Current
- Fast Response Time
- Withstands up to 15kV @ 45A ESD Pulse
- Bidirectional

### Dimensional Data



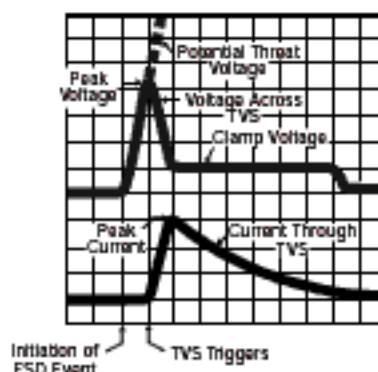
### Electrical Characteristics

|                                       |                            |
|---------------------------------------|----------------------------|
| <b>Continuous Operating Voltage</b>   | 24V maximum                |
| <b>Clamping Voltage<sup>1,2</sup></b> | 40V typical, 60V maximum   |
| <b>Peak Voltage<sup>1</sup></b>       | 150V typical, 300V maximum |
| <b>Capacitance<sup>3</sup></b>        | 1pF typical                |
| <b>Leakage Current<sup>4</sup></b>    | 100nA max                  |
| <b>Peak Current<sup>1,2</sup></b>     | 30A maximum                |
| <b>ESD Withstand<sup>1</sup></b>      | 20 pulses minimum          |

#### Notes:

1. Per IEC 61000-4-2, 30A @ 8kV, contact discharge.
2. Measurement made 30nS after initiation of pulse.
3. Measured @ 1MHz.
4. Measured at 24 Vdc.

### Typical Transient Response

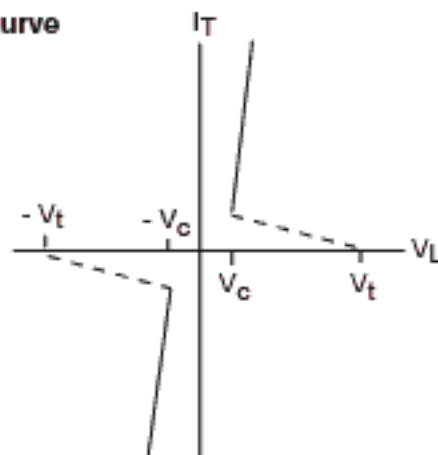
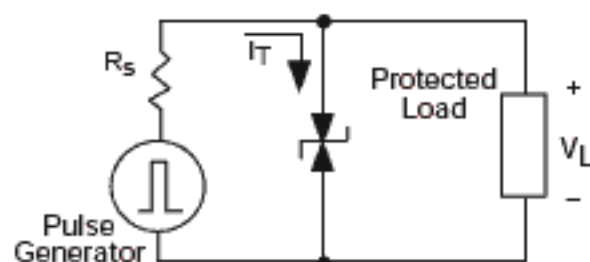


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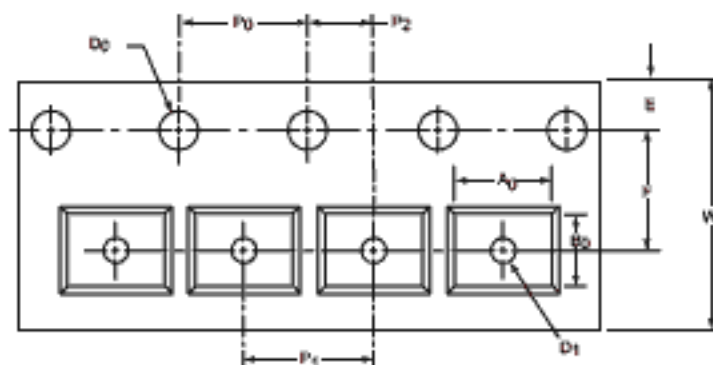
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### Typical Circuit and Generalized V-I Curve

V<sub>t</sub> = Trigger VoltageV<sub>c</sub> = Clamping Voltage

### Packaging Information:

- Tape and Reel: Standard 8mm tape, in compliance with EIA-RS481 (equivalent to IEC 286, Part 3).
- Code: **TR1** = 2,000 pieces on tape on a 178mm reel.  
**SP1** = 10 pieces on tape in a plastic box.
- EX: TR1/SOT23ESD-A denotes 2,000 pieces on tape.



### Carrier Dimensions - mm (in.)

|                |                                        |
|----------------|----------------------------------------|
| W              | 8.0 ± 0.1 (.315 ± .004)                |
| F              | 3.5 ± 0.05 (.138 ± .002)               |
| E              | 1.75 ± 0.1 (.069 ± .004)               |
| P <sub>2</sub> | 2.0 ± 0.05 (.079 ± .002)               |
| P <sub>0</sub> | 4.0 ± 0.1 (.157 ± .004)                |
| P <sub>1</sub> | 4.0 ± 0.1 (.157 ± .004)                |
| A <sub>0</sub> | 3.20 ± 0.1 (.126 ± .004)               |
| B <sub>0</sub> | 2.44 ± 0.1 (.096 ± .004)               |
| D <sub>0</sub> | 1.5 ± 0.1 / -0.0 (.059 ± .004 / -.000) |
| D <sub>1</sub> | 1.00 ± .25 (.039 ± .010)               |

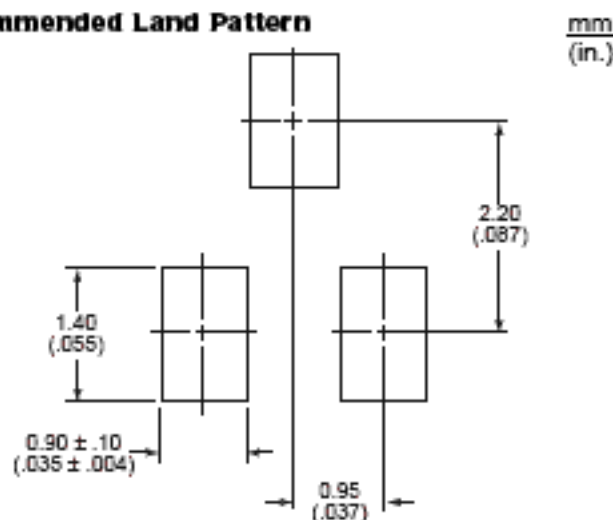
### Mechanical Specifications:

- Substrate: Ceramic
- End termination finish: Nickel barrier (3.88 – 4.3µm), followed by 90/10 tin – lead (5.1 – 10.2µm)
- ESD barrier: SurgX polymeric material

### Environmental Specifications:

- Dry heat: 96 hours @ 85°C
- Humidity: 96 hours @ 85% RH, 60°C
- Thermal shock: -55°C to 85°C, 1 hour cycle, 10 cycles
- Vibration: MIL-STD 202, Method 204, Test Condition C, (55 to 2000 Hz, 10Gs)
- Solderability: withstands 60 seconds above 200°C, 260°C maximum
- Solder leach resistance and terminal adhesion per EIA-576

### Recommended Land Pattern



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