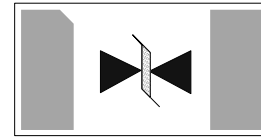
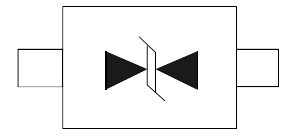


Description

Low capacitance ElectroStatic Discharge (ESD) protection diodes in ultra small SMD plastic packages designed to protect one signal line from the damage caused by ESD and other transients.



SOD-882



SOD-323/523

Features

- Bidirectional ESD protection of one line
- Max. peak pulse power: $P_{PP} = 130\text{ W}$
- Low clamping voltage: $V_{(CL)R} = 14\text{ V}$
- Ultra low leakage current: $I_{RM} = 5\text{ nA}$
- ESD protection > 30 kV
- IEC 61000-4-2, level 4 (ESD)
- IEC 61000-4-5 (surge); $I_{PP} = 12\text{ A}$
- Ultra small SMD plastic packages

Applications

- Cellular handsets and accessories
- Portable electronics
- Computers and peripherals
- Communication systems
- Audio and video equipment

Quick reference data

Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|---------------------------|---|-----|-----|-----|------|
| V_{RWM} | reverse stand-off voltage | | - | - | 5 | V |
| C_d | diode capacitance | $V_R = 0\text{ V};$ $f = 1\text{ MHz}$ | - | 35 | 45 | pF |

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 | 8/20 μs | [1][2] | - | 130 | W |
| I _{PP} | peak pulse current | 8/20 μs | [1][2] | - | 12 | A |
| T _j | junction temperature | | | - | 150 | °C |
| T _{amb} | ambient temperature | | | -65 | +150 | °C |
| T _{stg} | storage temperature | | | -65 | +150 | °C |

[1] Non-repetitive current pulse 8/20 μs exponentially decaying waveform according to IEC61000-4-5; see [Figure 1](#).

[2] Measured from pin 1 to pin 2.

ESD maximum ratings

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|--------|------------------------------------|-----------------------------------|--------|-----|-----|------|
| ESD | electrostatic discharge capability | IEC 61000-4-2 (contact discharge) | [1][2] | - | 30 | kV |
| | | HBM MIL-Std 883 | | - | 10 | kV |

[1] Measured from pin 1 to pin 2.

[2] Device stressed with ten non-repetitive ElectroStatic Discharge (ESD) pulses; see [Figure 2](#).

ESD standards compliance

| Standard | Conditions |
|--|---------------------------------|
| IEC 61000-4-2, level 4 (ESD); Figure 2 | > 15 kV (air); > 8 kV (contact) |
| HBM MIL-STD 883; class 3 | > 4 kV |

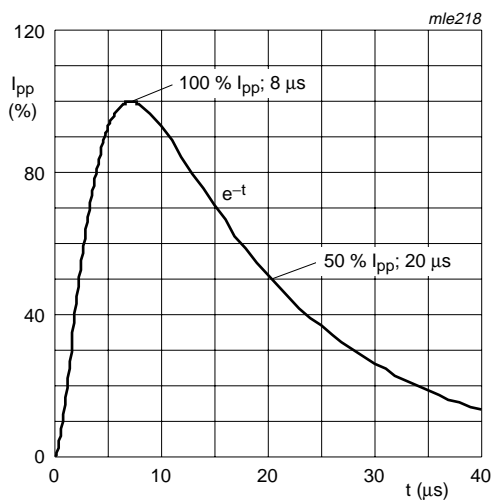


Fig 1. 8/20 μs pulse waveform according to IEC 61000-4-5

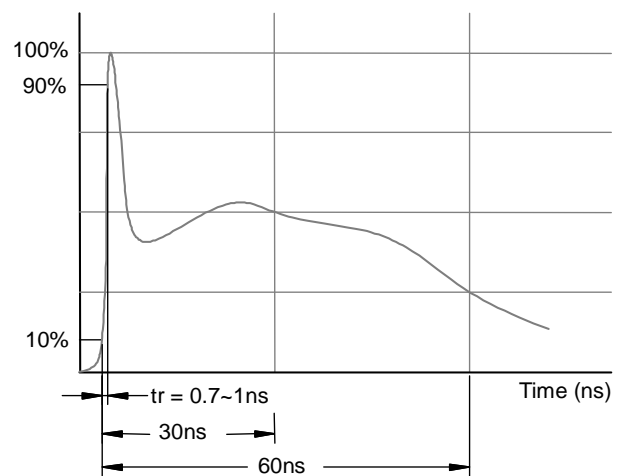


Fig 2. ElectroStatic Discharge (ESD) pulse waveform according to IEC 61000-4-2

Characteristics

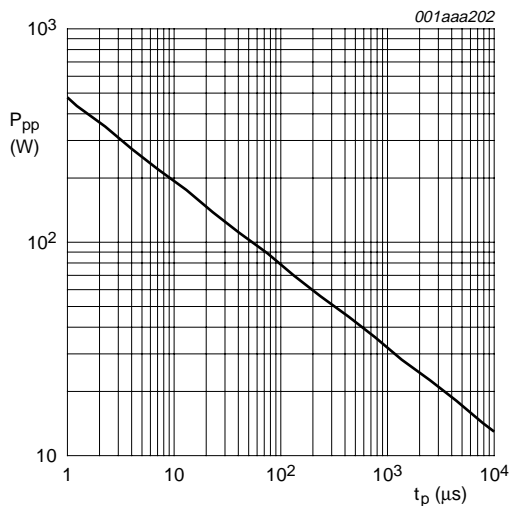
Characteristics

$T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|---------------------------|---|--------|-----|-----|----------|
| Per diode | | | | | | |
| V_{RWM} | reverse stand-off voltage | | - | - | 5 | V |
| I_{RM} | reverse leakage current | $V_{RWM} = 5\text{ V}$; see Figure 6 | - | 5 | 100 | nA |
| $V_{(CL)R}$ | clamping voltage | $I_{PP} = 1\text{ A}$ | [1][2] | - | 10 | V |
| | | $I_{PP} = 12\text{ A}$ | [1][2] | - | 14 | V |
| $V_{(BR)}$ | breakdown voltage | $I_R = 1\text{ mA}$ | 5.5 | - | 9.5 | V |
| r_{dif} | differential resistance | $I_R = 1\text{ mA}$ | - | - | 50 | Ω |
| C_d | diode capacitance | $V_R = 0\text{ V}$; $f = 1\text{ MHz}$; see Figure 5 | - | 35 | 45 | pF |

[1] Non-repetitive current pulse 8/20 μs exponentially decaying waveform according to IEC61000-4-5; see [Figure 1](#).

[2] Measures from pin 1 to pin 2.



$T_{amb} = 25^{\circ}\text{C}$

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

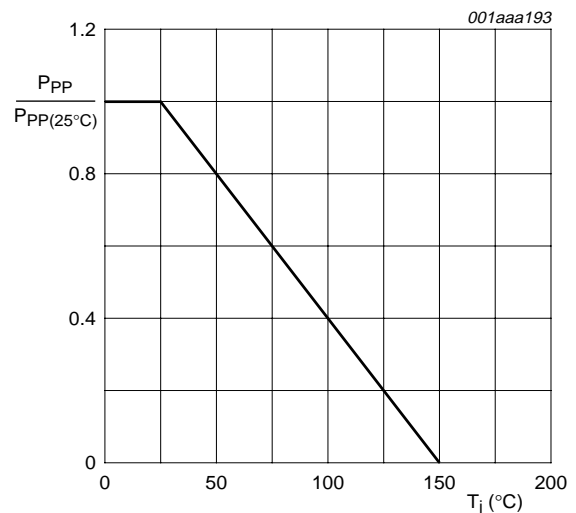
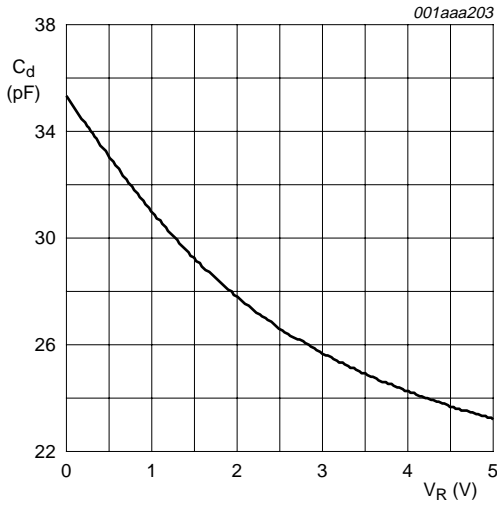


Fig 4. Relative variation of peak pulse power as a function of junction temperature; typical values



T_{amb} = 25 °C; f = 1 MHz

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

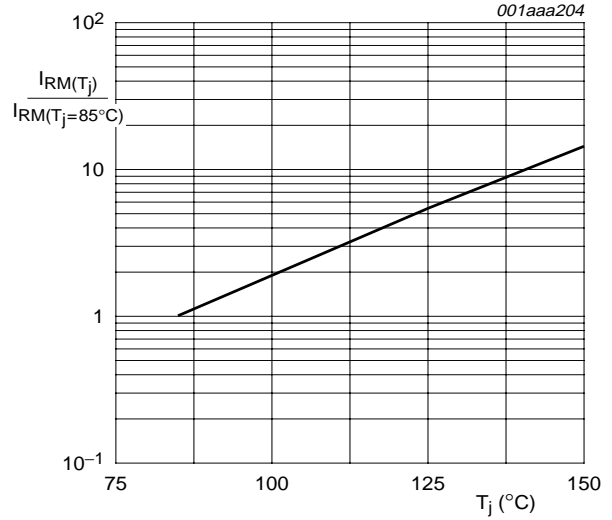
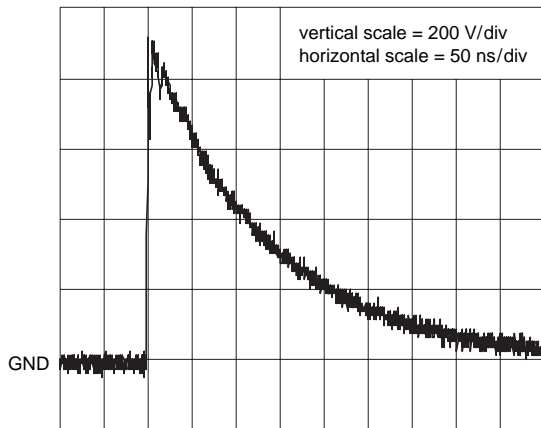
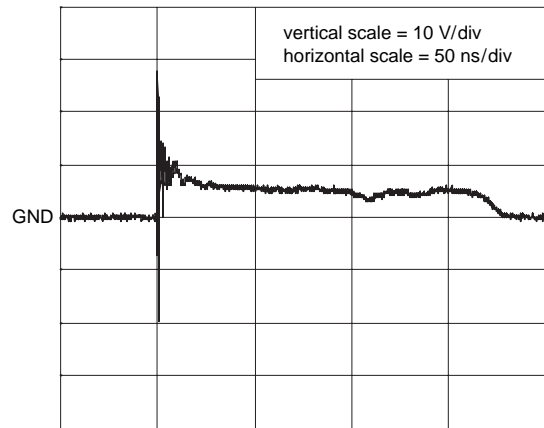


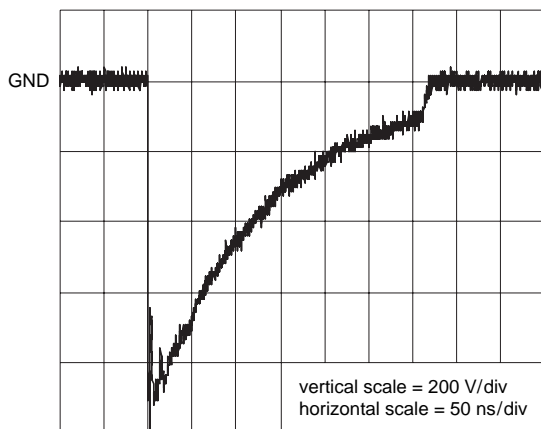
Fig 6. Relative variation of reverse leakage current as a function of junction temperature; typical



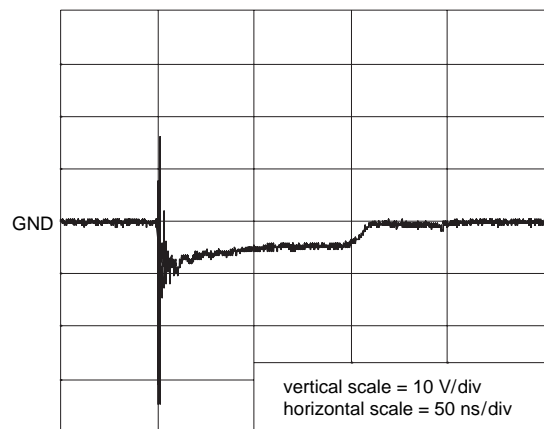
unclamped +1 kV ESD voltage waveform (IEC61000-4-2 network)



clamped +1 kV ESD voltage waveform (IEC61000-4-2 network)



unclamped -1 kV ESD voltage waveform (IEC61000-4-2 network)

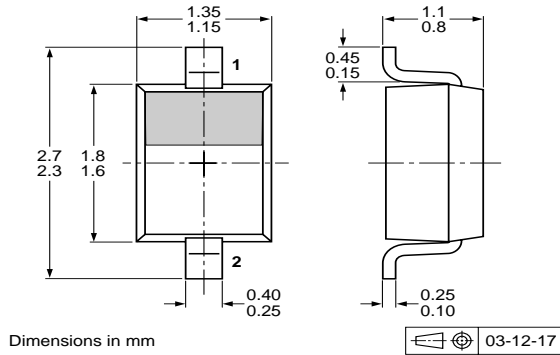


clamped -1 kV ESD voltage waveform (IEC61000-4-2 network)

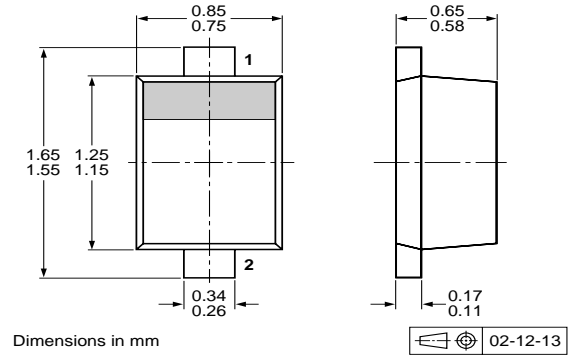
006aaa056

Fig 7. ESD clamping test setup and waveforms

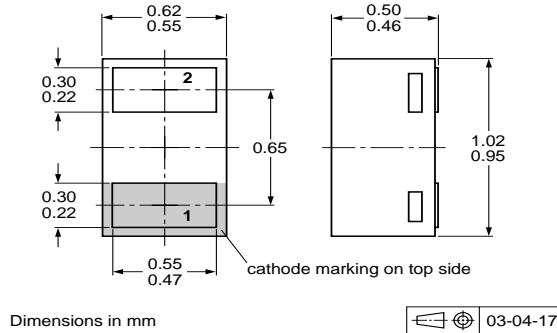
SOD-323/SOD-523/SOD-882 PACKAGE OUTLINE DIMENSIONS



PESD5V0S1BA(SOD-323)

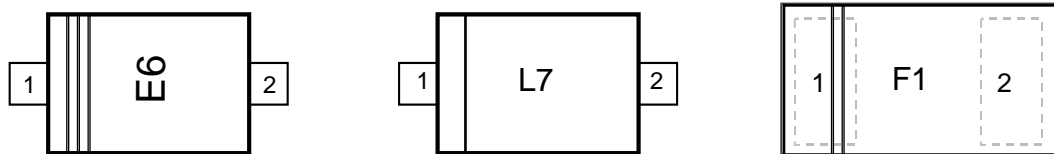


PESD5V0S1BB(SOD-523)



PESD5V0S1BL(SOD-882)

Marking



Ordering information

| Order code | Marking code | package | Baseqty | Delivermode |
|-----------------|--------------|---------|---------|---------------|
| UMW PESD5V0S1BA | E6 | SOD-323 | 3000 | Tape and reel |
| UMW PESD5V0S1BB | L7 | SOD-523 | 3000 | Tape and reel |
| UMW PESD5V0S1BL | F1 | SOD-882 | 10000 | Tape and reel |