

**1.Description**

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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.

**2.Features**

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

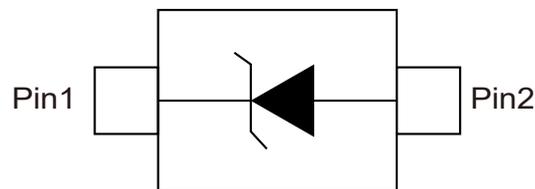
**3.Applications**

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- 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

**4.Pinning information**

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**SOD-523**



## 5. Quick reference data

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

## 6. Limiting values

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
peak pulse current	$I_{PP}$	$t_p=8/20\mu s$ ①②			1.5	A
junction temperature	$T_J$				150	°C
ambient temperature	$T_{amb}$		-55		+150	°C
storage temperature	$T_{STG}$		-65		+150	°C

Notes:

- ① Non-repetitive current pulse 8/20  $\mu s$  exponential decay waveform according to IEC 61000-4-5.
- ② Measured from pin 1 to pin 2.

## 7. ESD maximum ratings

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
electrostatic discharge voltage	$V_{ESD}$	IEC 61000-4-2 (contact discharge) ①②			8	kV
		machine model			400	V
		MIL-STD-883 (human body model)②			10	kV

Notes:

- ① Device stressed with ten non-repetitive ESD pulses.
- ② Measured from pin 1 to 2.



## 8. Electrical Characteristic (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
reverse standoff voltage	V <sub>RWM</sub>				5	V
reverse leakage current	I <sub>RM</sub>	V <sub>RWM</sub> =5V		1	100	nA
breakdown voltage	V <sub>BR</sub>	I <sub>R</sub> =10mA	5.8	7.5	10	V
diode capacitance	C <sub>d</sub>	V <sub>R</sub> =0V, f=1MHz		0.95	1.1	pF
clamping voltage	V <sub>CL</sub>	I <sub>pp</sub> =1.5A <sup>①②</sup>		8		V
dynamic resistance	r <sub>dyn</sub>	I <sub>R</sub> =10A		0.25		Ω

Notes:

- 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.
- ③ Non-repetitive current pulse, Transmission Line Pulse (TLP) tp = 100 ns; square pulse.

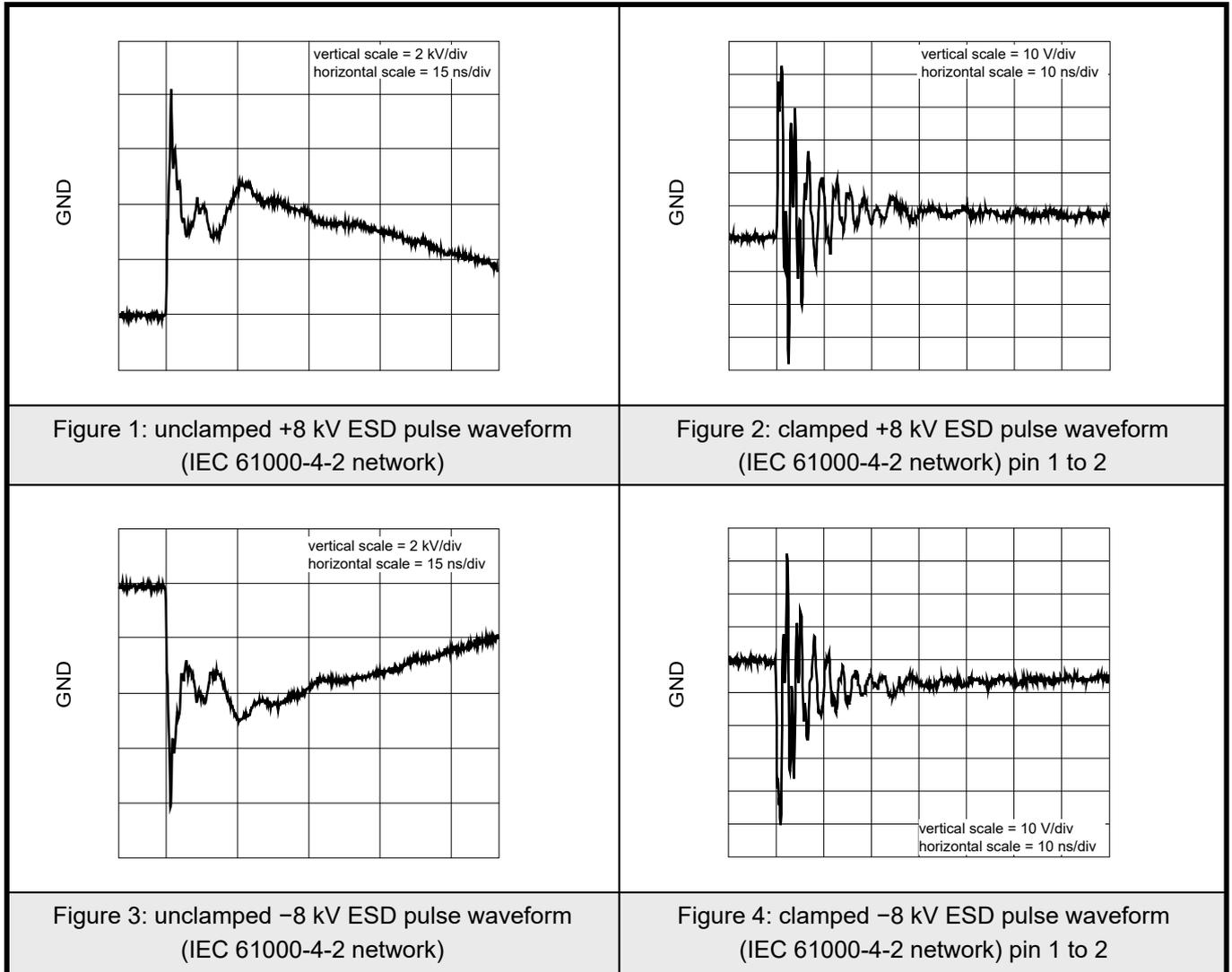


## 9.1 Typical Characteristic

<p>Figure 1: 8/20 <math>\mu</math>s pulse waveform according to IEC 61000-4-5</p>	<p>Figure 2: ESD pulse waveform according to IEC 61000-4-2</p>
<p>Figure 3: Diode capacitance as a function of reverse voltage; typical values</p>	<p>Figure 4: V-I characteristics for a unidirectional ESD protection diode</p>

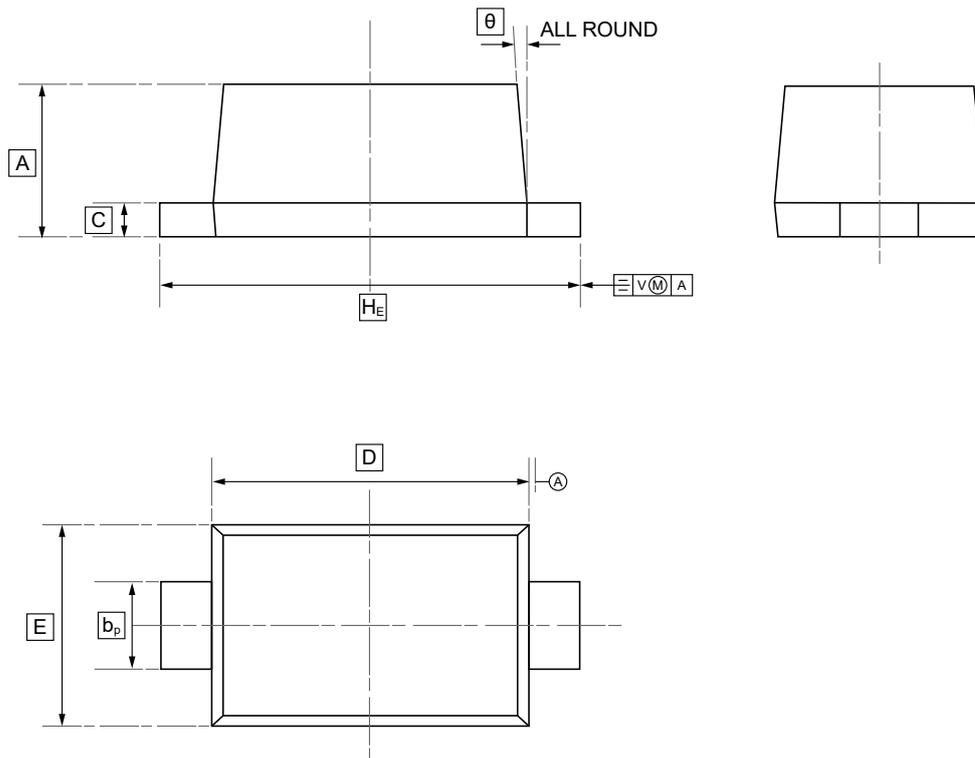


## 9.2 Typical Characteristic





## 10.SOD-523 Package Outline Dimensions

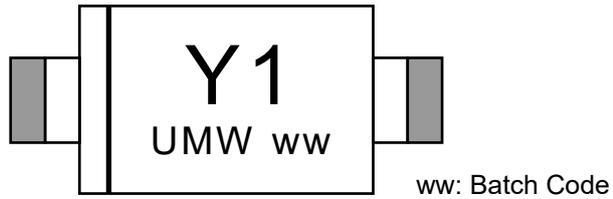


**DIMENSIONS (mm are the original dimensions)**

Symbol	A	b <sub>p</sub>	C	D	E	H <sub>E</sub>	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. Ordering Information



Order Code	Package	Base QTY	Delivery Mode
UMW PESD5V0X1UB	SOD-523	3000	Tape and reel



## **12.Disclaimer**

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