1.Description

Ultra low capacitance bidirectional ElectroStatic Discharge (ESD) protection diodes in small Surface Mounted Device (SMD) plastic packages designed to protect one data line from the damage caused by ESD.

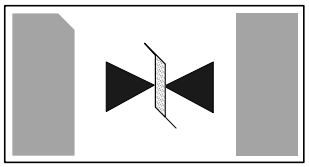
2.Features

- Bidirectional ESD protection of one line
- Ultra low diode capacitance: C_d=2.9pF
- IEC 61000-4-2; level 4 (ESD)
- Ultra low leakage current: I_{RM}=5nA
- ESD protection of up to 10 kV

3.Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- 10/100/1000 Ethernet
- Local Area Network (LAN) equipment
- Communication systems
- Portable electronics
- Subscriber Identity Module (SIM) card protection
- FireWire
- High-speed data lines

4.Pinning information



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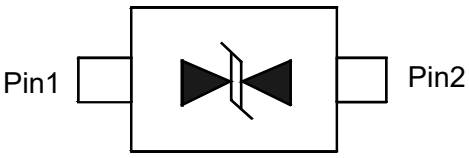

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5. Quick reference data

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		2.9	3.5	pF

6.Limiting values

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
junction temperature	T_J				150	°C
ambient temperature	T_{amb}		-65		150	°C
storage temperature	T_{STG}		-65		150	°C

7.ESD maximum ratings

T_{amb}=25 °C unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
electrostatic discharge voltage	V_{ESD}	IEC 61000-4-2 (contact discharge) ①②			10	kV
		MIL-STD-883 (human body model)			8	kV

Notes:

① Device stressed with ten non-repetitive ESD pulses.

② Measured from pin 1 to pin 2.

8.ESD standards compliance

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

9.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		5	100	nA
breakdown voltage	V_{BR}	I_R=5mA	5.5	7	9.5	V
diode capacitance	C_d	f=1MHz				
		V_R=0V		2.9	3.5	pF
		V_R=5V		1.9		pF
differential resistance	r_{dif}	I_R=1mA			100	Ω

10.1Typical characteristic

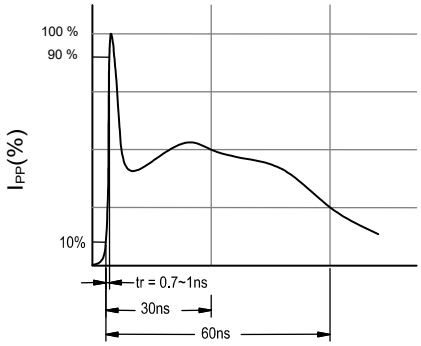


Figure 1: ESD pulse waveform according to IEC 61000-4-2

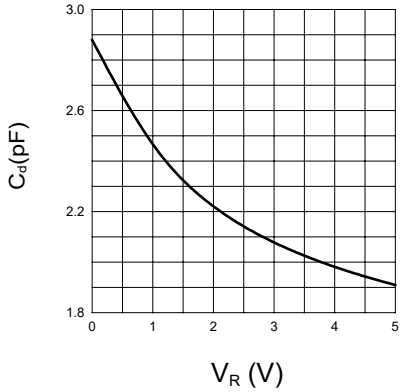


Figure 2: Diode capacitance as a function of reverse voltage; typical values

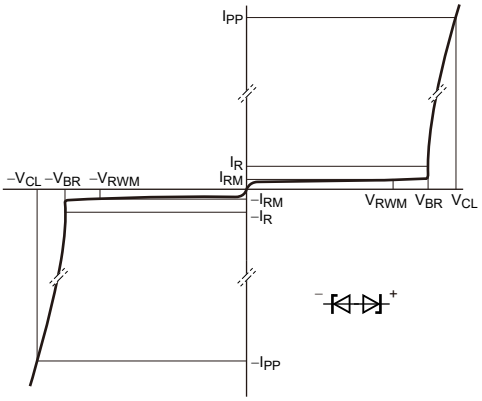


Figure 3: V-I characteristics for a unidirectional ESD protection diode

10.2Typical characteristic

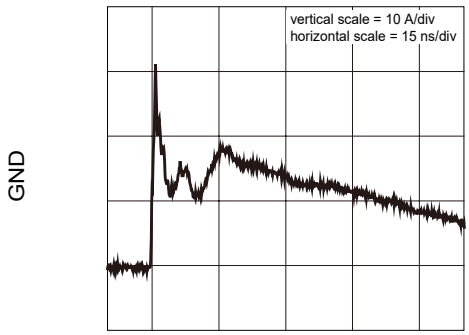


Figure 4: unclamped +8 kV ESD pulse waveform (IEC 61000-4-2 network)

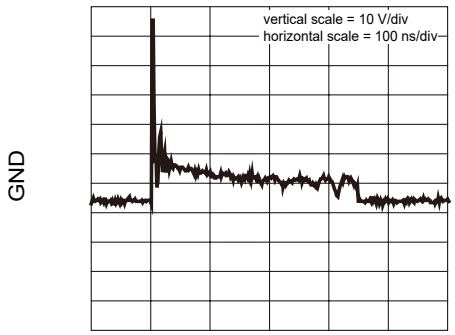


Figure 5: clamped +8 kV ESD pulse waveform (IEC 61000-4-2 network) pin 1 to 2

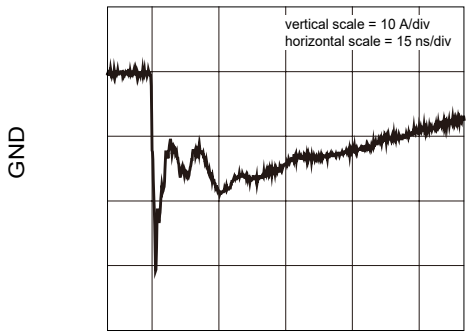


Figure 6: unclamped −8 kV ESD pulse waveform (IEC 61000-4-2 network)

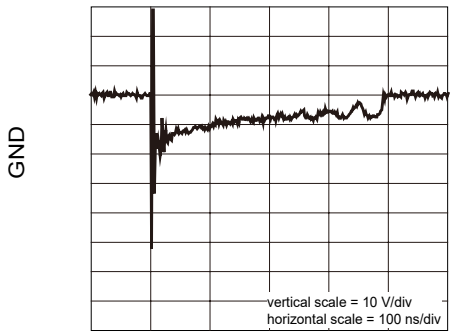
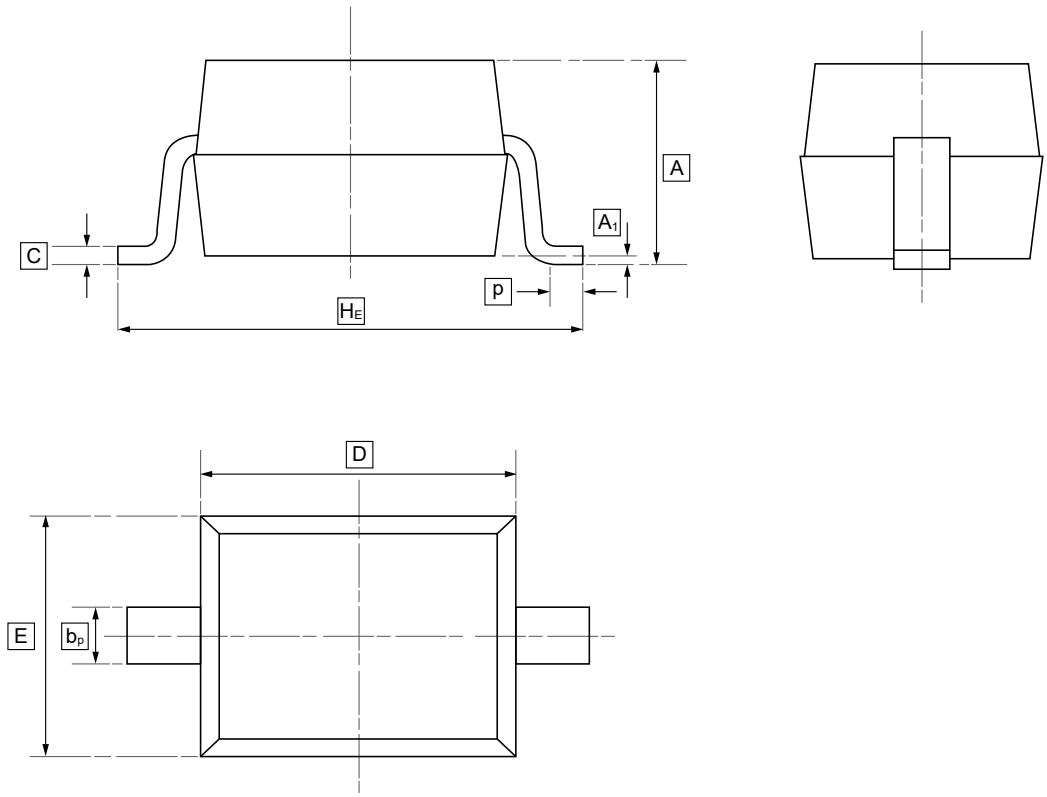


Figure 7: clamped −8 kV ESD pulse waveform (IEC 61000-4-2 network) pin 1 to 2

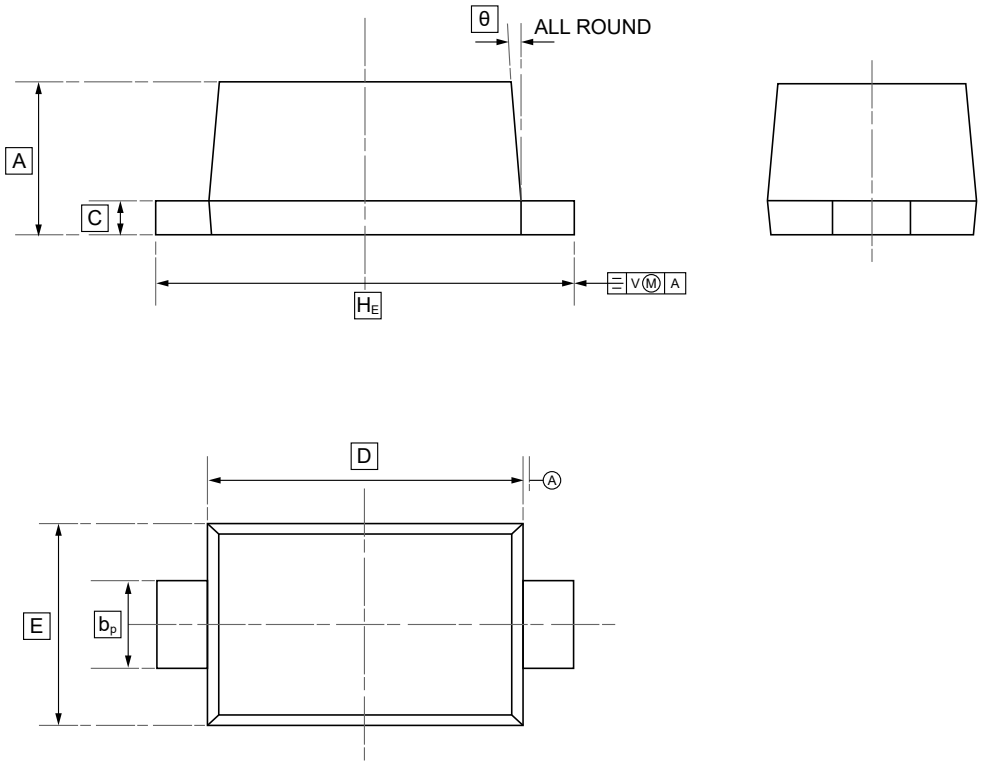
11.1SOD-323 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b_p	C	D	E	H_E	A_1	p
Min	0.90	0.25	0.10	1.60	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

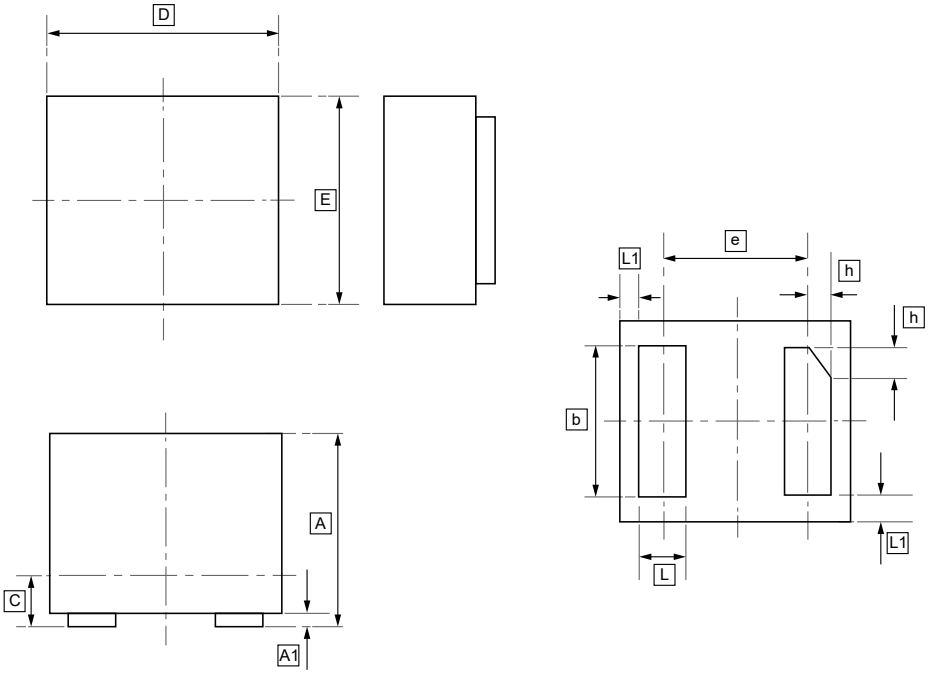
11.2.SOD-523 Package Outline Dimensions



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	

11.3.SOD-882 Package Outline Dimensions

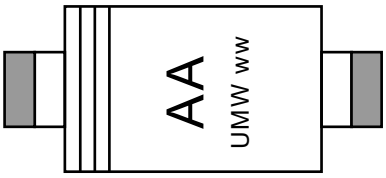


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	b	C	D	e	E	L	L1	h
Min	0.450	0.000	0.45	0.12	0.950	0.65	0.550	0.200	0.05	0.07
Max	0.550	0.050	0.55	0.18	1.050	BSC	0.650	0.300	REF	0.17

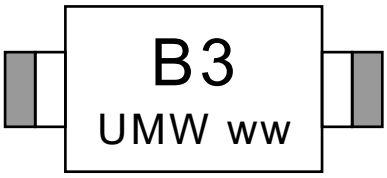
12.Ordering information

SOD-323



ww: Batch Code

SOD-523



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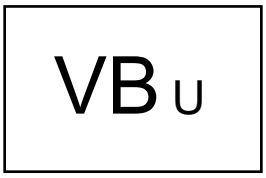
SOD-882



Order Code	Marking	Package	Base QTY	Delivery Mode
UMWPESD5V0U1BA	AA	SOD-323	3000	Tape and reel
UMWPESD5V0U1BB	B3	SOD-523	3000	Tape and reel
UMW PESD5V0U1BL	VB	SOD-882	10000	Tape and reel

13.Disclaimer

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