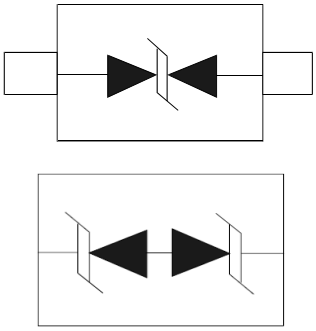
## Features

- Bidirectional ESD protection of one line
- Very low diode capacitance: $C_d$ = 11 pF
- Max. peak pulse power: $P_{PP}$ = 45 W
- Low clamping voltage: $V_{CL}$ = 12.5 V
- Ultra low leakage current: $I_{RM}$ < 1 nA
- ESD protection up to 30 kV
- IEC 61000-4-2; level 4 (ESD)
- IEC 61000-4-5 (surge); $I_{PP}$ = 4.8 A
- AEC-Q101 qualified



Transparent
top view

## Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Subscriber Identity Module (SIM) card protection
- Communication systems
- Portable electronics
- 10/100 Mbit/s Ethernet
- FireWire

## Mechanical Data

- SOD-882 package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

## Quick reference data

**Quick reference data**
$T_{amb}$ = 25 ˚C unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{RWM}$ | reverse standoff voltage | | - | - | 5 | V |
| $C_d$ | diode capacitance | f = 1 MHz; $V_R$ = 0 V | - | 11 | 13 | pF |

## Ordering information

Ordering information

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| PESD5V0V1BA | SC-76 | plastic surface-mounted package; 2 leads | SOD323 |
| PESD5V0V1BB | SC-79 | plastic surface-mounted package; 2 leads | SOD523 |
| PESD5V0V1BL | - | leadless ultra small plastic package; 2 terminals; body 1.0 ? 0.6 ? 0.5 mm | SOD882 |

## Limiting values

Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| Per diode | | | | | | |
| $P_{PP}$ | peak pulse power | $t_p$ = 8/20 ?s | [1] | - | 45 | W |
| $I_{PP}$ | peak pulse current | $t_p$ = 8/20 ?s | [1] | - | 4.8 | A |

Limiting values …continued
In accordance with the Absolute Maximum Rating System (IEC 60134).

| **Symbol** | **Parameter** | **Conditions** | **Min** | **Max** | **Unit** |
|---|---|---|---|---|---|
| **Per device** | | | | | |
| $T_j$ | junction temperature | | - | 150 | °C |
| $T_{amb}$ | ambient temperature | | −55 | +150 | °C |
| $T_{stg}$ | storage temperature | | −65 | +150 | °C |

[1] Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC 61000-4-5.

**ESD maximum ratings**
$T_{amb}$ = 25 °C unless otherwise specified.

| **Symbol** | **Parameter** | **Conditions** | | **Min** | **Max** | **Unit** |
|---|---|---|---|---|---|---|
| $V_{ESD}$ | electrostatic discharge voltage | IEC 61000-4-2 (contact discharge) | [1] | - | 30 | kV |
| | | machine model | | - | 2 | kV |
| | | MIL-STD-883 (human body model) | | - | 16 | kV |

[1] Device stressed with ten non-repetitive ESD pulses.

**ESD standards compliance**

| **Standard** | **Conditions** |
|---|---|
| IEC 61000-4-2; level 4 (ESD) | > 15 kV (air); > 8 kV (contact) |
| MIL-STD-883; class 3B (human body model) | > 8 kV |

## Characteristics

**Characteristics**

$T_{amb}$ = 25 °C unless otherwise specified.

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{RWM}$ | reverse standoff voltage | | | - | - | 5 | V |
| $I_{RM}$ | reverse leakage current | $V_{RWM}$ = 5 V | | - | < 1 | 10 | nA |
| $V_{BR}$ | breakdown voltage | $I_R$ = 5 mA | | 5.8 | 6.8 | 7.8 | V |
| $C_d$ | diode capacitance | f = 1 MHz; | | - | 11 | 13 | pF |
| | | $V_R$ = 0 V | | | | | |
| $V_{CL}$ | clamping voltage | $I_{PP}$ = 4.8 A | [1] | - | - | 12.5 | V |
| $r_{dyn}$ | dynamic resistance | $I_R$ = 10 A | [2] | - | 0.2 | - | Ω |
| $r_{dif}$ | differential resistance | $I_R$ = 5 mA | | - | - | 35 | Ω |

[1] Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC 61000-4-5.

[2] Non-repetitive current pulse, Transmission Line Pulse (TLP) $t_p$ = 100 ns; square pulse; ANS/IESD STM5.1-2008.

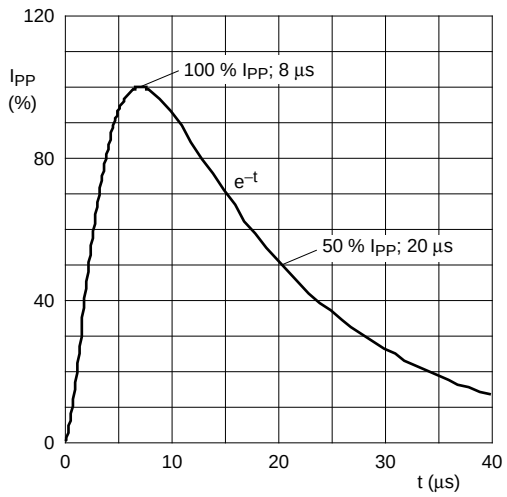



Fig 1. 8/20 ?s pulse waveform according to IEC 61000-4-5

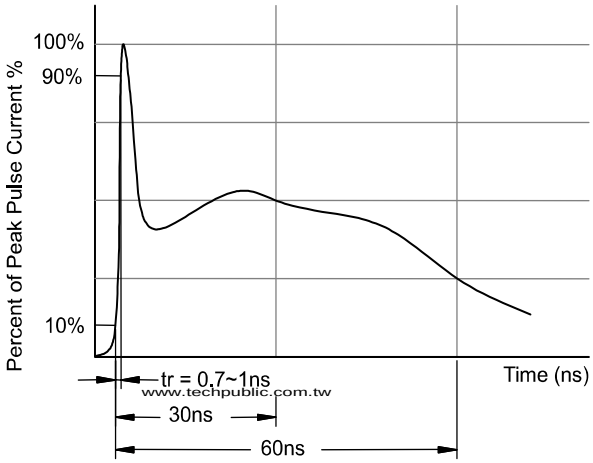



Fig 2. ESD pulse waveform according to IEC 61000-4-2

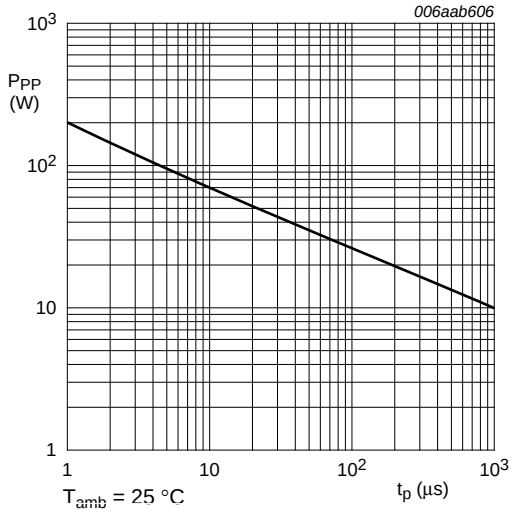



Fig 3. Peak pulse power as a function of exponential pulse duration; typical values

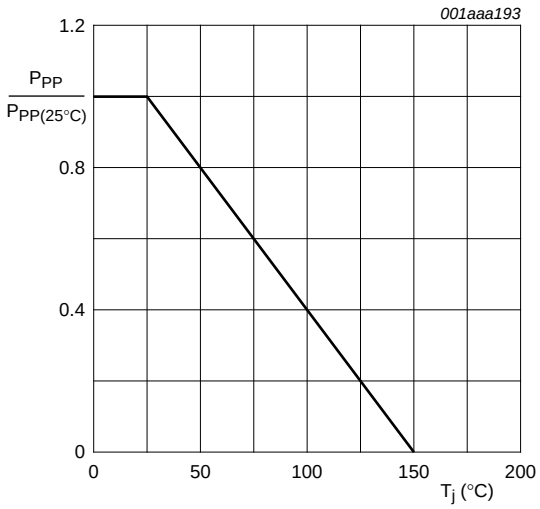



Fig 4. Relative variation of peak pulse power as a function of junction temperature; typical values

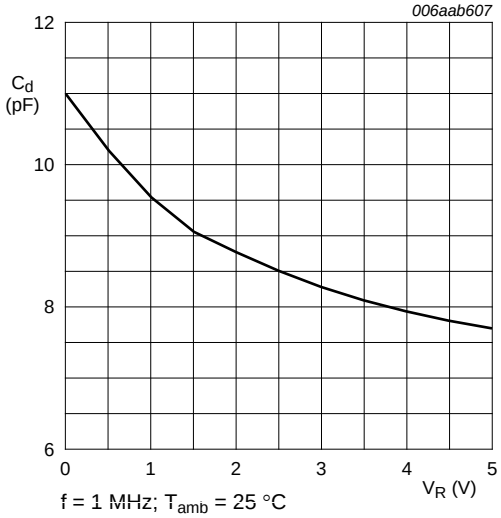



Fig 5. Diode capacitance as a function of reverse voltage; typical values

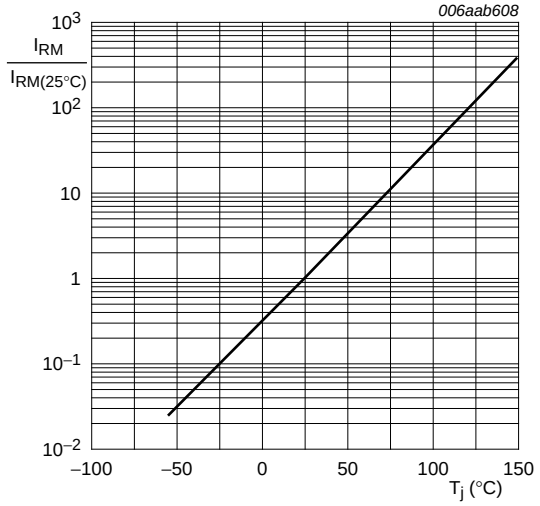
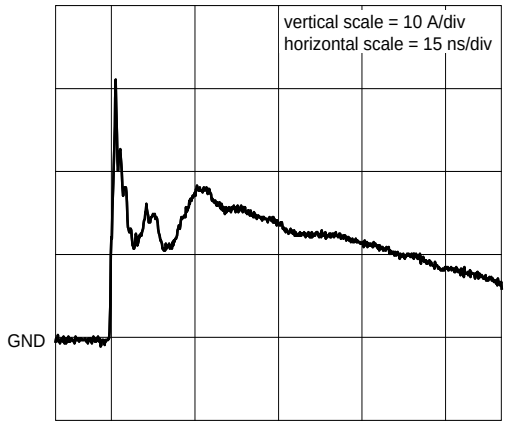
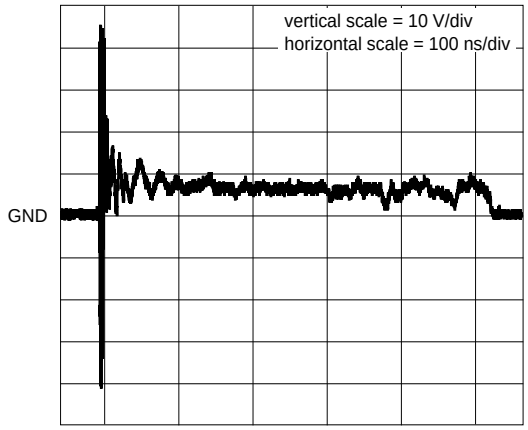



Fig 6. Relative variation of reverse leakage current as a function of junction temperature; typical values

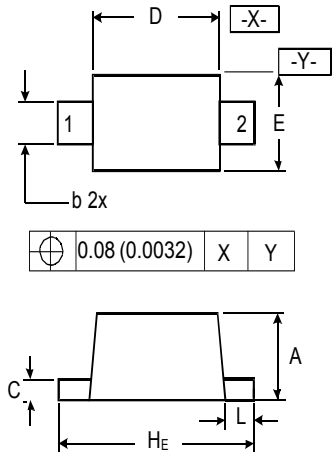



unclamped +8 kV ESD pulse waveform
(IEC 61000-4-2 network)



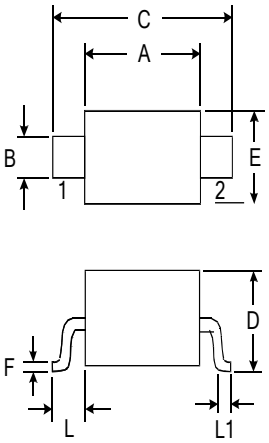

clamped +8 kV ESD pulse waveform
(IEC 61000-4-2 network)

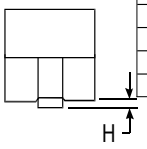
## Outline Drawing – SOD-323/SOD-523/SOD-882




| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | MILLIMETER | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 0.50 | 0.70 | 0.020 | 0.028 |
| b | 0.25 | 0.35 | 0.010 | 0.014 |
| C | 0.07 | 0.20 | 0.0028 | 0.0079 |
| D | 1.10 | 1.30 | 0.043 | 0.051 |
| E | 0.70 | 0.90 | 0.028 | 0.035 |
| $H_E$ | 1.50 | 1.70 | 0.059 | 0.067 |
| L | 0.15 | 0.25 | 0.006 | 0.010 |

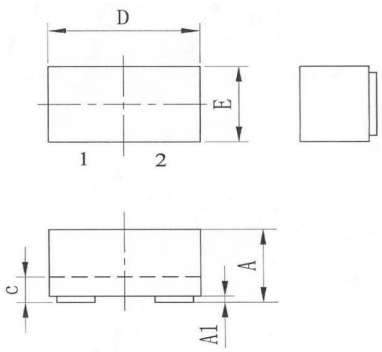
SOD-523

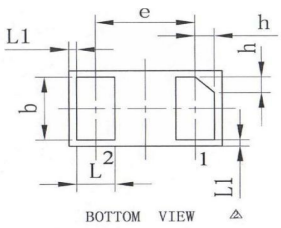



| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | MILLIMETER | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 1.600 | 1.800 | 0.063 | 0.071 |
| B | 0.250 | 0.350 | 0.010 | 0.014 |
| C | 2.500 | 2.700 | 0.098 | 0.106 |
| D | | 1.000 | | 0.039 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| F | 0.080 | 0.150 | 0.003 | 0.006 |
| L | 0.475 REF | | 0.019REF | |
| L1 | 0.250 | 0.400 | 0.010 | 0.016 |
| H | 0.000 | 0.100 | 0.000 | 0.004 |

SOD-323

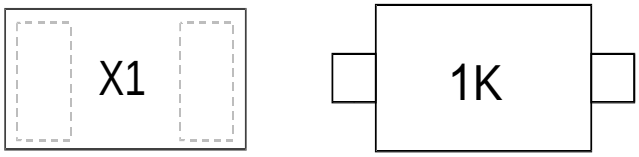



| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 |
| A1 | 0 | 0.02 | 0.05 |
| b | 0.45 | 0.50 | 0.55 |
| c | 0.12 | 0.15 | 0.18 |
| D | 0.95 | 1.00 | 1.05 |
| e | 0.65BSC | | |
| E | 0.55 | 0.60 | 0.65 |
| L | 0.20 | 0.25 | 0.30 |
| L1 | 0.05REF | | |
| h | 0.07 | 0.12 | 0.17 |
| 载体尺寸 (W11) | 20*20 | | |

SOD-882

## Marking




## Ordering information

| Order code | Marking codes | Package | Baseqty | Deliverymode |
|---|---|---|---|---|
| PESD5V0V1BA | 1K | SOD-323 | 10000 | Tape and reel |
| PESD5V0V1BB | Z9 | SOD-523 | 10000 | Tape and reel |
| PESD5V0V1BL | X1 | SOD-882 | 10000 | Tape and reel |