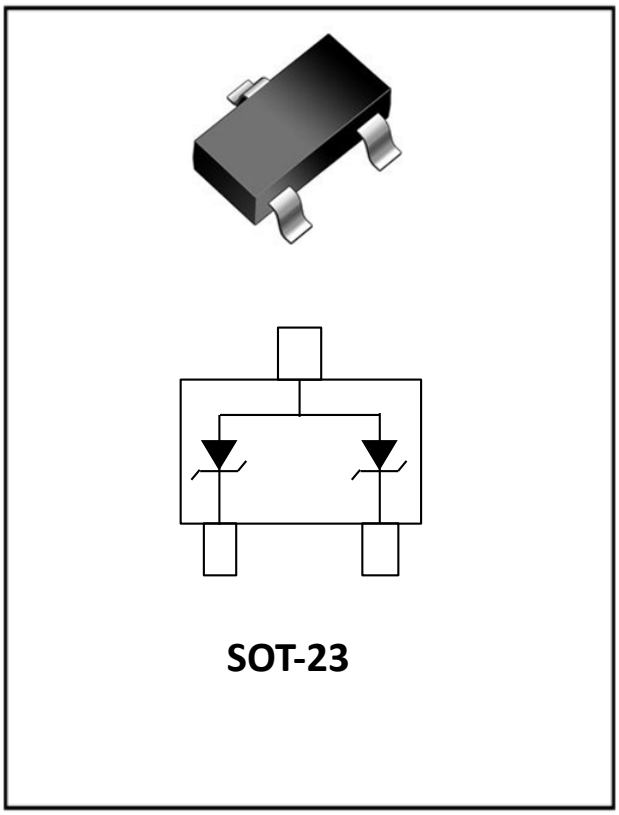
# 2- Line, Uni-directional, Transient Voltage Suppressor




## Features

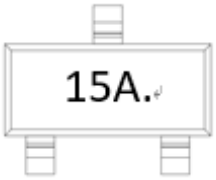
- Transient protection for each line according to IEC61000-4-2(ESD): ±30kV contact, ±30kV air IEC61000-4-5:8A(tp=8/20μs)
- Low leakage current
- Ultra low clamping voltage
- RoHS Compliant

## Applications

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

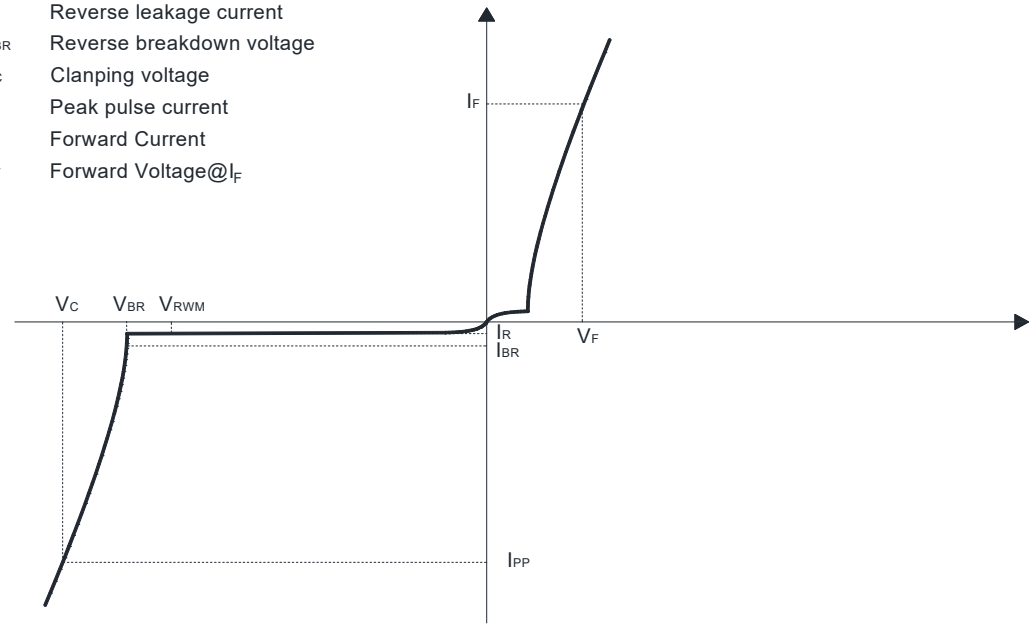
## Mechanical Data

- 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

| | |
|---|---|
| $V_{RWM}$ | Reverse stand-off voltage |
| $I_R$ | Reverse leakage current |
| $V_{BR}$ | Reverse breakdown voltage |
| $V_C$ | Clanping voltage |
| $I_{PP}$ | Peak pulse current |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage@$I_F$ |



## ■Maximum Ratings

| PARAMETER | SYMBOL | LIMITS | UNIT |
|---|---|---|---|
| Peak pulse power ($t_p$ = 8/20μs) | $P_{pk}$ | 280 | W |
| Peak pulse current ($t_p$ = 8/20μs) | $I_{PP}$ | 8 | 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 | ℃ |
| Storage temperature | $T_{STG}$ | -55~150 | ℃ |

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℃）

| PARAMETER | Symbol | UNIT | Conditions | Min | Typ | Max |
|---|---|---|---|---|---|---|
| Reverse maximum working voltage | $V_{RWM}$ | V | | | | 15 |
| Reverse leakage current | $I_R$ | μA | $V_{RWM}$ = 15V | | | 1.0 |
| Reverse breakdown voltage | $V_{BR}$ | V | $I_T$ = 1mA | 16.1 | | 19 |
| 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) | | 19 | |
| Dynamic resistance 2) | $R_{DYN}$ | Ω | TLP, tp=100ns, I/O to Ground | | 0.19 | |
| Clamping voltage 1) | $V_C$ | V | $I_{PP}$ = 1A, $t_p$ = 8/20μs | | | 24 |
| | | | $I_{PP}$ = 5A, $t_p$ = 8/20μs | | | 30 |
| | | | $I_{PP}$ = 8A, $t_p$ = 8/20μs | | | 35 |
| Junction capacitance | $C_J$ | pF | $V_R$ = 0V, f = 1MHz | | 45 | 55 |

Notes:

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

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

## ■Ordering Information (Example)

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| ESD1502E | F2 | Approximate 10 | 3000 | 30000 | 120000 | 7 reel |

## ■ Characteristics (Typical)

Fig.1 8/20us Waveform Per iec6100-4-5

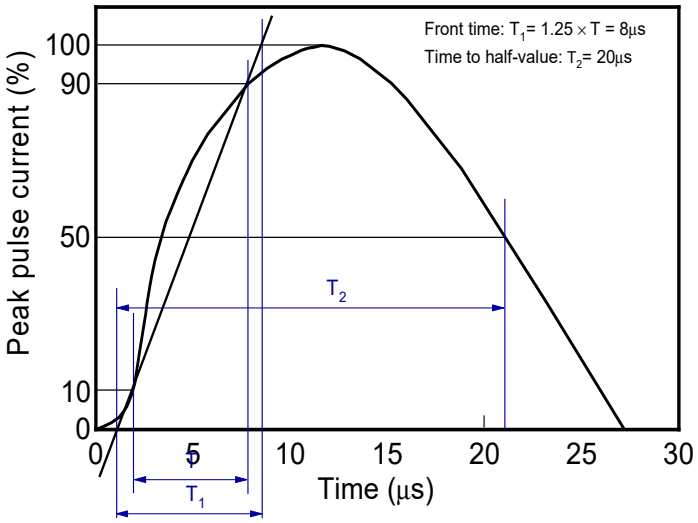



Fig.2 Contact Discharge Current Waveform per IEC61000-4-2

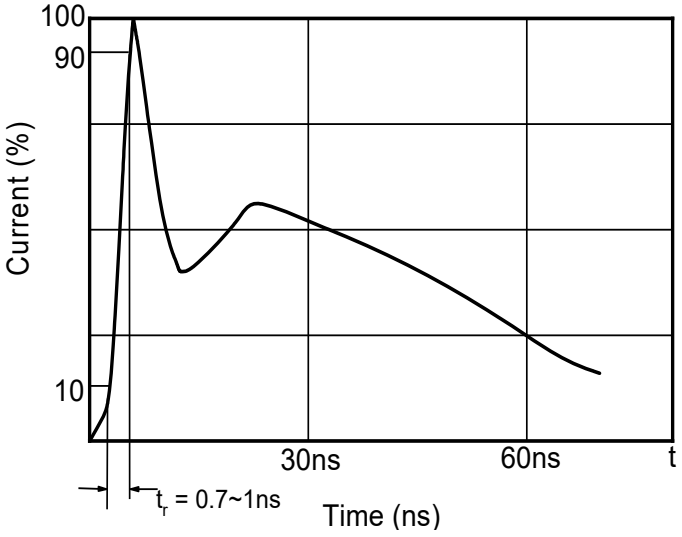



Fig.3 ClampingVoltage VS Peak Pulse Current

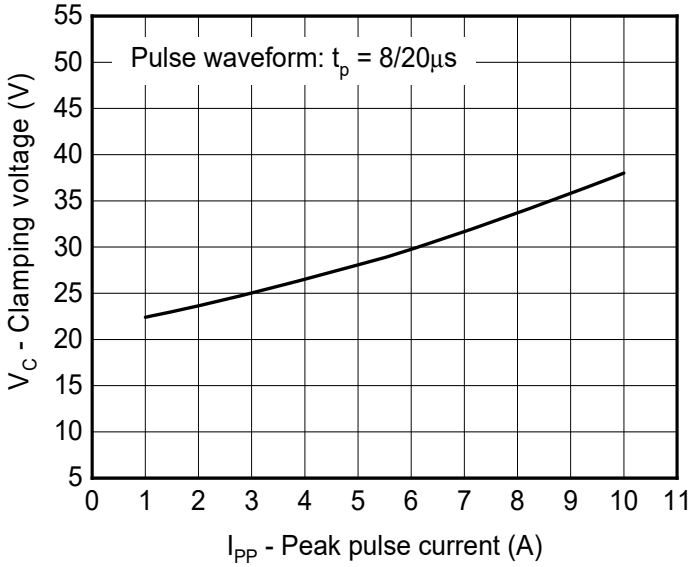



Fig.4 Capacitance VS Bias

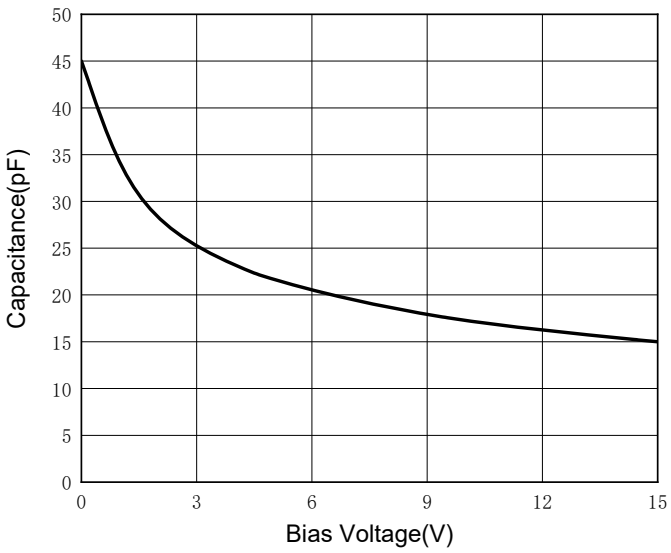



Fig.4 Non-Repetitive Peak Pulse Power vs Pulse Time

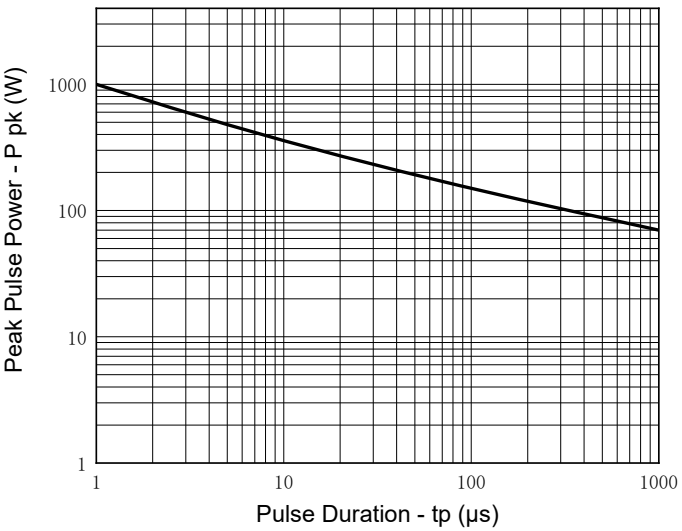



Fig.5 Power Derating Curve

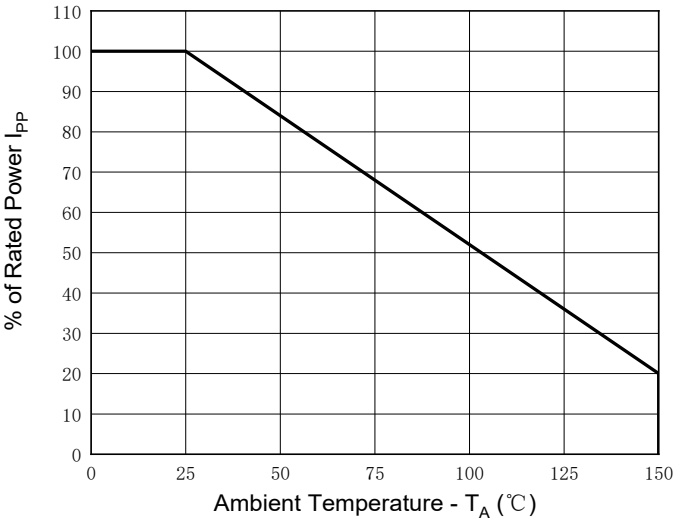
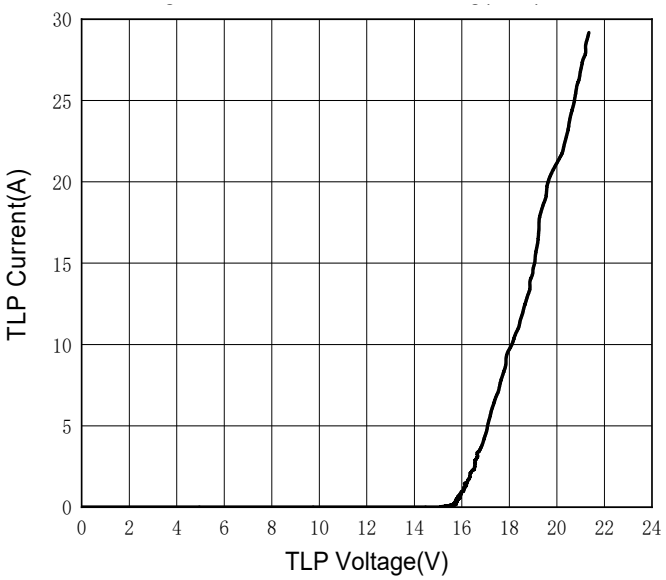
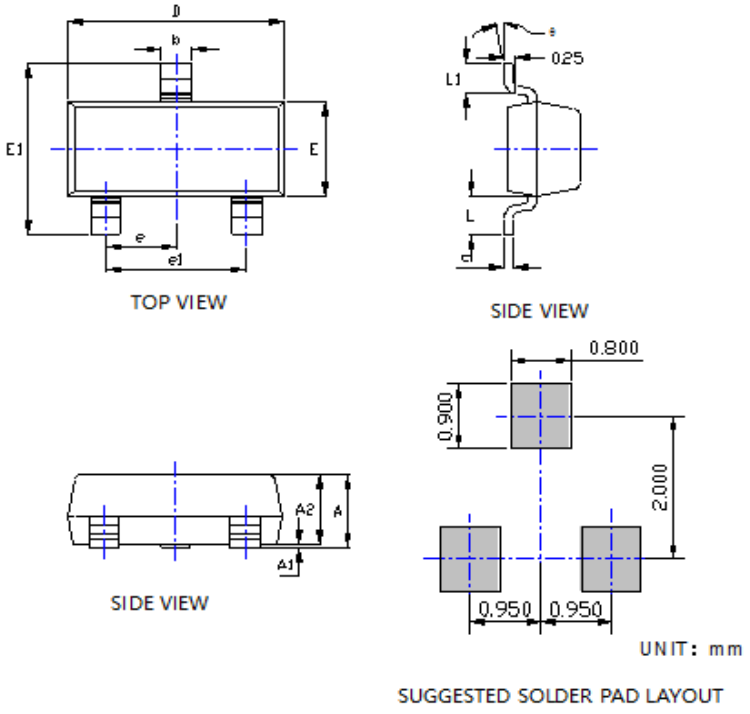


Fig.6 Trans mission Line Pulsing(TLP)Plot




## ■ Outline Dimensions




| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | 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 |
| θ | 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.

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