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PESD5V0S1UL

Unidirectional ESD protection diode

**1. General description**

Unidirectional ElectroStatic Discharge (ESD) protection diode in a SOD882 leadless ultra small Surface Mounted Device (SMD) plastic package designed to protect one signal line from the damage caused by ESD and other transients.

2. Features and benefits

- Ultra small SMD plastic package
- ESD protection of one line
- Max. peak pulse power: $P_{PPM} = 150 \text{ W}$
- Low clamping voltage: $V_{CL} = 20 \text{ V}$
- Ultra low leakage current: $I_{RM} < 100 \text{ nA}$
- ESD protection up to 30 kV
- IEC 61000-4-2; level 4 (ESD)
- IEC 61000-4-5; (surge); $I_{PPM} = 15 \text{ A}$
- AEC-Q101 qualified

3. Application information

- Computers and peripherals
- Audio and video equipment
- Parallel ports
- Communication systems
- High-speed data lines

4. Quick reference data**Table 1. Quick reference data**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25^\circ\text{C}$	-	-	5	V
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25^\circ\text{C}$	-	152	200	pF

5. Pinning information**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	Transparent top view DFN1006-2 (SOD882)	1 2 sym035
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information**Table 3. Ordering information**

Type number	Package	Description	Version
PESD5V0S1UL	DFN1006-2	plastic, leadless ultra small package; 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.48 mm body	SOD882

7. Marking**Table 4. Marking codes**

Type number	Marking code
PESD5V0S1UL	G2

8. Limiting values**Table 5. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
P_{PPM}	rated peak pulse power	$t_p = 8/20 \mu\text{s}$	[1]	150	W
I_{PPM}	rated peak pulse current		[1]	15	A
T_j	junction temperature		-	150	$^\circ\text{C}$
T_{amb}	ambient temperature		-55	150	$^\circ\text{C}$
T_{stg}	storage temperature		-65	150	$^\circ\text{C}$
ESD maximum ratings					
V_{ESD}	electrostatic discharge voltage	IEC 61000-4-2 (contact discharge)	[2]	30	kV
		MIL-STD-883 (human body model)	-	10	kV

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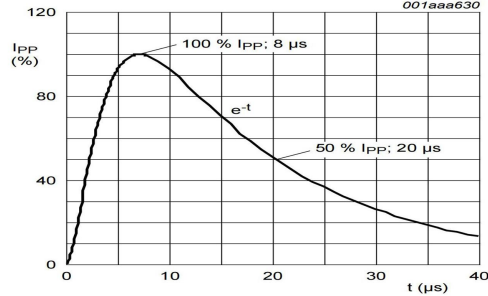


Fig. 1. 8/20 μ s pulse waveform according to IEC 61000-4-5

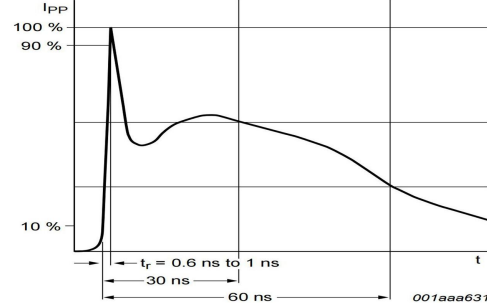


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	5	V
V_{BR}	breakdown voltage	$I_R = 5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	6.4	6.8	7.2 V
I_{RM}	reverse leakage current	$V_{RWM} = 5\text{ V}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	0.1	1	μA
C_d	diode capacitance	$f = 1\text{ MHz}; V_R = 0\text{ V}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	152	200	pF
V_{CL}	clamping voltage	$I_{PP} = 1\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[2]	-	9	V
		$I_{PPM} = 15\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[2]	-	20	V
r_{dif}	differential resistance	$I_R = 1\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	80	Ω

[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; duty cycle ≤ 0.02 .

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

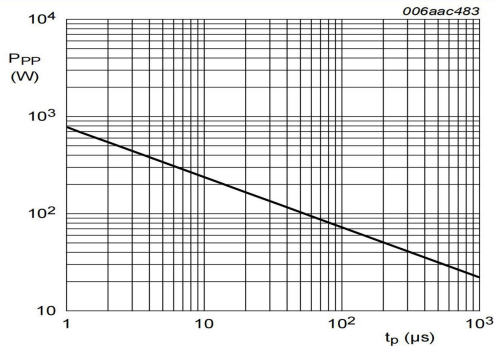


Fig. 3. Peak pulse power as a function of exponential pulse duration; typical values

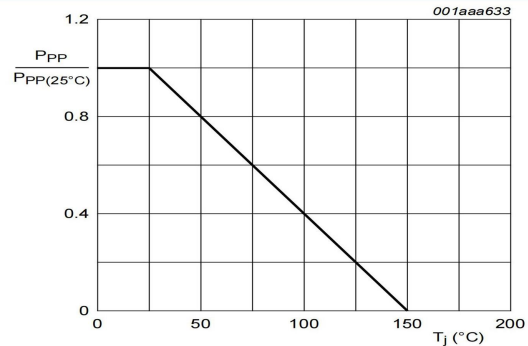


Fig. 4. Relative variation of peak pulse power as a function of junction temperature; typical values



Fig. 5. Diode capacitance as a function of reverse voltage; typical values

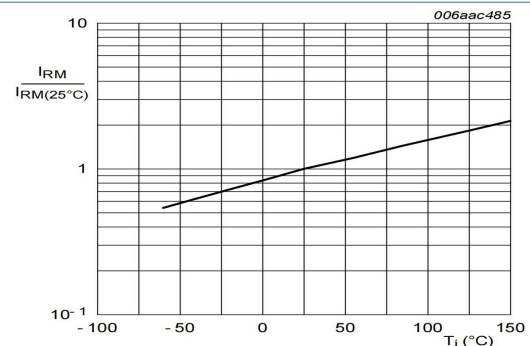


Fig. 6. Relative variation of reverse leakage current as a function of junction temperature; typical values

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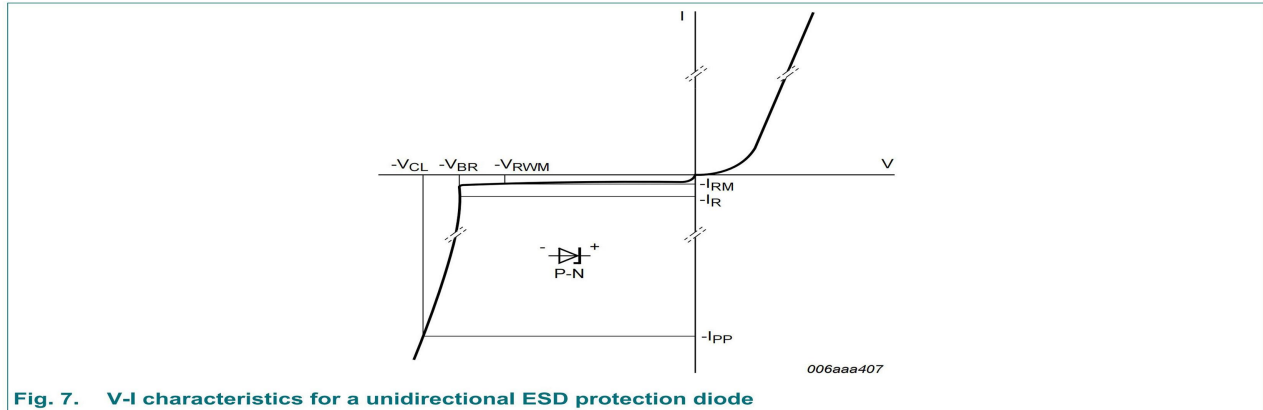


Fig. 7. V-I characteristics for a unidirectional ESD protection diode

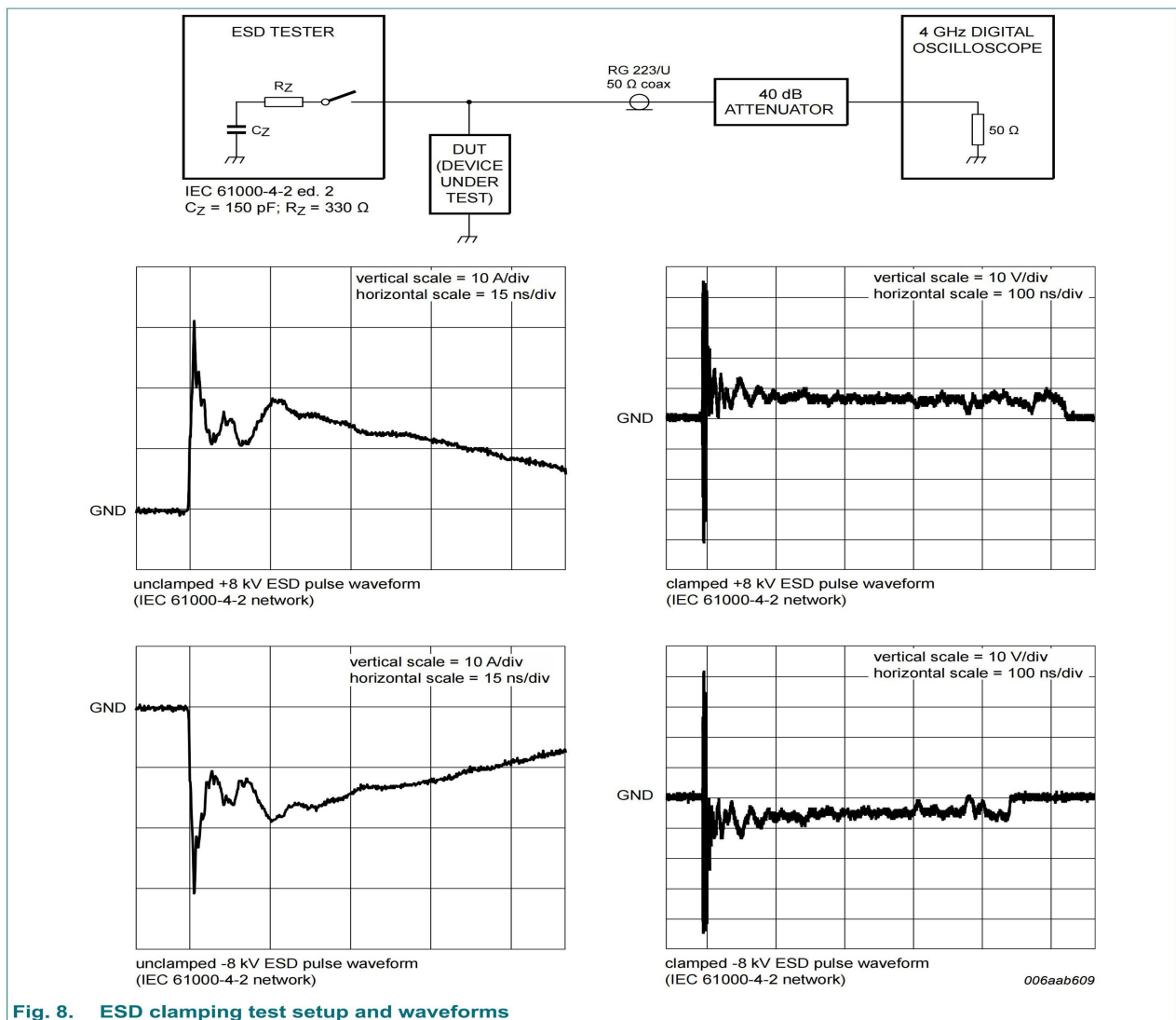


Fig. 8. ESD clamping test setup and waveforms

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Ordering Information

PREFERRED P/N	PACKAGE	SIZE(mm)	DELIVERY MODE	MPQ(PCS)
	DFN1006-2L	1.00×0.60×0.37	7" REEL	10,000

Recommended Soldering Conditions



Package Outline Dimensions (DFN1006-2L)

Symbol	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.950	1.050	0.037	0.041
B	0.550	0.650	0.022	0.026
C	0.350	0.450	0.014	0.018
D	0.550	0.650	0.022	0.026
D ₁	0.280	0.380	0.011	0.015
E	0.450	0.550	0.018	0.022
L	0.000	0.100	0.000	0.004

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
J	0.50	0.60	0.020	0.024
K	0.25	0.35	0.010	0.014
M	0.55	0.65	0.022	0.026