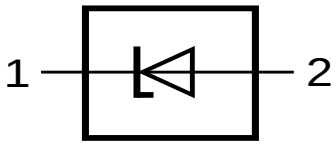
General description

Ultra low capacitance unidirectional ElectroStatic Discharge (ESD) protection diode in a SOD-523 ultra small and flat lead Surface-Mounted Device (SMD) plastic package designed to protect one signal line from the damage caused by ESD and other transients.The combination of extremely low capacitance and ultra low clamping voltage makes the device ideal for high-speed data line protection applications.



Features and benefits

- ESD protection of one line
- Ultra low diode capacitance C_d = 0.95 pF
- Ultra low clamping voltage: V_{CL} = 8 V
- Ultra low leakage current: I_{RM} = 1 nA
- ESD protection up to 8 kV

Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- 10/100/1000 Mbit/s Ethernet
- Communication systems
- Portable electronics
- Subscriber Identity Module (SIM) card protection
- USB, High-Definition Multimedia Interface (HDMI), FireWire
- High-speed data lines

Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage				5.5	V
C_d	diode capacitance	f = 1 MHz; V_R = 0 V		0.95	1.1	pF

Limiting values

Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
I_{PP}	peak pulse current	t_p = 8/20 μs	[1][2]	1.5	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 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][2]	8	kV
		machine model		400	V
		MIL-STD-883 (human body model)	[2]	10	kV

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

[2] Measured from pin 1 to 2.

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

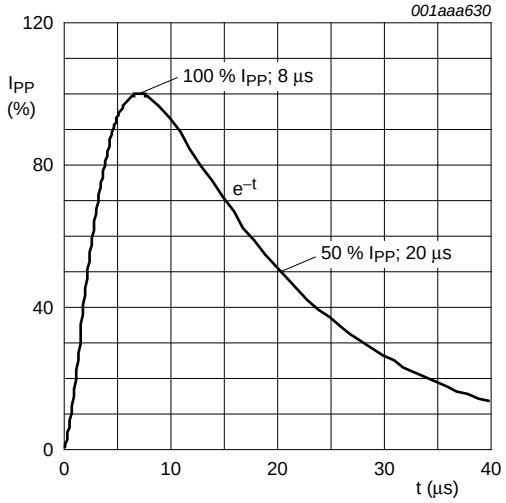


Fig 1. 8/20 μs pulse waveform according to IEC 61000-4-5

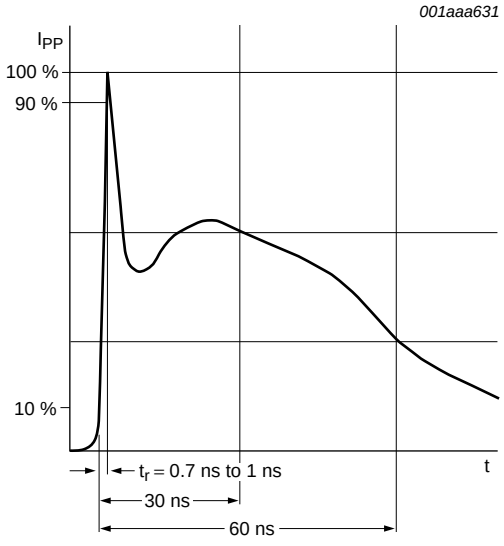


Fig 2. ESD pulse waveform according to IEC 61000-4-2

Characteristics

Characteristics

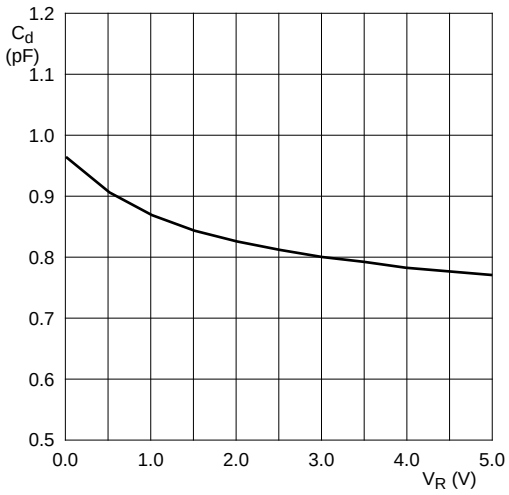
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage				5.5	V
I_{RM}	reverse leakage current	V_{RWM} = 5 V		1	100	nA
V_{BR}	breakdown voltage	I_R = 10 mA	5.8	7.5	10	V
C_d	diode capacitance	f = 1 MHz; V_R = 0 V		0.95	1.1	pF
V_{CL}	clamping voltage	I_{PP} = 1.5 A	[1][2]	8		V
r_{dyn}	dynamic resistance	I_R = 10 A	—	0.25		Ω

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

[2] Measured from pin 1 to 2.

[3] Non-repetitive current pulse, Transmission Line Pulse (TLP) t_p = 100 ns; square pulse;



f = 1 MHz; T_{amb} = 25 °C

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

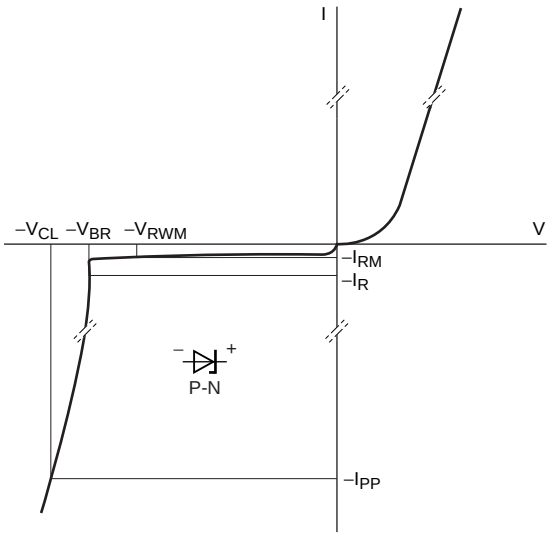


Fig 4. V-I characteristics for a unidirectional ESD protection diode

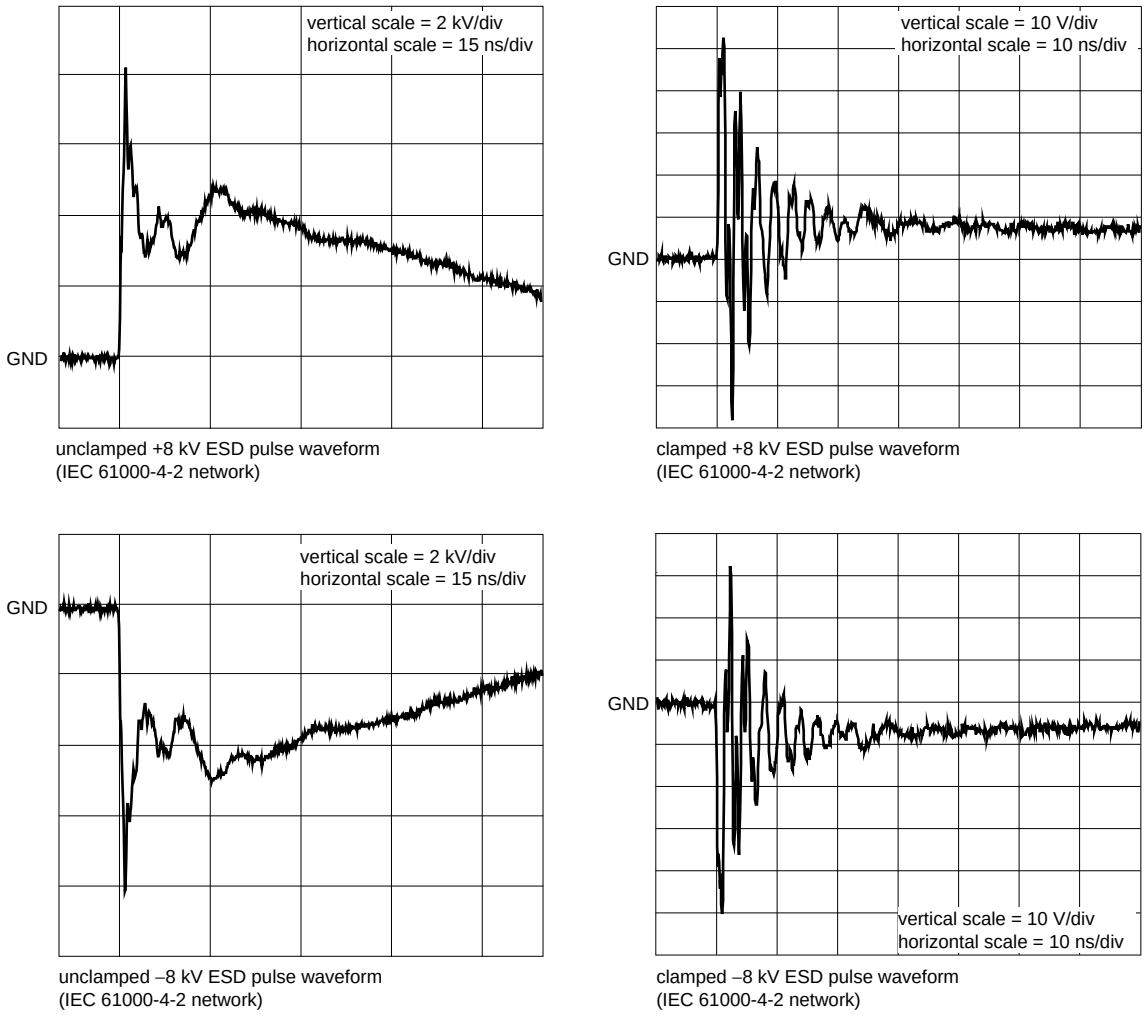
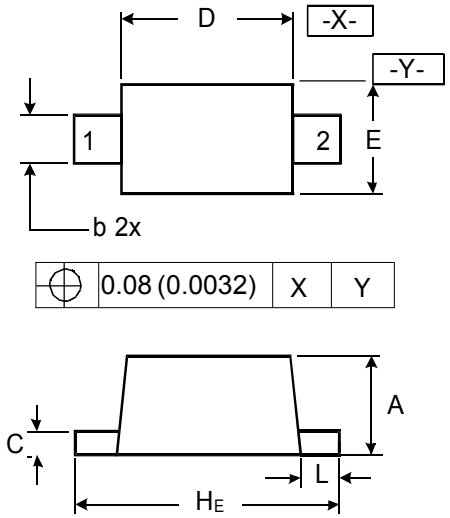


Fig 5. ESD clamping test setup and waveforms

Package outline dimensions

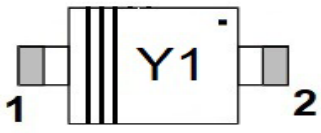
SOD-523



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 PESD5V0X1UB	SOD-523	3000	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

>>UMW(友台半导体)