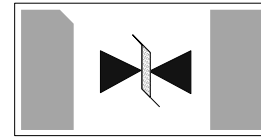
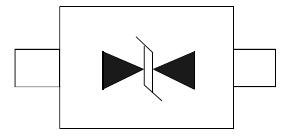


## Description

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
<b>Per diode</b>					
P <sub>PP</sub>	peak pulse power	8/20 μs	[1][2] -	130	W
I <sub>PP</sub>	peak pulse current	8/20 μs	[1][2] -	12	A
T <sub>j</sub>	junction temperature		-	150	°C
T <sub>amb</sub>	ambient temperature		-65	+150	°C
T <sub>stg</sub>	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) HBM MIL-Std 883	[1][2] -	30 10	kV 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); <a href="#">Figure 2</a>	> 15 kV (air); > 8 kV (contact)
HBM MIL-STD 883; class 3	> 4 kV

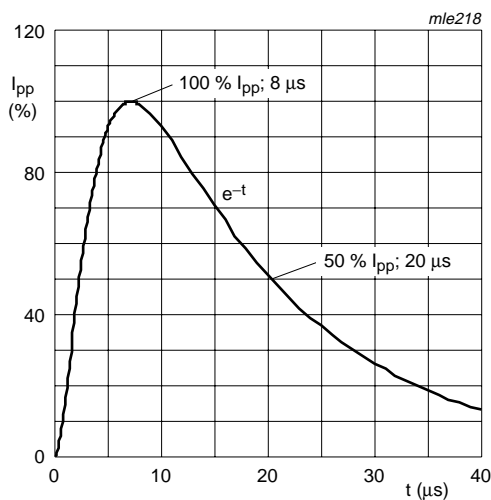


Fig 1. 8/20 μs pulse waveform according to IEC 61000-4-5

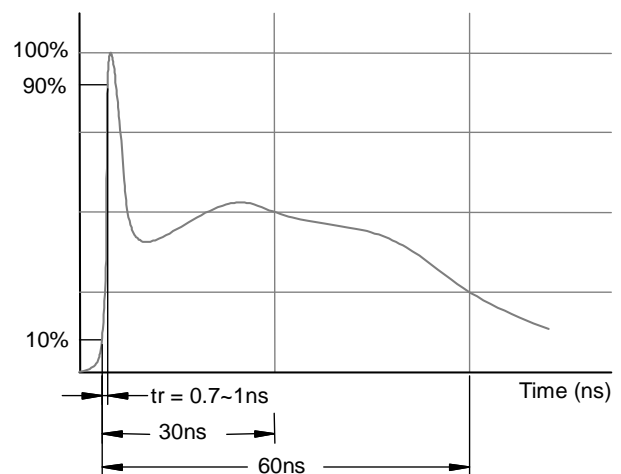


Fig 2. ElectroStatic Discharge (ESD) pulse waveform according to IEC 61000-4-2

## Characteristics

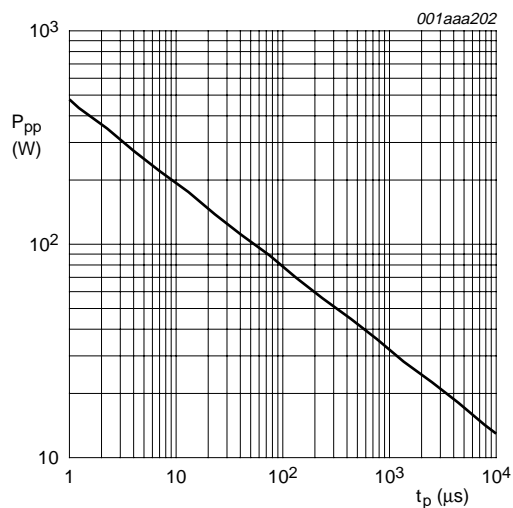
### Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_{RWM}$	reverse stand-off voltage		-	-	5	V
$I_{RM}$	reverse leakage current	$V_{RWM} = 5\text{ V}$ ; see <a href="#">Figure 6</a>	-	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	$\Omega$
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$ ; see <a href="#">Figure 5</a>	-	35	45	pF

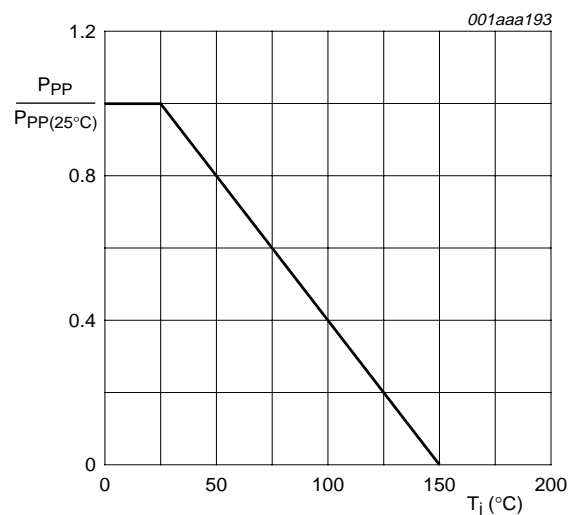
[1] Non-repetitive current pulse 8/20  $\mu\text{s}$  exponentially decaying waveform according to IEC61000-4-5; see [Figure 1](#).

[2] Measures from pin 1 to pin 2.

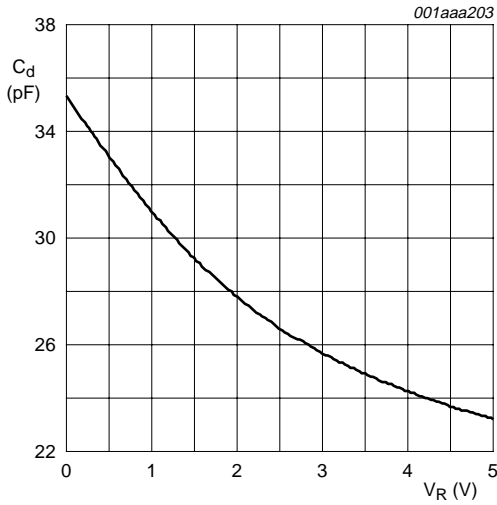


$T_{amb} = 25^{\circ}\text{C}$

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

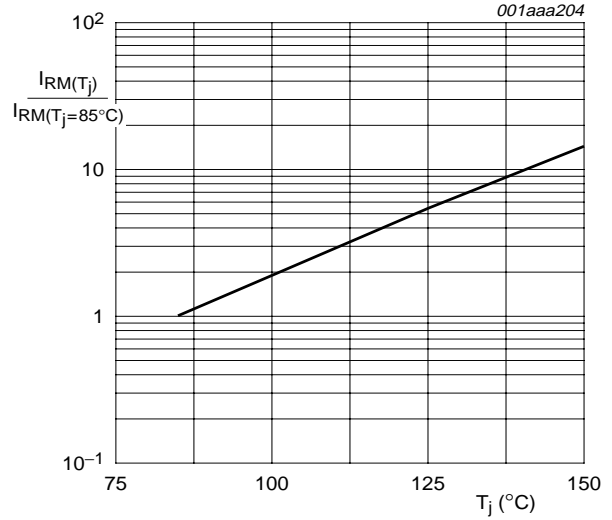


**Fig 4. Relative variation of peak pulse power as a function of junction temperature; typical values**

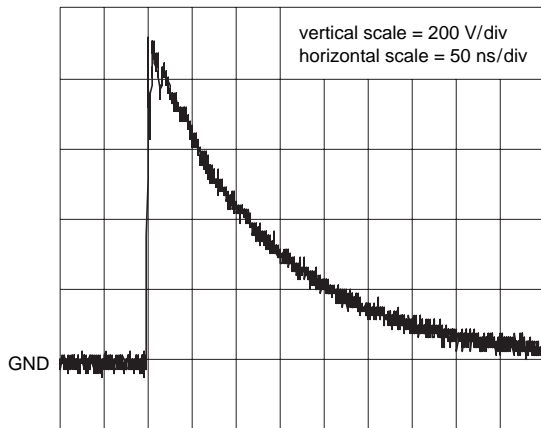


T<sub>amb</sub> = 25 °C; f = 1 MHz

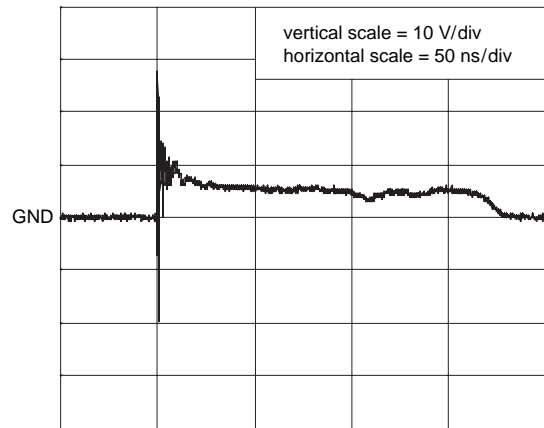
**Fig 5. Diode capacitance as a function of reverse voltage; typical values**



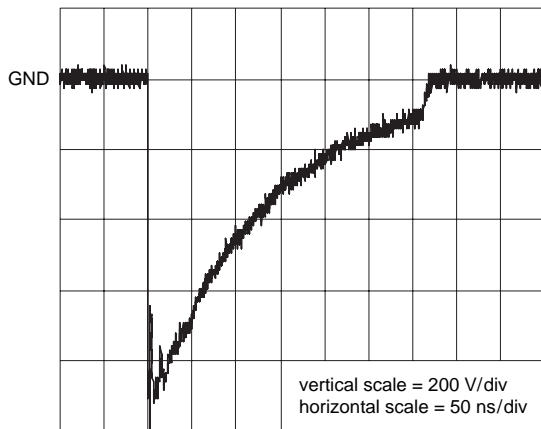
**Fig 6. Relative variation of reverse leakage current as a function of junction temperature; typical**



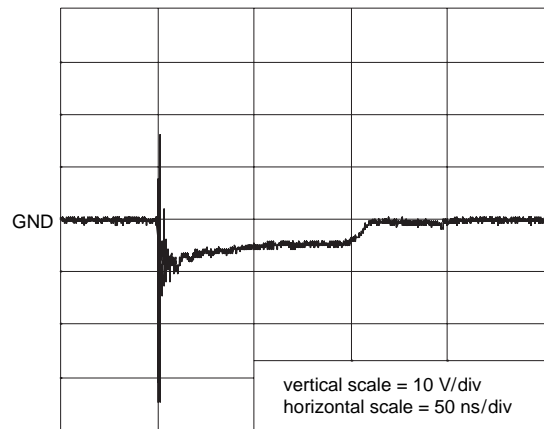
unclamped +1 kV ESD voltage waveform (IEC61000-4-2 network)



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



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

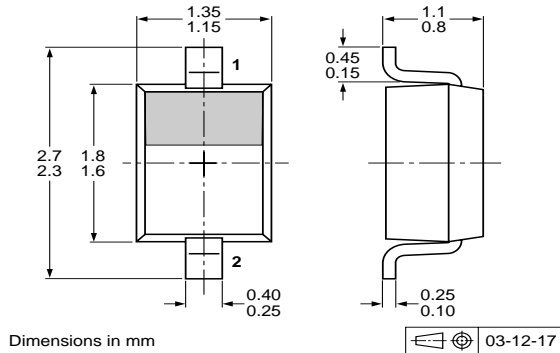


clamped -1 kV ESD voltage waveform (IEC61000-4-2 network)

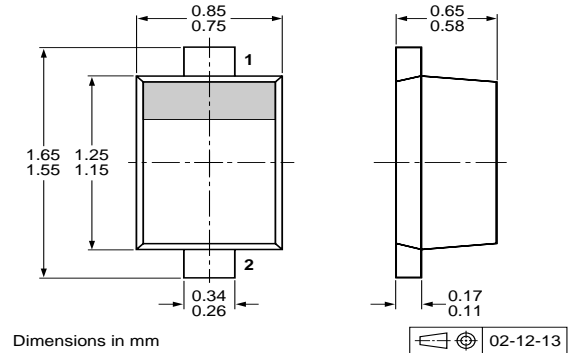
006aaa056

**Fig 7. ESD clamping test setup and waveforms**

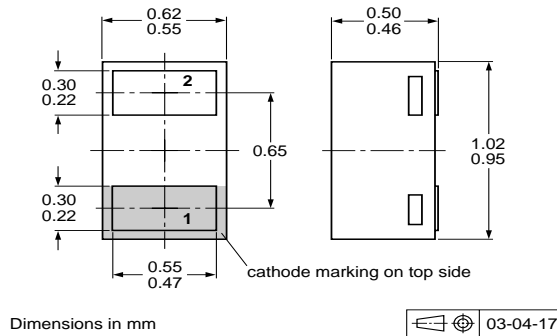
**SOD-323/SOD-523/SOD-882 PACKAGE OUTLINE DIMENSIONS**



PESD5V0S1BA(SOD-323)

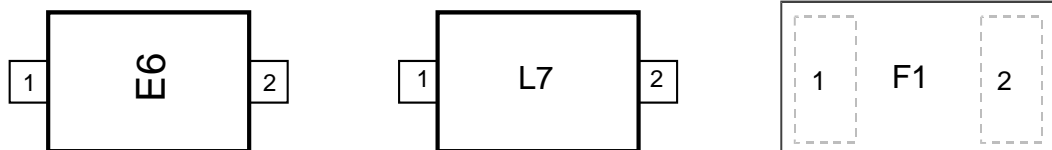


PESD5V0S1BB(SOD-523)



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

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