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PESD12VV1BL

Very low capacitance bidirectional ESD protection diode



DFN1006-2L(SOD-882)

**1. General description**

Very low capacitance bidirectional ElectroStatic Discharge (ESD) protection diode designed to protect one signal line from the damage caused by ESD and other transients. The device is housed in a leadless ultra small DFN1006-2 (SOD882) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Bidirectional ESD protection of one line
- Low diode capacitance $C_d = 17 \text{ pF}$
- Rated peak pulse power: $P_{PPM} = 290 \text{ W}$
- Ultra low leakage current $I_{RM} = 1 \text{ nA}$
- ESD protection up to 30 kV
- IEC 61000-4-2; level 4 (ESD)
- IEC 61000-4-5 (surge); $I_{PPM} = 7.8 \text{ A}$

3. Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Portable electronics
- Communication systems

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	12	V
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	17	25	pF

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K1	cathode1	Transparent top view DFN1006-2 (SOD882)	sym045
2	K2	cathode2		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PESD12VV1BL	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
PESD12VV1BL	MW

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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		[1]	-	290	W
I _{PPM}	rated peak pulse current	t _p = 8/20 μs	[1]	-	7.8	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]	-	30	kV
		machine model		-	400	V
		MIL-STD-883; human body model (HBM)		-	10	kV

- [1] Device stressed with non-repetitive current pulses (8/20 μs exponential decay waveform according to IEC 61000-4-5).
 [2] Device stressed with ten non-repetitive ESD pulses.

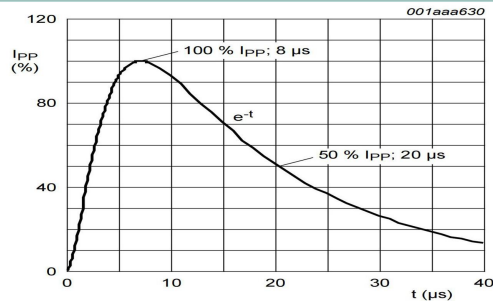


Fig. 1. 8/20 μs pulse waveform according to IEC 61000-4-5

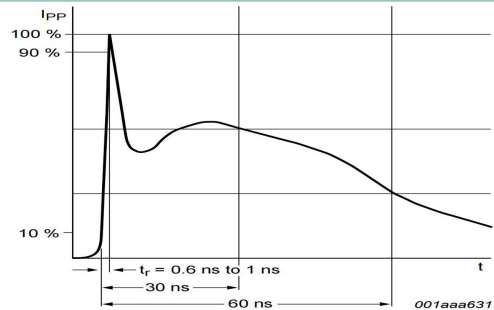


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V _{RWM}	reverse standoff voltage	T _{amb} = 25 °C		-	-	12	V
V _{BR}	breakdown voltage	I _R = 5 mA; T _{amb} = 25 °C		14.6	15.7	16.8	V
I _{RM}	reverse leakage current	V _{RWM} = 12 V; T _{amb} = 25 °C		-	1	10	nA
C _d	diode capacitance	f = 1 MHz; V _R = 0 V; T _{amb} = 25 °C		-	17	25	pF
V _{CL}	clamping voltage	I _{PPM} = 1 A; t _p = 8/20 μs; T _{amb} = 25 °C	[1]	-	-	22	V
		I _{PPM} = 7.8 A; t _p = 8/20 μs; T _{amb} = 25 °C	[1]	-	-	38	V
R _{dyn}	dynamic resistance	I _R = 10 A; t _p = 100 ns; T _{amb} = 25 °C	[2]	-	0.7	-	Ω

- [1] Device stressed with 8/20 μs exponential decay waveform according to IEC 61000-4-5.
 [2] Non-repetitive current pulse, Transmission Line Pulse (TLP); square pulse; ANSI / ESD STM5.5.1-2008.

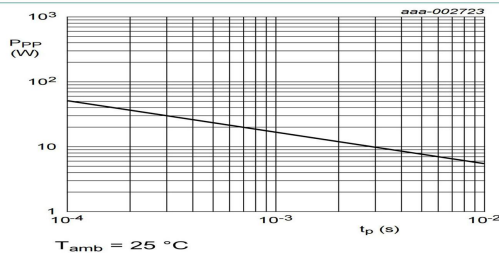


Fig. 3. Rated peak pulse power as a function of square pulse duration; maximum values

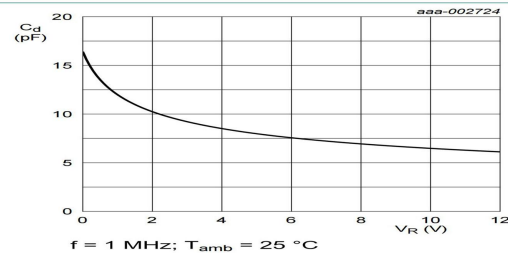


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

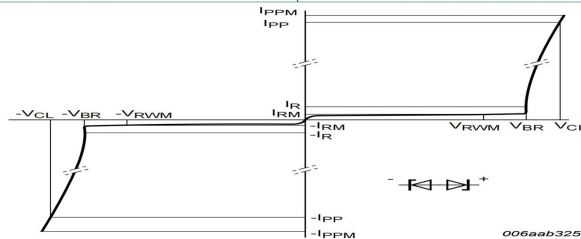


Fig. 5. V-I characteristics for a bidirectional ESD protection diode

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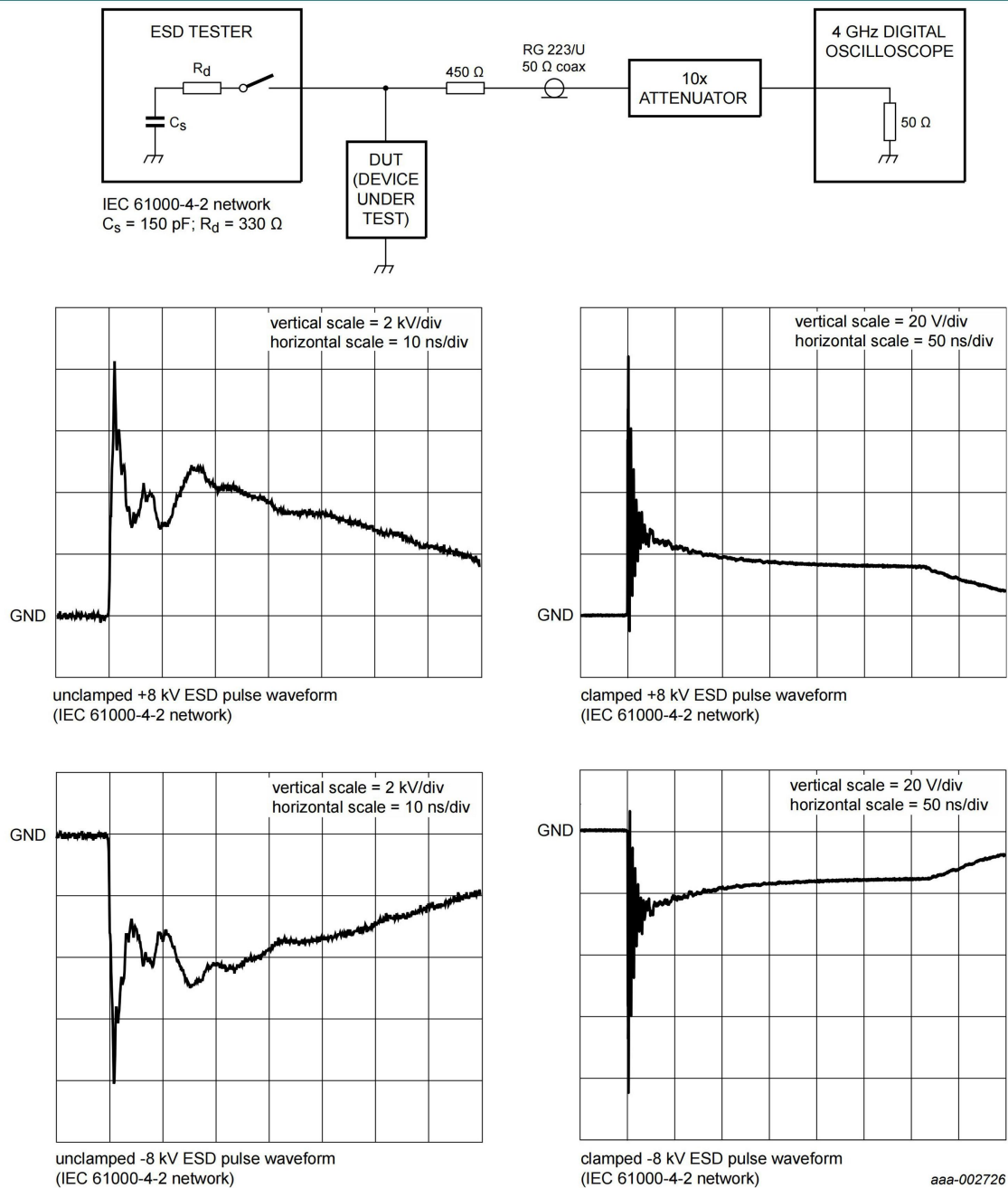


Fig. 6. ESD clamping test setup and waveforms

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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