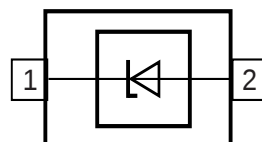


General description

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



Features

- Unidirectional ESD protection of
- Low diode capacitance: $C_d = 25 \text{ pF}$
- Low clamping voltage: $V_{CL} = 12 \text{ V}$
- Very low leakage current: $I_{RM} = 10 \text{ nA}$
- ESD protection up to 26 kV
- IEC 61000-4-2; level 4 (ESD)
- AEC-Q101 qualified

Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Communication systems
- Subscriber Identity Module (SIM) card protection
- Portable electronics
- FireWire
- High-speed data lines

Quick reference data

Table 2. Quick reference data

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage				5.0	V
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}$		25	30	pF

Limiting values

Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
P _{PP}	peak pulse power	t _p = 8/20 μs	[1][2]	42	W
I _{PP}	peak pulse current	t _p = 8/20 μs	[1][2]	3.5	A
T _j	junction temperature			150	°C
T _{amb}	ambient temperature		-55	+150	°C
T _{stg}	storage temperature		-65	+150	°C

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

[2] Measured from pin 1 to pin 2.

ESD maximum ratings

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

Symbol	Parameter	Conditions	Min	Max	Unit
V _{ESD}	electrostatic discharge voltage	IEC 61000-4-2 (contact discharge)	[1]	26	kV
		machine model		400	V
		MIL-STD-883 (human body model)		10	kV

[1] Device stressed with ten non-repetitive ESD pulses.

ESD standards compliance

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

Characteristics

Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{RWM}	reverse standoff voltage				5.0	V
I _{RM}	reverse leakage current	V _{RWM} = 5.0 V		10	100	nA
V _{BR}	breakdown voltage	I _R = 5 mA	6.4	6.8	7.2	V
C _d	diode capacitance	f = 1 MHz; V _R = 0 V		25	30	pF
V _{CL}	clamping voltage	[1][2]				
		I _{PP} = 1 A			9	V
		I _{PP} = 3.5 A			12	V
r _{dif}	differential resistance	I _R = 5 mA			30	Ω
V _F	forward voltage	I _F = 200 mA			1.2	V

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

[2] Measured from pin 1 to pin 2.

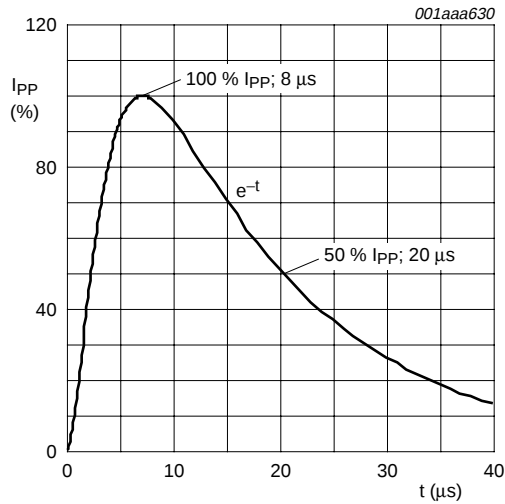


Fig 1. 8/20 μ s pulse waveform according to IEC 61000-4-5

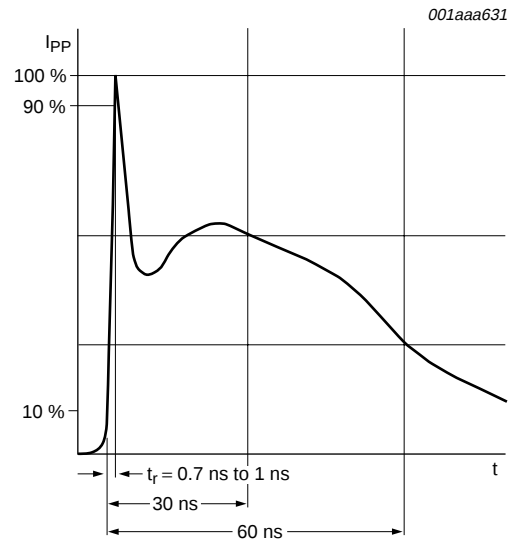
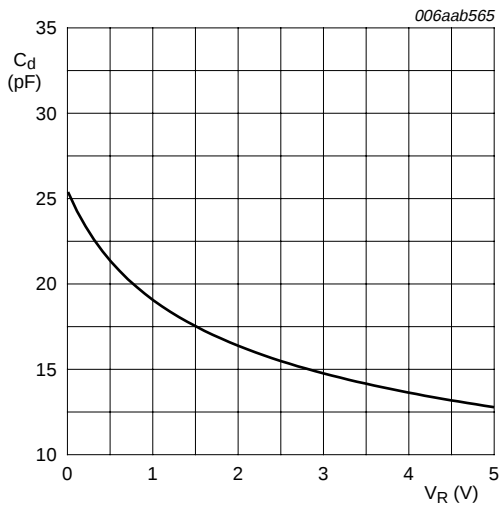


Fig 2. ESD pulse waveform according to IEC 61000-4-2



$f = 1 \text{ MHz}$; $T_{\text{amb}} = 25 \text{ }^{\circ}\text{C}$

Fig 3. Diode capacitance as a function of reverse voltage; typical values

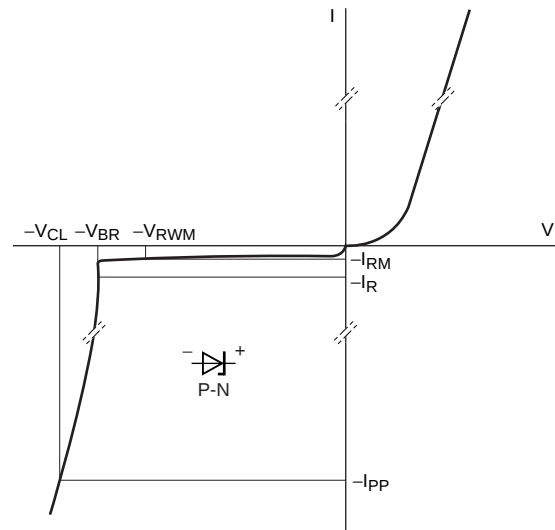


Fig 4. V-I characteristics for a unidirectional ESD protection diode

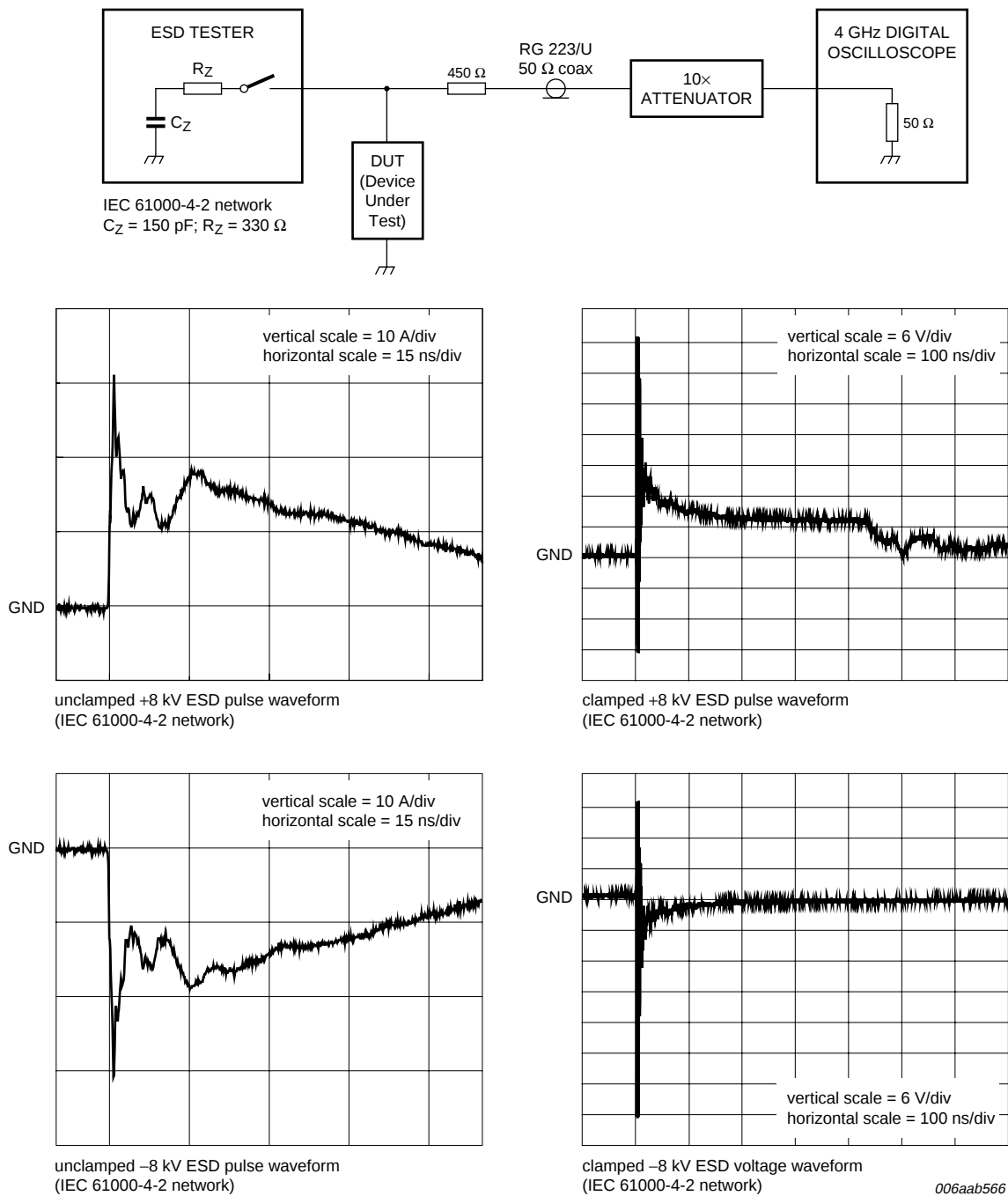
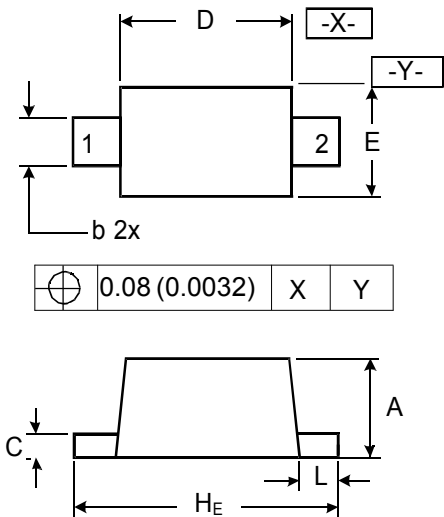


Fig 5. ESD clamping test setup and waveforms

Package outline dimensions

SOD-523



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.50	0.70	0.020	0.028
b	0.25	0.35	0.010	0.014
C	0.07	0.20	0.0028	0.0079
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
H _E	1.50	1.70	0.059	0.067
L	0.15	0.25	0.006	0.010

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
UMW PESD5V0L1UB	SOD-523	3000	Tape and reel