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PESD24VS1UL**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: $P_{PPM} = 150 \text{ W}$
- Ultra low leakage current: $I_{RM} = 1 \text{ nA}$
- ESD protection up to 23 kV
- IEC 61000-4-2; level 4 (ESD)
- IEC 61000-4-5; (surge); $I_{PPM} = 3 \text{ A}$

3. Applications

- 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	$T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	24	V
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	23	50	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)	$K \rightarrow A$ sym035
2	A	anode		

[1] The marking bar indicates the cathode.

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

Type number	Package		
	Name	Description	Version
PESD24VS1UL	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
PESD24VS1UL	G5

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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	$t_p = 8/20 \mu s$	[1]	-	150	W
I_{PPM}	rated peak pulse current		[1]	-	3	A
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	150	°C
T_{stg}	storage temperature			-65	150	°C
ESD maximum ratings						
V_{ESD}	electrostatic discharge voltage	IEC 61000-4-2; contact discharge	[2]	-	23	kV
		MIL-STD-883; human body model (HBM)	[2]	-	10	kV

[1] Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

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

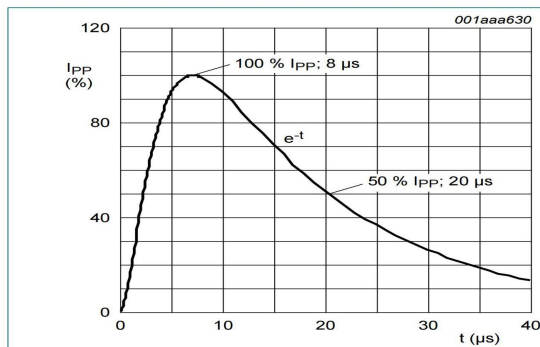


Fig. 1. 8/20 μs pulse waveform according to IEC 61000-4-5

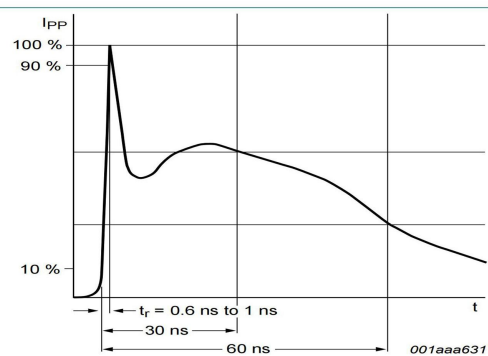


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25 \text{ }^{\circ}\text{C}$		-	-	24	V
V_{BR}	breakdown voltage	$I_R = 5 \text{ mA}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	[1]	26.5	27	27.5	V
I_{RM}	reverse leakage current	$V_{RWM} = 24 \text{ V}; T_{amb} = 25 \text{ }^{\circ}\text{C}$		-	1	50	nA
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25 \text{ }^{\circ}\text{C}$		-	23	50	pF
V_{CL}	clamping voltage	$I_{PP} = 1 \text{ A}; t_p = 8/20 \mu s; T_{amb} = 25 \text{ }^{\circ}\text{C}$	[2]	-	-	36	V
		$I_{PPM} = 3 \text{ A}; t_p = 8/20 \mu s; T_{amb} = 25 \text{ }^{\circ}\text{C}$	[2]	-	-	70	V
R_{diff}	differential resistance	$I_R = 0.5 \text{ mA}; T_{amb} = 25 \text{ }^{\circ}\text{C}$		-	-	300	Ω

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

[2] Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

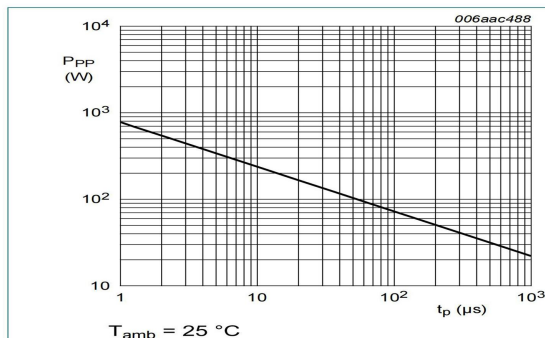


Fig. 3. Peak pulse power as a function of exponential pulse duration; typical values

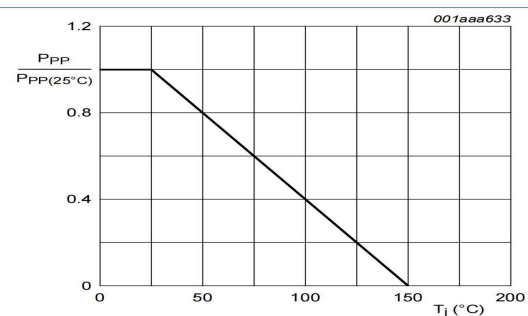


Fig. 4. Relative variation of peak pulse power as a function of junction temperature; typical values

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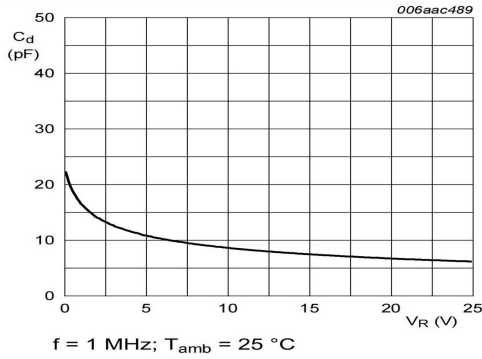


Fig. 5. Diode capacitance as a function of reverse voltage; typical values

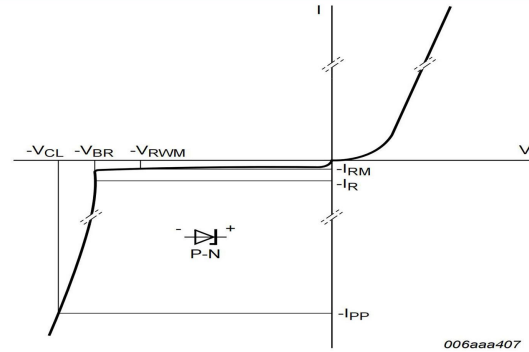


Fig. 6. V-I characteristics for a unidirectional ESD protection diode

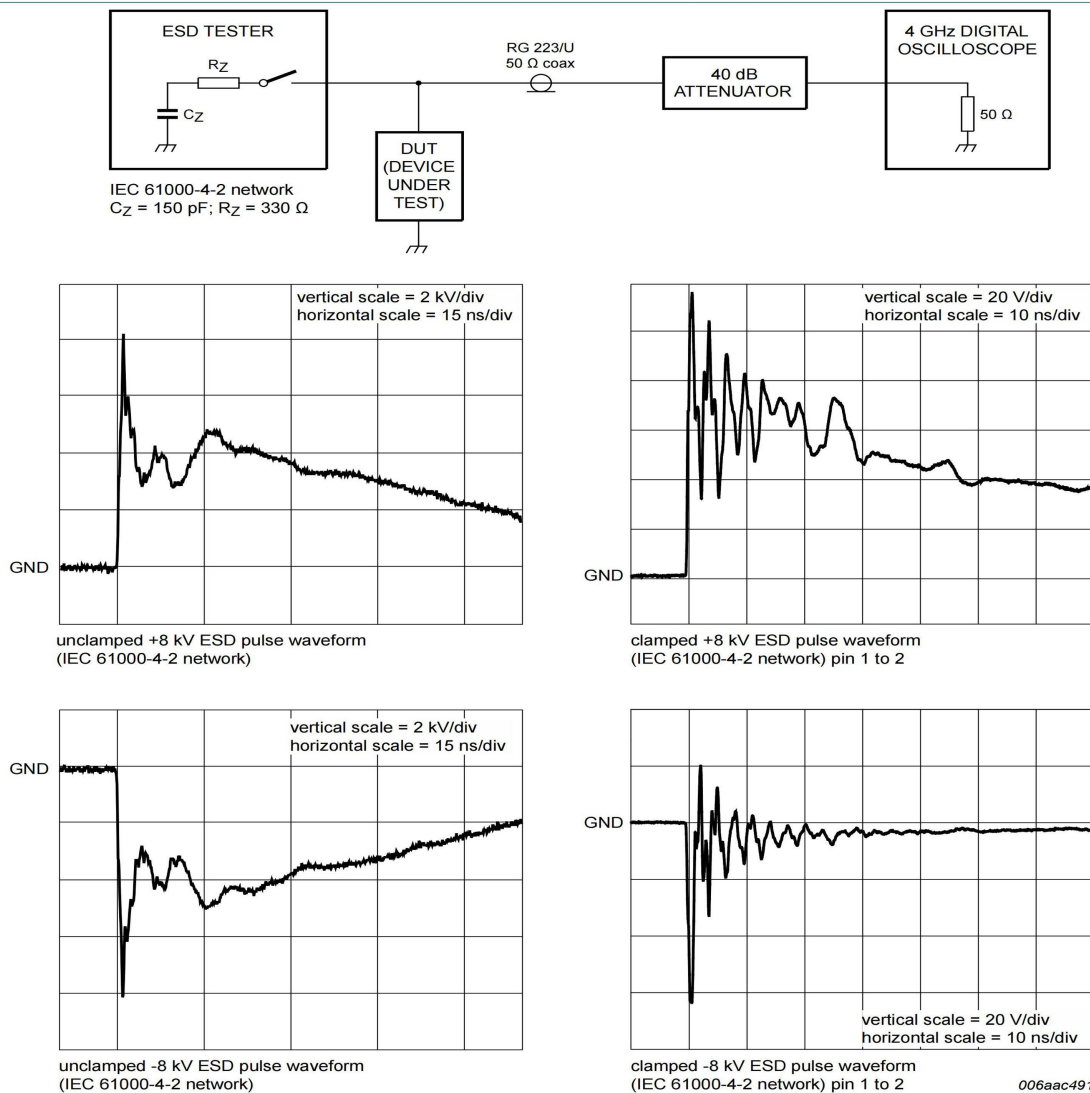


Fig. 7. ESD clamping test setup and waveforms

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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