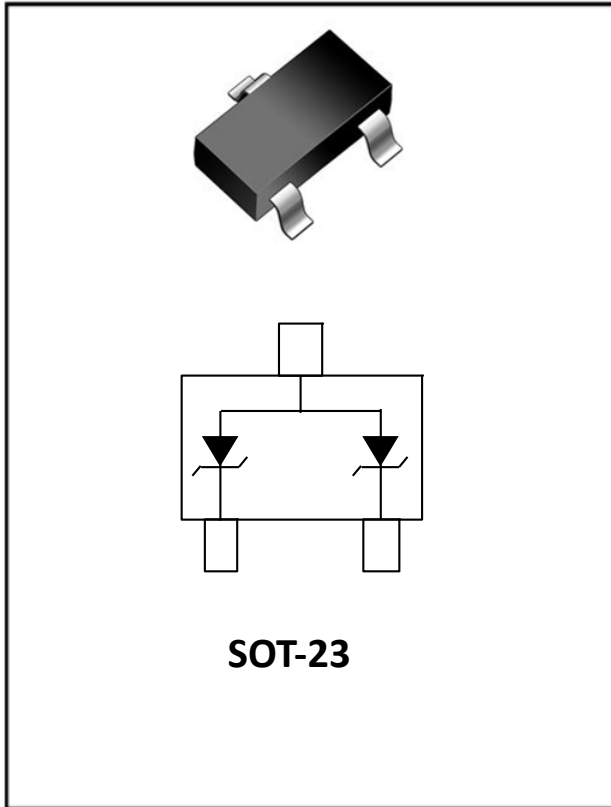


2- Line, Uni-directional, Transient Voltage Suppressor



Features

- Transient protection for each line according to IEC61000-4-2(ESD): $\pm 30\text{kV}$ contact, $\pm 30\text{kV}$ air IEC61000-4-5:7A($t_p=8/20\mu\text{s}$)
- Low leakage current
- Ultra low clamping voltage
- RoHS Compliant

Applications

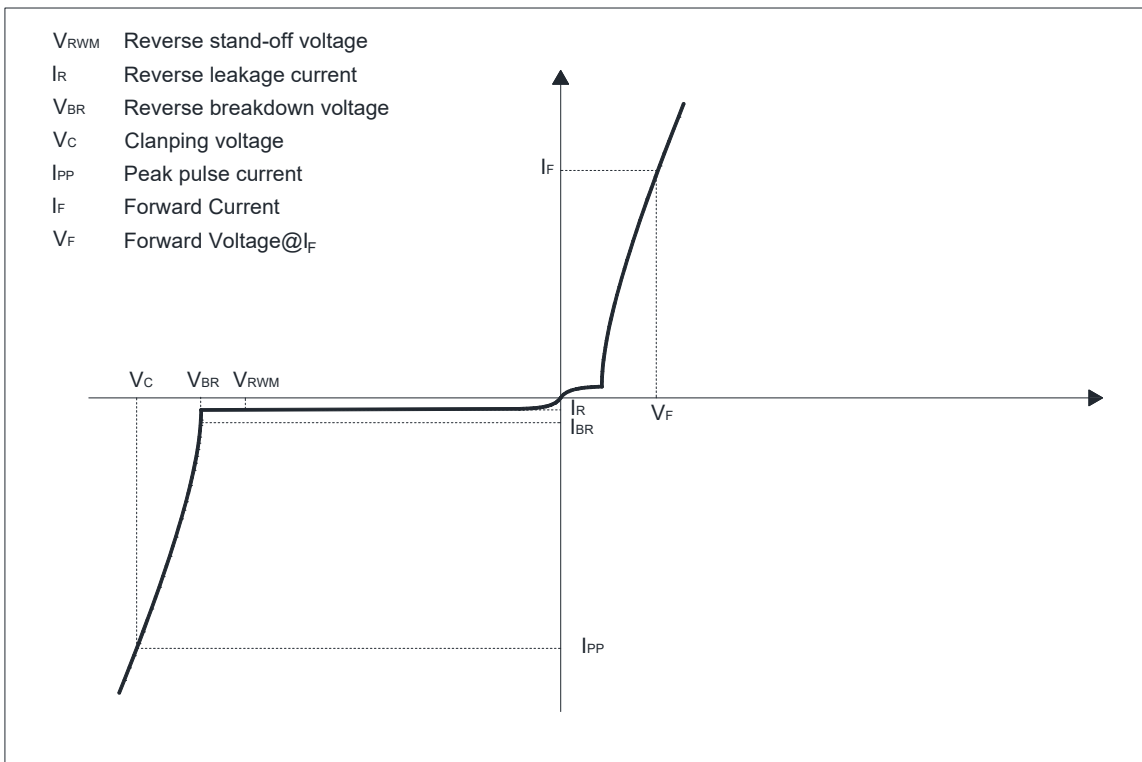
- Switches / Buttons
- Test Equipment/Instrumentation
- Point-of-Sale Terminals
- Medical Equipment
- Notebooks / Desktops / Servers
- Computer Peripherals

Mechanical Data

- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below



■Definitions of electrical characteristics





ESD2402E

■Maximum Ratings

| PARAMETER | SYMBOL | LIMITS | UNIT |
|---|-----------|----------|-------------|
| Peak pulse power ($t_p = 8/20\mu s$) | P_{pk} | 300 | W |
| Peak pulse current ($t_p = 8/20\mu s$) | I_{pp} | 7 | A |
| ESD according to IEC61000-4-2 air discharge | V_{ESD} | ± 30 | KV |
| ESD according to IEC61000-4-2 contact discharge | | ± 30 | |
| Junction temperature | T_J | -55~150 | $^{\circ}C$ |
| Storage temperature | T_{STG} | -55~150 | $^{\circ}C$ |

Notes:

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

■Electrical Characteristics ($T_J=25^{\circ}C$)

| PARAMETER | Symbol | UNIT | Conditions | Min | Typ | Max |
|----------------------------------|-----------|----------|--------------------------------------|------|------|------|
| Reverse Standoff Voltage | V_{RWM} | V | | | | 24 |
| Reverse leakage current | I_R | μA | $V_{RWM} = 24V$ | | | 1.0 |
| Reverse breakdown voltage | V_{BR} | V | $I_T = 1mA$ | 26.7 | | 30 |
| Forward Voltage | V_F | V | $I_F = 10mA$ | | | 1.25 |
| Clamping voltage ¹⁾ | V_{CL} | V | $I_{PP} = 16A, t_p = 0.2/100ns(TLP)$ | | 33 | |
| Dynamic resistance ²⁾ | R_{DYN} | Ω | TLP, $t_p = 100ns, I/O$ to Ground | | 0.36 | |
| Clamping voltage ¹⁾ | V_C | V | $I_{PP} = 1A, t_p = 8/20\mu s$ | | | 32 |
| | | | $I_{PP} = 5A, t_p = 8/20\mu s$ | | | 42 |
| | | | $I_{PP} = 7A, t_p = 8/20\mu s$ | | | 44 |
| Junction capacitance | C_J | pF | $V_R = 0V, f = 1MHz$ | | 35 | 50 |

Notes:

(1). Non-repetitive current pulse, according to IEC61000-4-5.

(2). TLP parameter: $Z_0 = 50\Omega, t_p = 100ns, t_r = 2ns$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

■Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-----------------|----------------------|-------------------------|----------------------------|---------------|
| ESD2402E | F2 | Approximate 10 | 3000 | 30000 | 120000 | 7 reel |



■ Characteristics (Typical)

Fig.1 8/20us Waveform Per IEC6100-4-5

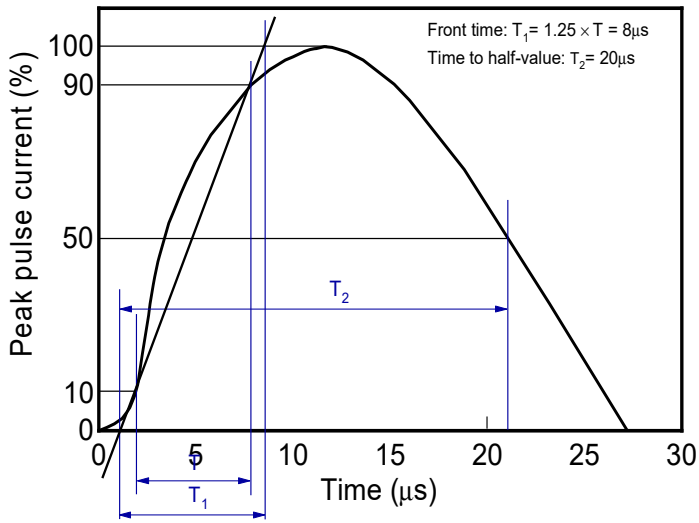


Fig.2 Contact Discharge Current Waveform per IEC61000-4-2

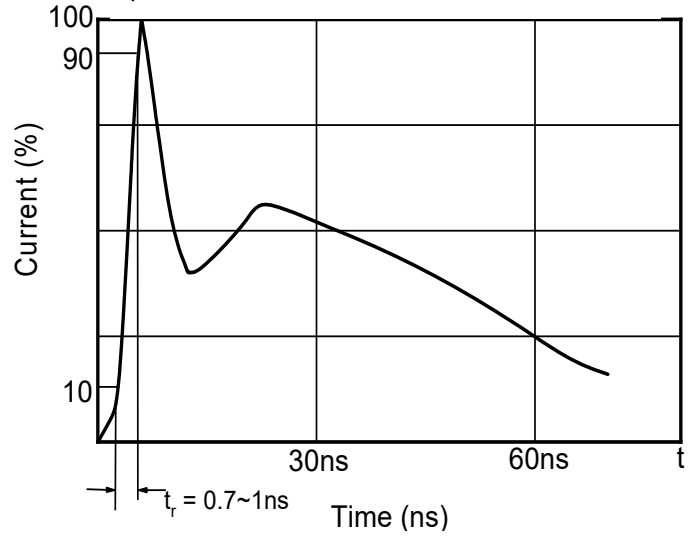


Fig.3 Clamping Voltage VS Peak Pulse Current

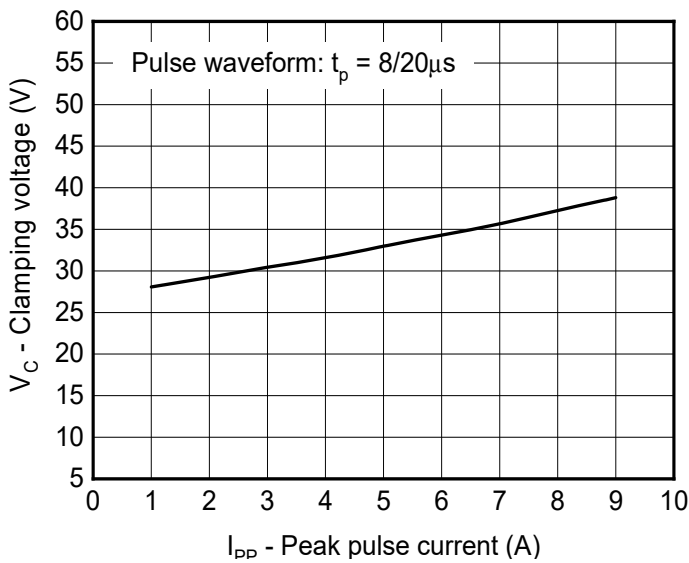


Fig.4 Capacitance VS Bias

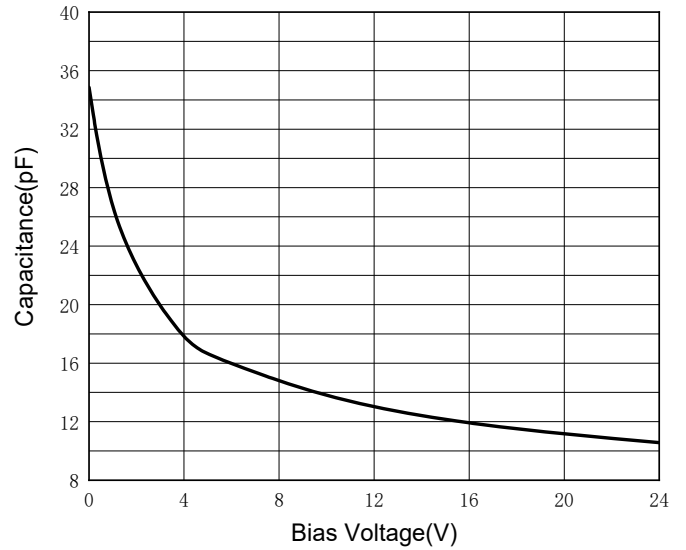


Fig.4 Non-Repetitive Peak Pulse Power vs Pulse

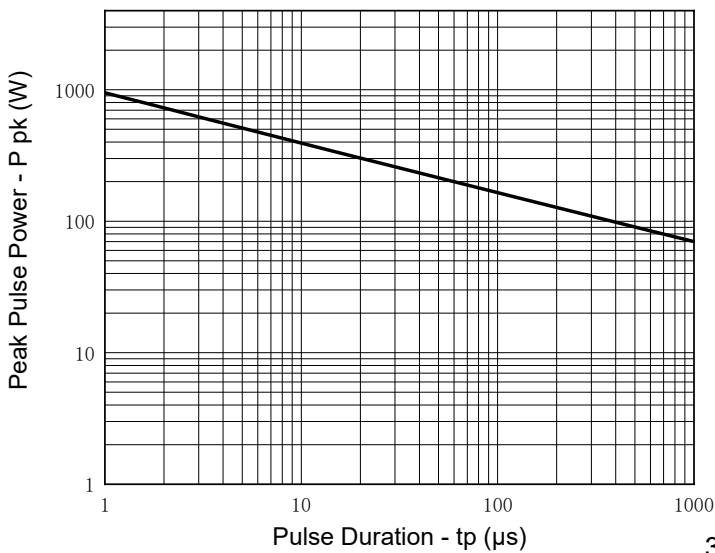


Fig.5 Power Derating Curve

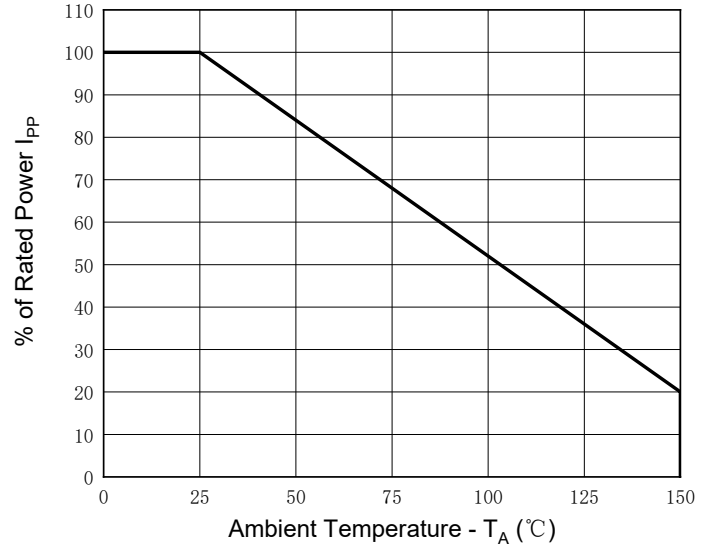
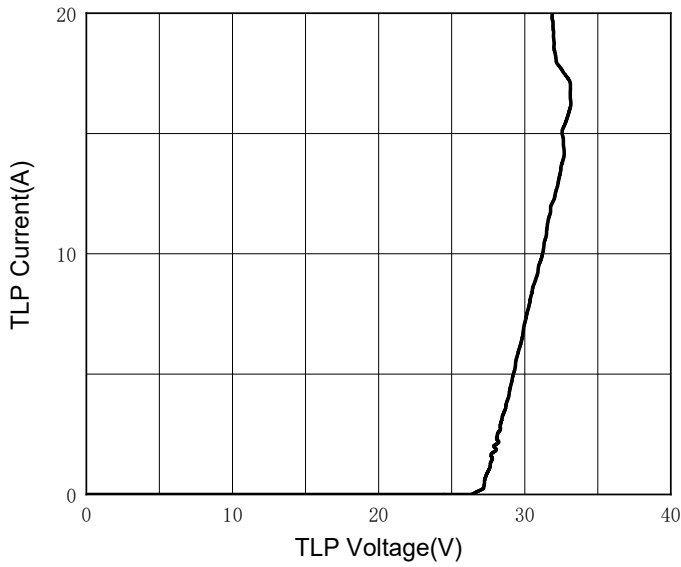
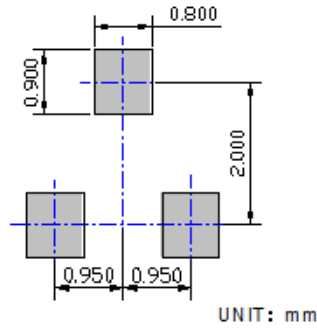
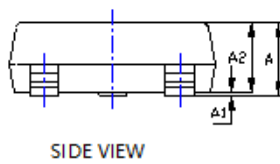
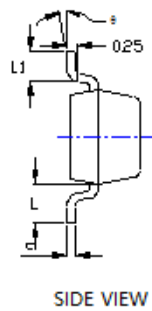
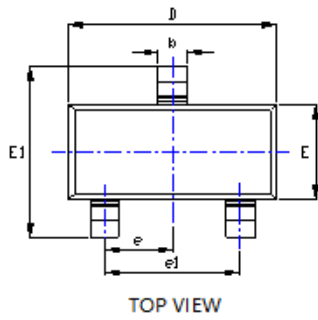


Fig.6 Transmission Line Pulsing(TLPP)Plot



Outline Dimensions



| SYMBOL | DIMENSIONS | | | |
|--------|------------|-------|------------|-------|
| | INCHES | | Millimeter | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.035 | 0.045 | 0.900 | 1.150 |
| A1 | 0.000 | 0.004 | 0.000 | 0.100 |
| A2 | 0.035 | 0.041 | 0.900 | 1.050 |
| b | 0.012 | 0.020 | 0.300 | 0.500 |
| c | 0.004 | 0.008 | 0.100 | 0.200 |
| D | 0.110 | 0.118 | 2.800 | 3.000 |
| E | 0.047 | 0.055 | 1.200 | 1.400 |
| E1 | 0.089 | 0.100 | 2.250 | 2.550 |
| e | 0.037TYP | | 0.950TYP | |
| e1 | 0.071 | 0.079 | 1.800 | 2.000 |
| L | 0.022REF | | 0.550REF | |
| L1 | 0.012 | 0.020 | 0.300 | 0.500 |
| φ | 0° | 8° | 0° | 8° |

NOTE:
 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



ESD2402E

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