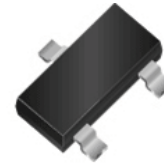


**RoHS Device**  
**Halogen Free**

**Features**

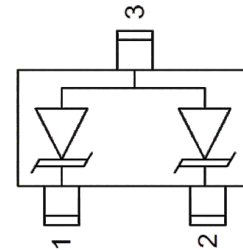
- Protects one I/O or power line
- Low Clamping Voltage
- Ultra Low Capacitance (< 0.8pF)
- Working Voltage: 5V
- Low Leakage Current



SOT-23

**Mechanical Characteristics**

- SOT-23 package
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel per EIA 481



**Applications**

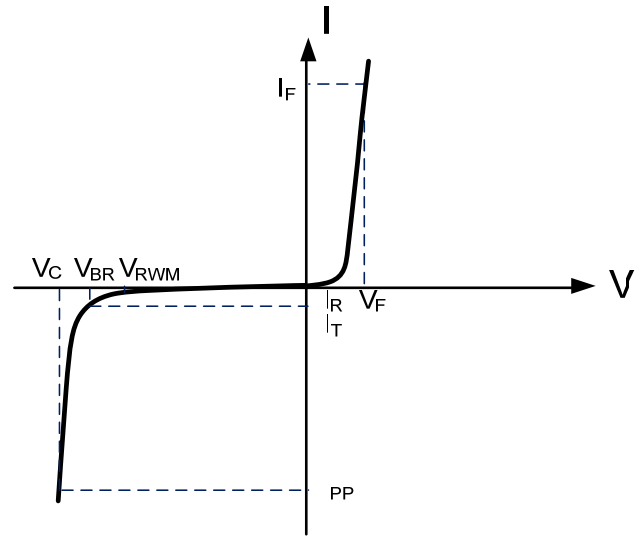
- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- SATA and eSATA
- IEEE 1394
- PCI Express
- Portable Electronics
- Notebooks

**Absolute Maximum Rating**

| Rating   | Symbol    | Value         | Units |
|--|-----------|---------------|-------|
| Peak Pulse Power ( $t_p=8/20\mu s$ )           | $P_{PP}$  | 100           | Watts |
| Peak Pulse Current ( $t_p=8/20\mu s$ )         | $I_{PP}$  | 5             | A     |
| Electrostatic discharge Voltage (See Note1 ,2) | $V_{ESD}$ | 8KV (contact) | Volts |
|  |           | 15KV (air)    |       |
| Operating Temperature                          | $T_J$     | -55 to + 150  | °C    |
| Storage Temperature                            | $T_{STG}$ | -55 to +150   | °C    |

### Electrical Parameters (T=25°C)

| Symbol    | Parameter                                   |
|-----------|---|
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Test Current                                |
| $I_F$     | Forward Current                             |
| $V_F$     | Forward Voltage @ $I_F$                     |



### Electrical Characteristics

| Parameter                     | Symbol    | Conditions                                  | Minimum     | Typical | Maximum | Units   |
|-------------------------------|-----------|---|-------------|---------|---------|---------|
| Reverse Stand-Off Voltage     | $V_{RWM}$ |   |             |         | 5       | V       |
| Reverse Breakdown Voltage     | $V_{BR}$  | $I_T=1mA$                                   | 6.0         |         |         | V       |
| Reverse Leakage Current       | $I_R$     | $V_{RWM}=5V, T=25^\circ C$                  |             |         | 1       | $\mu A$ |
| Junction Capacitance          | $C_j$     | $V_R = 0V, f = 1MHz$<br>Pin 1 to Pin 2      |             | 0.4     | 0.6     | pF      |
|                               |           | $V_R = 0V, f = 1MHz$<br>Pin 1 or 2 to Pin 3 |             | 0.6     | 0.8     | pF      |
| Clamping Voltage ( See Note3) | $V_C$     | 8KV (contact )                              | See Figure3 |         |         | V       |

**Note1:** ESD Pulse Waveform according to IEC 61000-4-2, see Table1 and Figure1

**Note2:** ESD Clamping Voltage see Figure2 and 3.

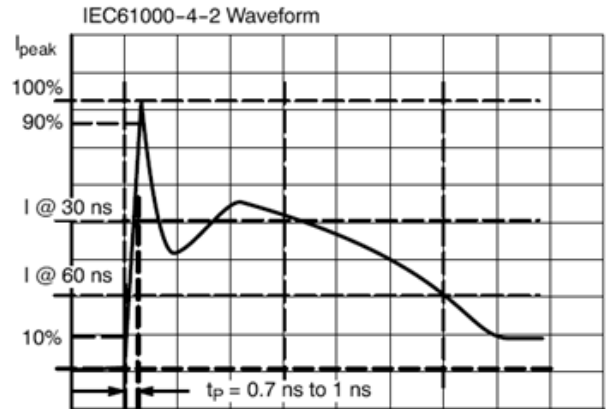
**Note3:** The clamping Voltage data is taken with a 100x attenuator.

## Typical Characteristics

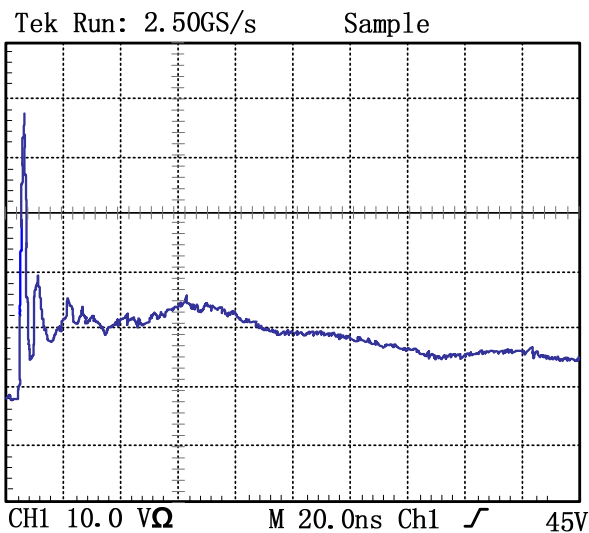
**Table 1: IEC 61000-4-2 Discharge Parameters**

| Level | First Peak Current (A) | Peak Current at 30 ns (A) | Peak Current at 60 ns (A) | Test Voltage (Contact Discharge) (kV) | Test Voltage (Air Discharge) (kV) |
|-------|------------------------|---------------------------|---------------------------|---------------------------------------|-----------------------------------|
| 1     | 7.5                    | 4                         | 2                         | 2                                     | 2                                 |
| 2     | 15                     | 8                         | 4                         | 4                                     | 4                                 |
| 3     | 22.5                   | 12                        | 6                         | 6                                     | 8                                 |
| 4     | 30                     | 16                        | 8                         | 8                                     | 15                                |

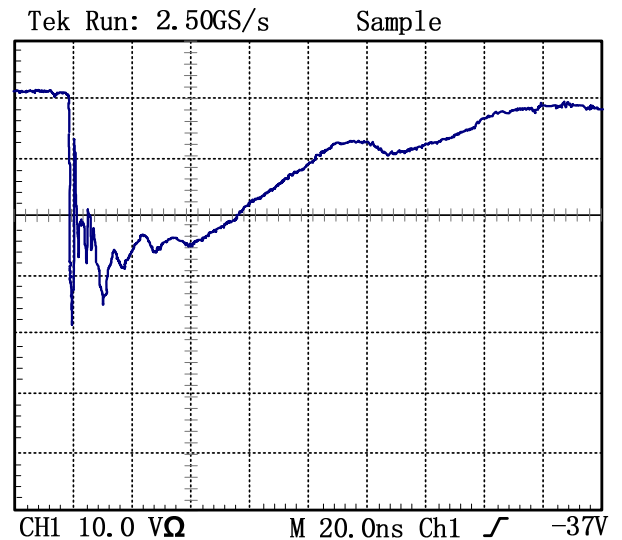
**Figure 1: IEC 61000-4-2 Waveform**



**Figure 2 ESD Clamping Voltage Screenshot Positive 8 kV contact per IEC 61000-4-2**

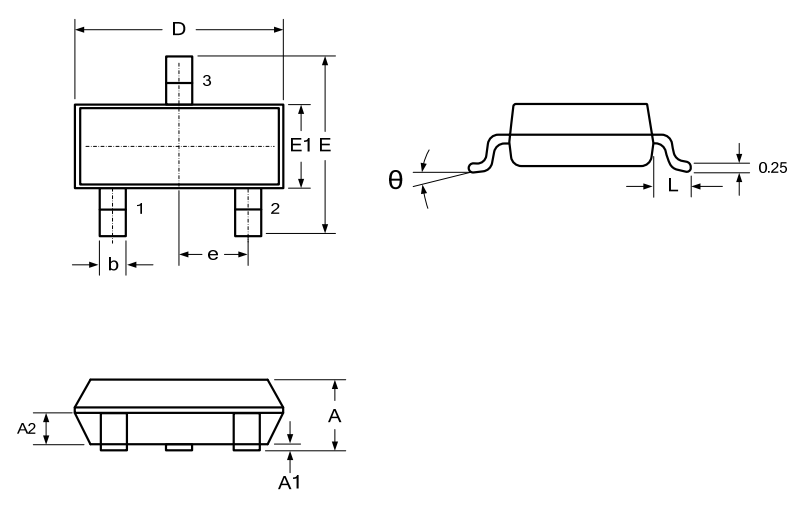


**Figure 3 ESD Clamping Voltage Screenshot Negative 8 kV contact per IEC 61000-4-2**



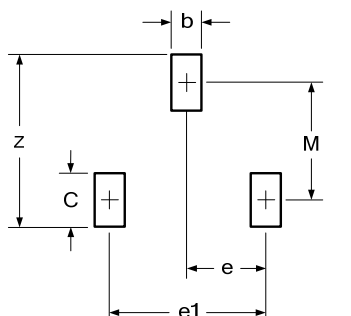
**Outline Drawing – SOT-23**

### PACKAGE OUTLINE



| SYMBOL | DIMENSIONS |       |           |       |
|--------|------------|-------|-----------|-------|
|        | MILLIMETER |       | INCHES    |       |
|        | MIN        | MAX   | MIN       | MAX   |
| A      | 0.900      | 1.150 | 0.035     | 0.045 |
| A1     | 0.000      | 0.100 | 0.000     | 0.004 |
| A2     | 0.900      | 1.050 | 0.035     | 0.041 |
| D      | 2.800      | 3.000 | 0.110     | 0.118 |
| b      | 0.300      | 0.500 | 0.012     | 0.020 |
| E      | 2.250      | 2.550 | 0.089     | 0.100 |
| E1     | 1.200      | 1.400 | 0.047     | 0.055 |
| e      | 0.950 BSC  |       | 0.037 BSC |       |
| L      | 0.300      | 0.500 | 0.012     | 0.020 |
| θ      | 0          | 8°    | 0         | 8°    |

---



| DIMENSIONS |           |             |
|------------|-----------|-------------|
| DIM        | INCHES    | MILLIMETERS |
| M          | 0.088     | 2.20        |
| C          | 0.0058    | 0.15        |
| Z          | 0.093     | 2.35        |
| e          | 0.037 BSC | 0.95 BSC    |
| e1         | 0.074 BSC | 1.9 BSC     |
| b          | 0.0389    | 0.35        |

**Notes**

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.