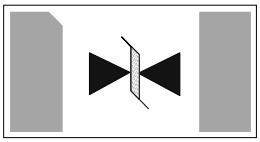
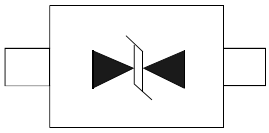
Description

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 W
- Low clamping voltage: $V_{(CL)R}$ = 14 V
- Ultra low leakage current: I_{RM} = 5 nA
- ESD protection > 30 kV
- IEC 61000-4-2, level 4 (ESD)
- IEC 61000-4-5 (surge); I_{PP} = 12 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 V; f = 1 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

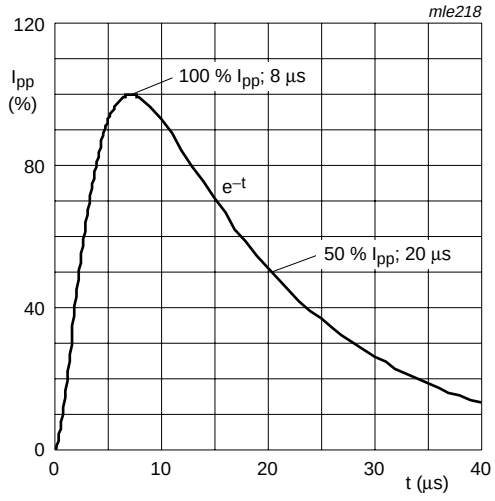


Fig 1. 8/20 µs pulse waveform according to IEC 61000-4-5

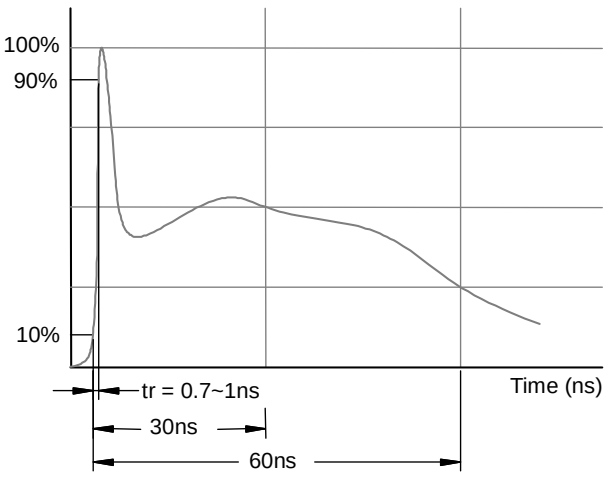


Fig 2. ElectroStatic Discharge (ESD) pulse waveform according to IEC 61000-4-2

Characteristics

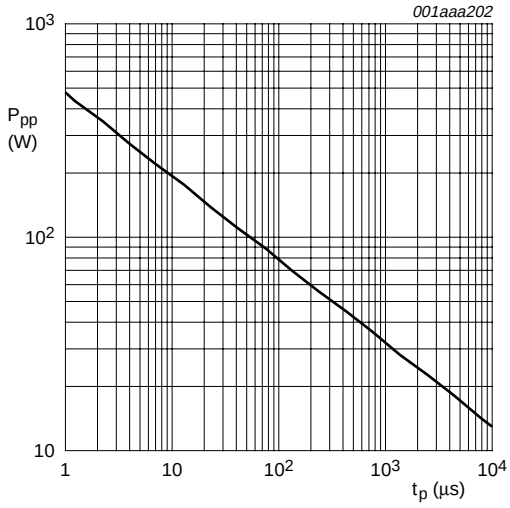
Characteristics

T_{amb}= 25°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 V; see Figure 6		-	5	100	nA
$V_{(CL)R}$	clamping voltage	I_{PP} = 1 A	[1][2]	-	-	10	V
		I_{PP} = 12 A	[1][2]	-	-	14	V
$V_{(BR)}$	breakdown voltage	I_R = 1 mA		5.5	-	9.5	V
r_{dif}	differential resistance	I_R = 1 mA		-	-	50	Ω
C_d	diode capacitance	V_R = 0 V; f = 1 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 °C

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

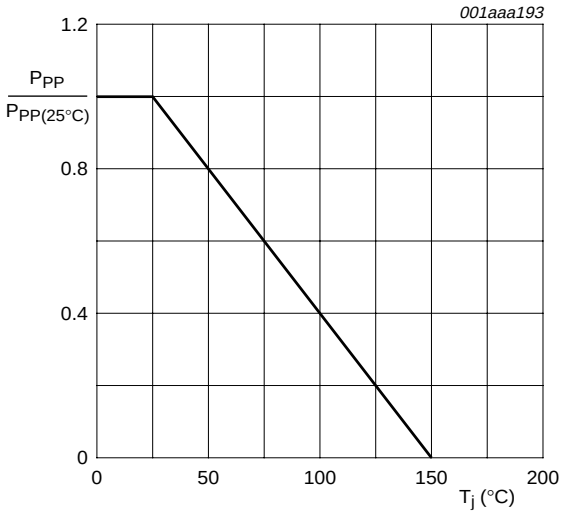
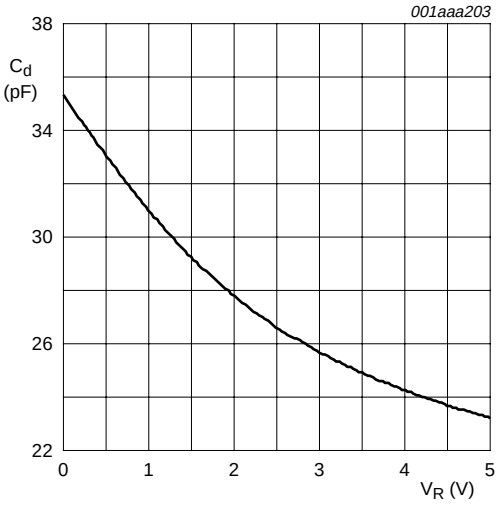


Fig 4. Relative variation of peak pulse power as a function of junction temperature; typical values



T_{amb} = 25 °C; f = 1 MHz

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

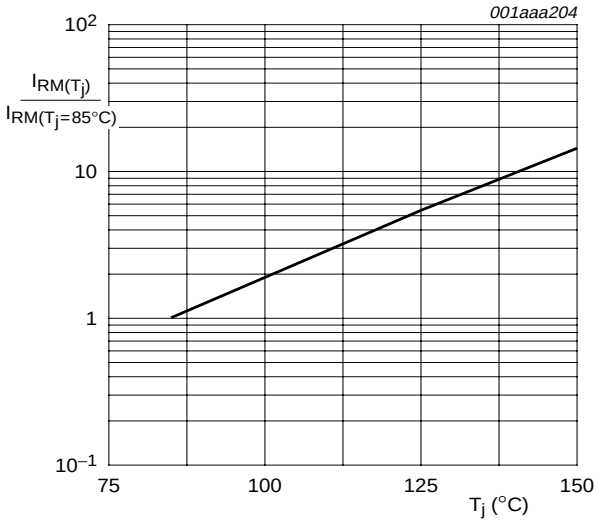


Fig 6. Relative variation of reverse leakage current as a function of junction temperature; typical

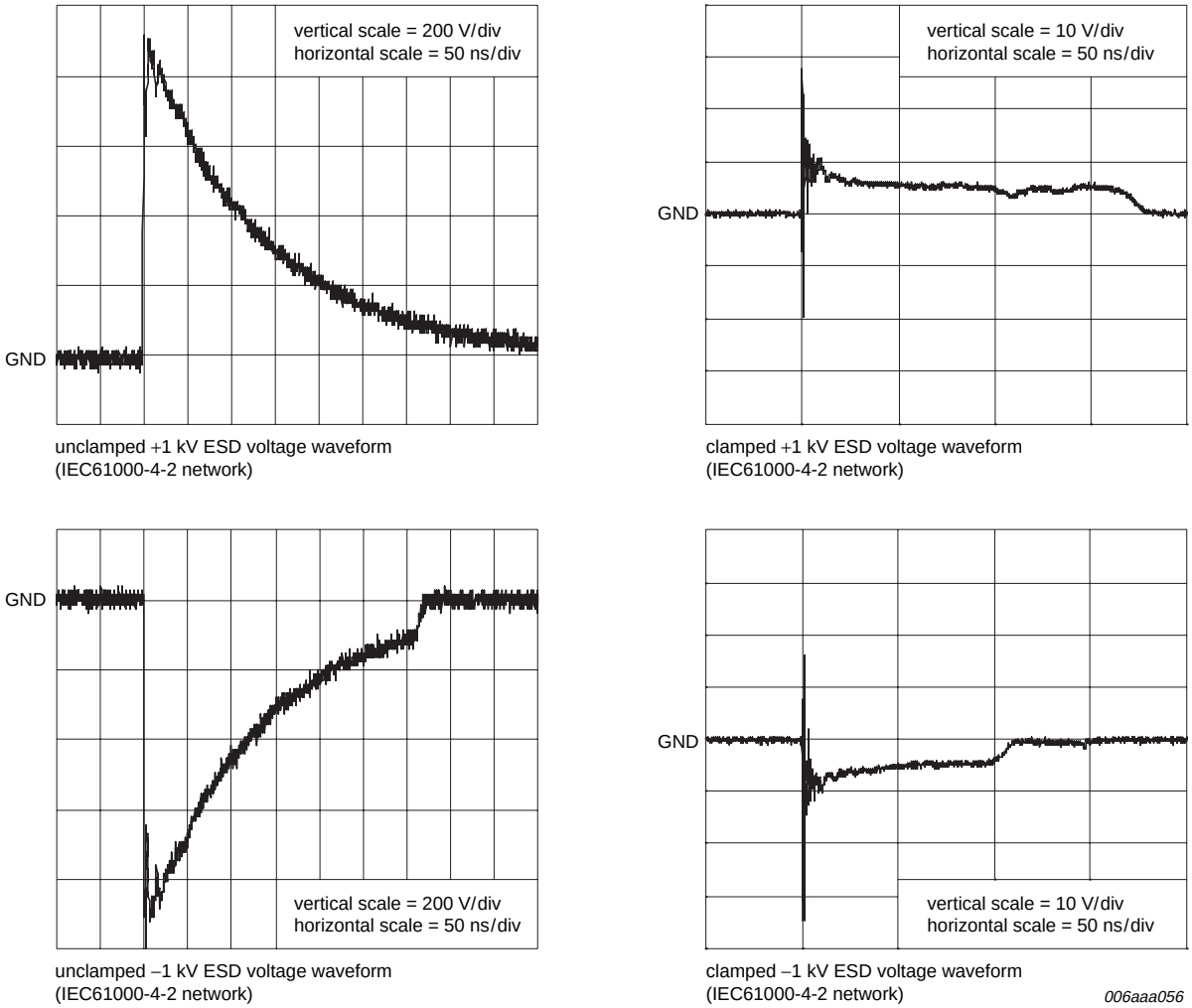
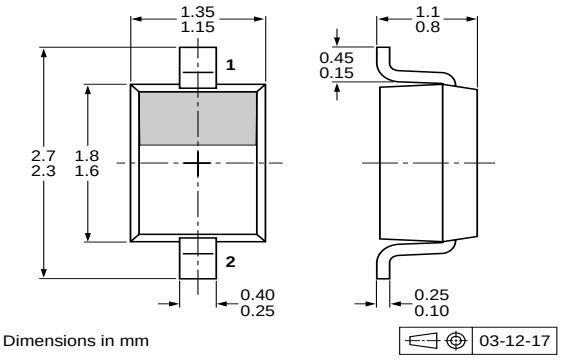
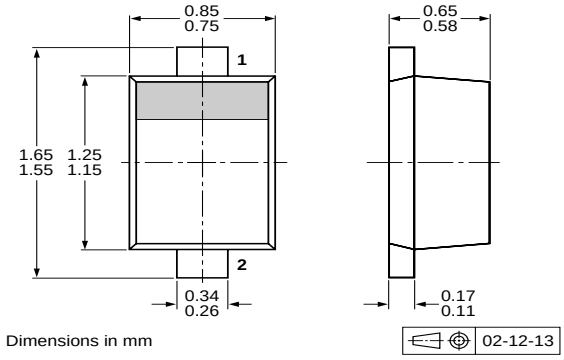


Fig 7. ESD clamping test setup and waveforms

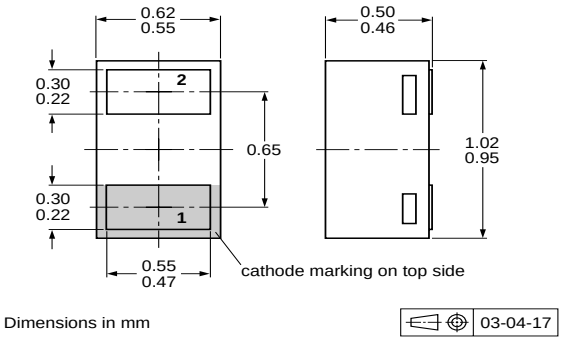
SOD-323/SOD-523/SOD-882 PACKAGE OUTLINE DIMENSIONS



PESD5V0S1BA(SOD-323)

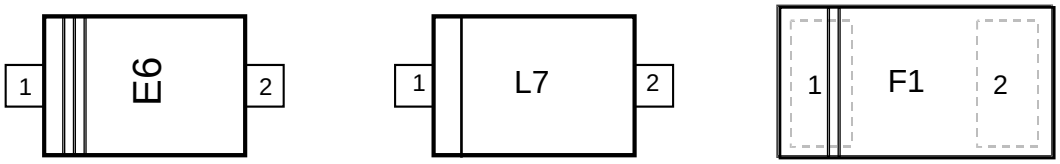


PESD5V0S1BB(SOD-523)



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