UMW PESD5V0S1BA/BB/BL

1.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.

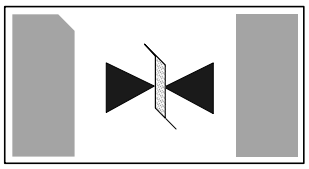
2.Applications

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

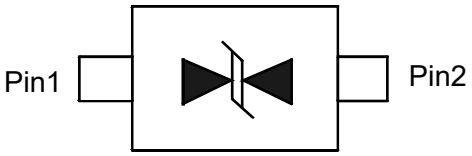
3.Features

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

4.Pinning information



SOD-882



SOD-323/523

5. Quick reference data

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
reverse standoff voltage	V_{RWM}				5	V
diode capacitance	C_d	V_R=0V, f=1MHz		35	45	pF

6.Limiting values

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
peak pulse power	P_{PP}	t_p=8/20μs ①②			130	W
peak pulse current	I_{PP}	t_p=8/20μs ①②			12	A
junction temperature	T_J				150	°C
ambient temperature	T_{amb}		-65		150	°C
storage temperature	T_{STG}		-65		150	°C

Notes:

① Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC 61000-4-5 (see Figure 1)

② Measured from pin 1 to pin 2.

7.ESD maximum ratings

T_{amb}=25 °C unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
electrostatic discharge capability	V_{ESD}	IEC 61000-4-2 (contact discharge) ①②			30	kV
		MIL-STD-883			10	kV

Notes:

① Measured from pin 1 to pin 2.

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

8.Electrical Characteristic (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
reverse standoff voltage	V_{RWM}				5	V
reverse leakage current	I_{RM}	V_{RWM}=5V, see Figure 6		5	100	nA
clamping voltage	$V_{CL(R)}$	I_{PP}=1A ①②			10	V
		I_{PP}=12A ①②			14	V
breakdown voltage	V_{BR}	I_R=1mA	5.5		9.5	V
differential resistance	r_{dif}	I_R=1mA			50	Ω
diode capacitance	C_d	V_R=0V, f=1MHz, see Figure 5		35	45	pF

Notes:

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

② Measured from pin 1 to pin 2.

9.1 Typical characteristic

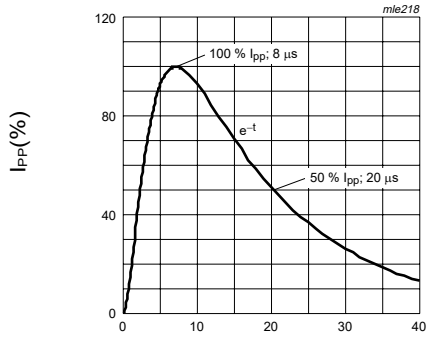


Figure 1: 8/20 µs pulse waveform according to IEC 61000-4-5

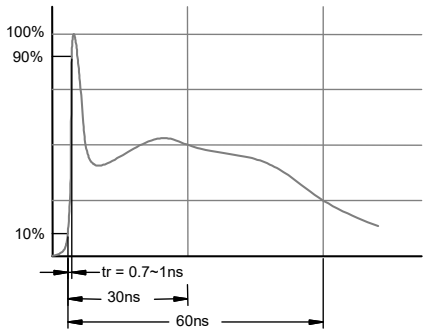


Figure 2: ElectroStatic Discharge (ESD) pulse waveform according to IEC 61000-4-2

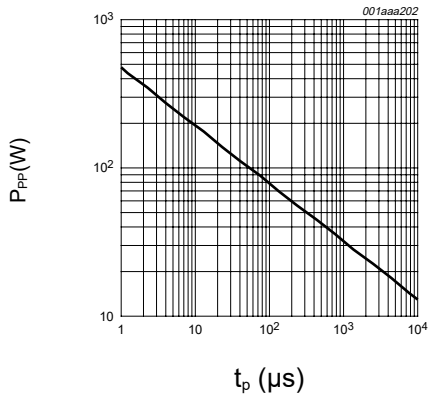


Figure 3: Peak pulse power dissipation as a function of exponential time duration tp; typical values

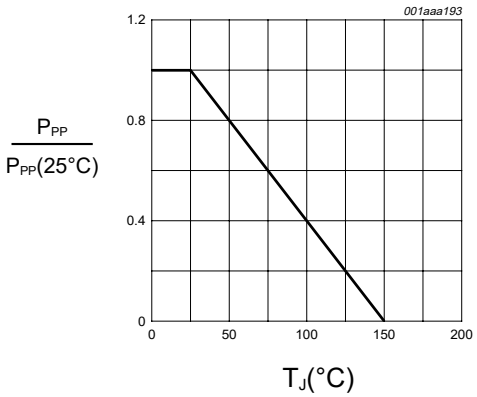


Figure 4: Relative variation of peak pulse power as a function of junction temperature; typical values

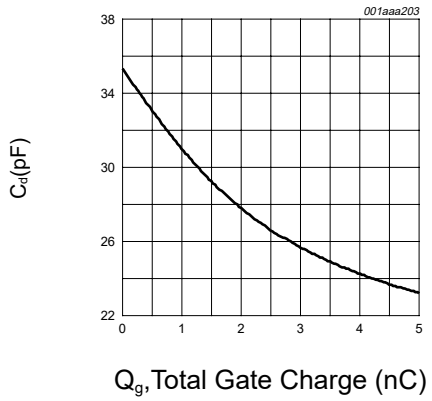


Figure 5: Diode capacitance as a function of reverse voltage; typical values

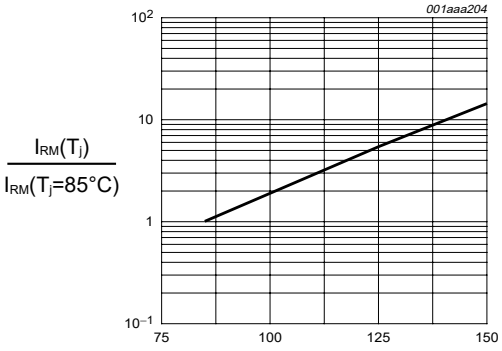


Figure 6: Relative variation of reverse leakage current as a function of junction temperature; typical

9.2 Typical characteristic

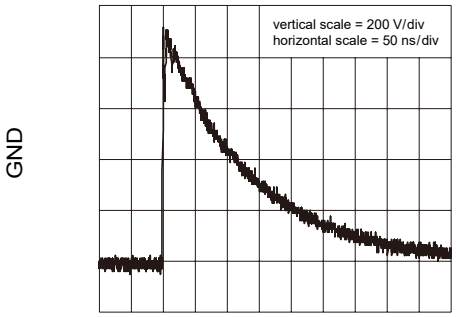


Figure 5: unclamped +1 kV ESD voltage waveform (IEC61000-4-2 network)

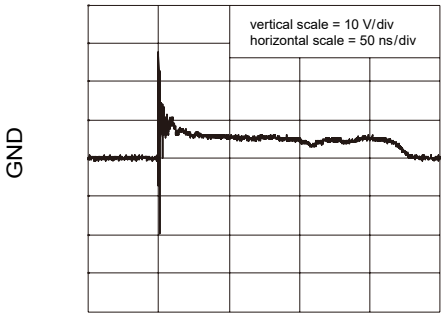


Figure 6: clamped +1 kV ESD voltage waveform (IEC61000-4-2 network)

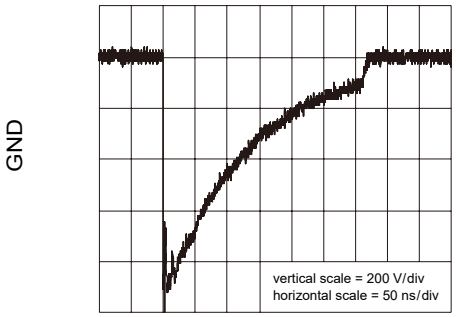


Figure 7: unclamped −1 kV ESD voltage waveform (IEC61000-4-2 network)

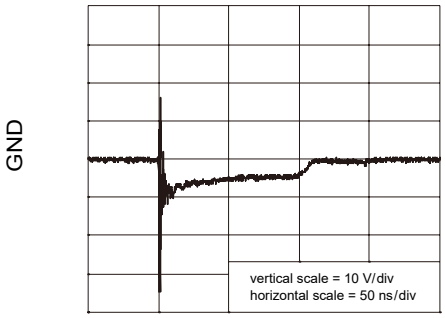
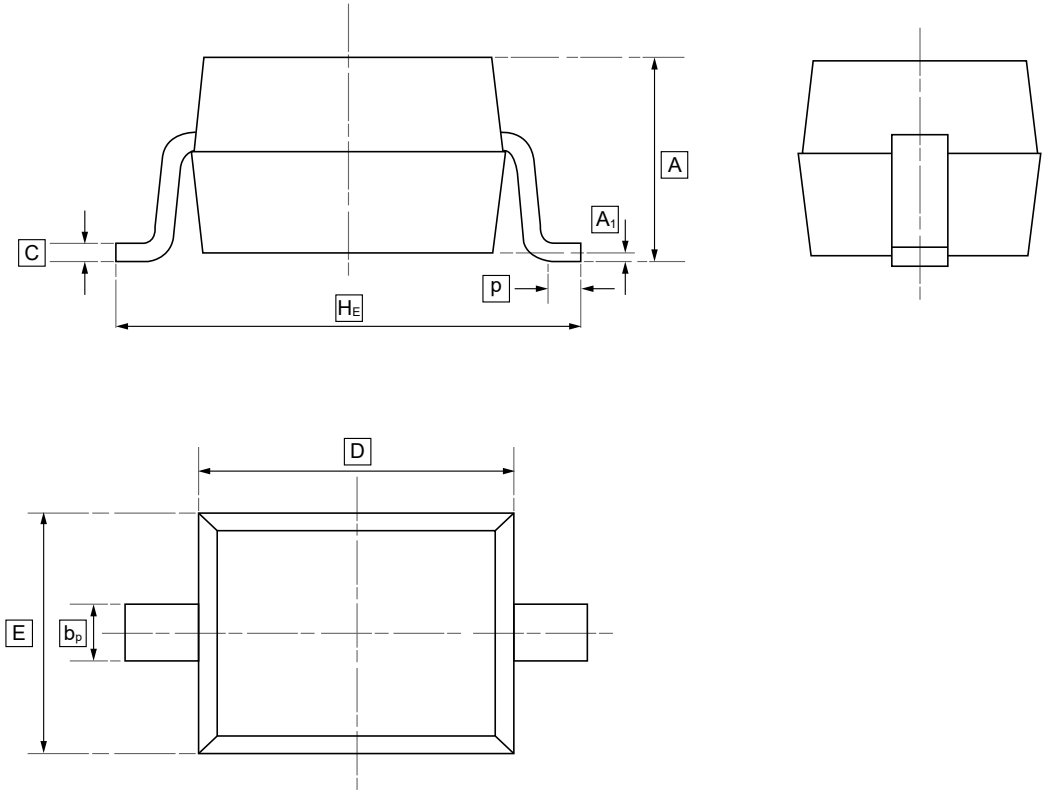


Figure 8: clamped −1 kV ESD voltage waveform (IEC61000-4-2 network)

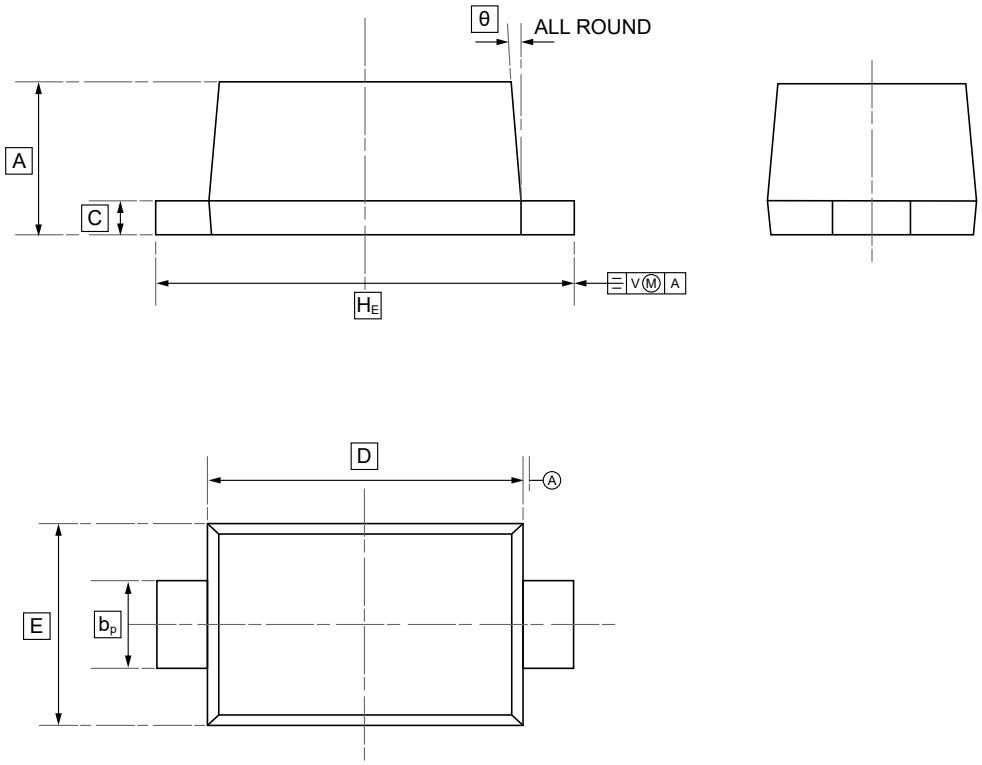
10.1 SOD-323 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b_p	C	D	E	H_E	A_1	p
Min	0.80	0.25	0.10	1.50	1.15	2.30	0.01	0.20
Max	1.20	0.40	0.15	1.80	1.35	2.80	0.10	0.50

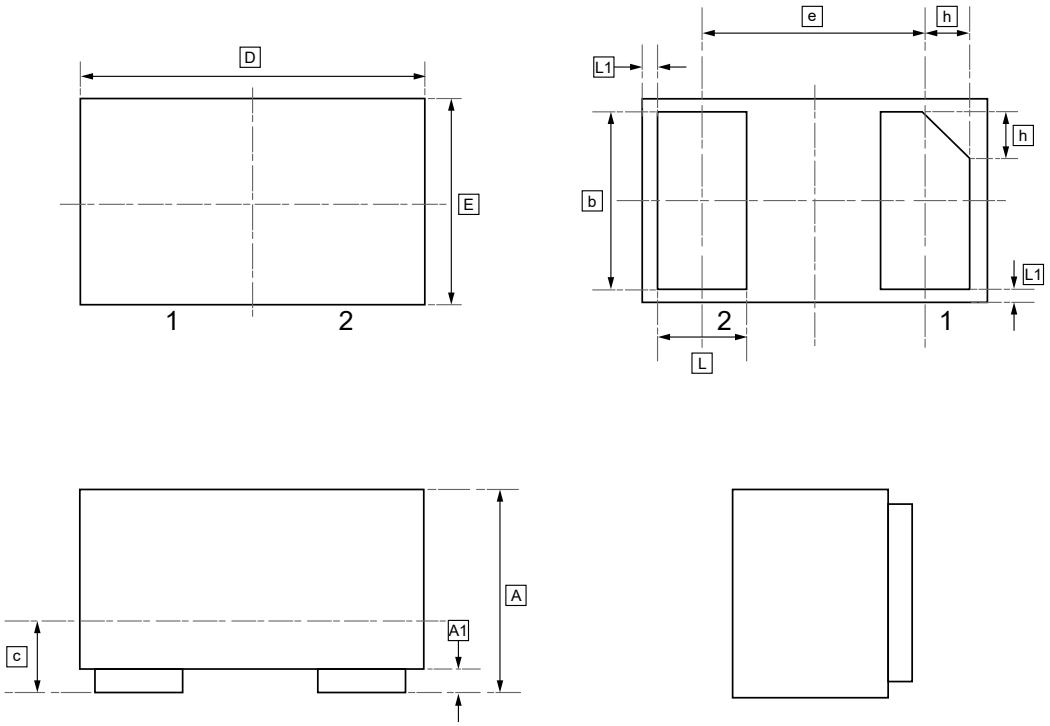
10.2 SOD-523 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b_p	C	D	E	H_E	θ
Min	0.58	0.3	0.100	1.15	0.75	1.5	5°
Max	0.68	0.4	0.135	1.25	0.85	1.7	

10.3 SOD-882 Package Outline Dimensions

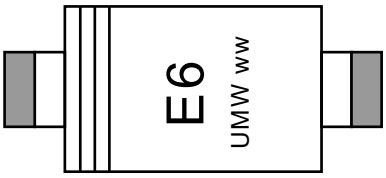


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	b	c	D	e	E	L	L1	h
Min	0.45	0.00	0.45	0.12	0.95	0.65	0.55	0.20	0.05	0.07
Max	0.55	0.05	0.55	0.18	1.05	BSC	0.65	0.30	REF	0.17

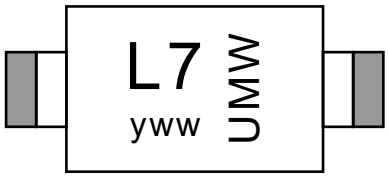
11.Ordering Information

SOD-323



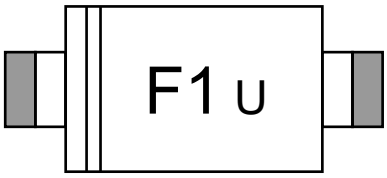
ww: Batch Code

SOD-523



yww: Batch Code

SOD-882



Order Code	Marking	Package	Base QTY	Delivery Mode
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

12.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.