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PESD24VF1BL

Ultra low capacitance bidirectional ESD protection diode



1. General description

Ultra low capacitance bidirectional ElectroStatic Discharge (ESD) protection diode in a DFN1006-2 (SOD882) ultra small and leadless 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 low diode capacitance $C_d = 0.30 \text{ pF}$
- High reverse standoff voltage $V_{RWM} = 24 \text{ V}$
- Ultra low leakage current: $I_{RM} = 1 \text{ nA}$
- ESD protection up to 10 kV ; IEC 61000-4-2
- AEC-Q101 qualified

3. Applications

- NFC antenna protection
- Protection of high-speed data lines

4. Quick reference data

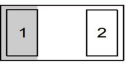
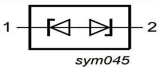
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
C_d	diode capacitance	$f = 1 \text{ MHz}$; $V_R = 0 \text{ V}$	[1]	0.23	0.3	0.45	pF
V_{RWM}	reverse standoff voltage			-	-	24	V

[1] Measured from pin 1 to pin 2.

5. Pinning information

Table 2. Pinning information

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

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PESD24VF1BL	DFN1006-2	DFN1006-2: leadless ultra small plastic package; 2 terminals	SOD882

7. Marking

Table 4. Marking codes

Type number	Marking code
PESD24VF1BL	7L

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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
I_{PPM}	peak pulse current	$t_p = 8/20 \mu s$	[1][2]	-	1	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 (air discharge)	[1][3]	-	15	kV
		IEC 61000-4-2 (contact discharge)	[1][3]	-	10	kV
		MIL-STD-883 (human body model)	[1]	-	10	kV

[1] Measured from pin 1 to pin 2.

[2] According to IEC 61000-4-5 and IEC 61643-321.

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

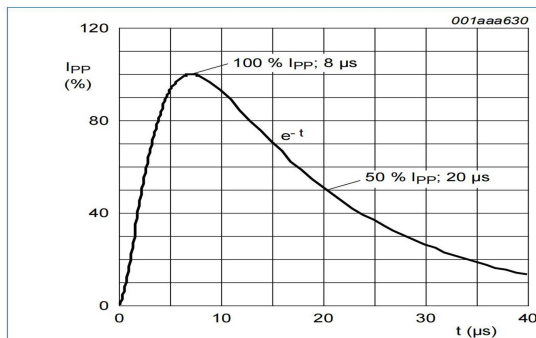


Fig. 1. 8/20 μs pulse waveform according to IEC 61000-4-5 and IEC 61643-321

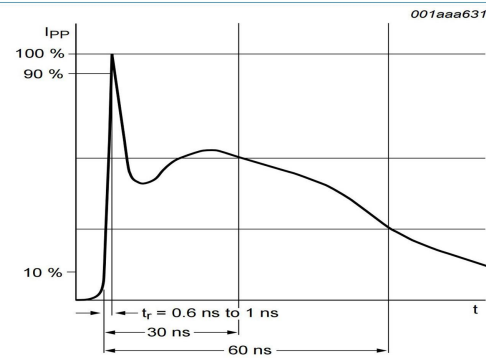


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

9. Characteristics

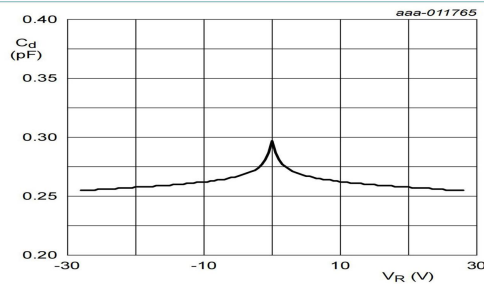
Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage			-	-	24	V
I_{RM}	reverse leakage current	$V_R = 24 V$	[1]	-	1	30	nA
V_{CL}	clamping voltage	$I_{PP} = 1 A$	[1][2]	-	-	17	V
V_{BR}	breakdown voltage	$I_R = 10 mA$	[1]	24.5	28	31.5	V
C_d	diode capacitance	$f = 1 MHz; V_R = 0 V$	[1]	0.23	0.3	0.45	pF
R_{dyn}	dynamic resistance	$I_R = 7.5 A$	[3][1]	-	0.8	-	Ω

[1] Measured from pin 1 to pin 2.

[2] According to IEC 61000-4-5 and IEC 61643-321.

[3] Non-repetitive current pulse; Transmission Line Pulse (TLP); square pulse; ANSI / ESD STM5.5.1-2008.



$f = 1 MHz; T_{amb} = 25 ^\circ C$

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

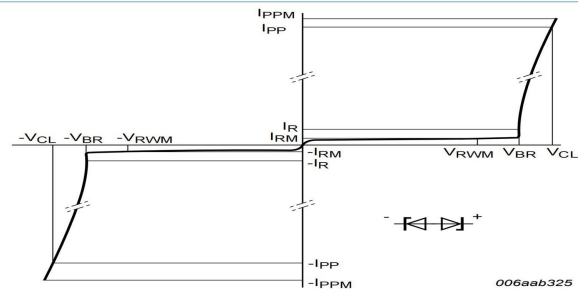
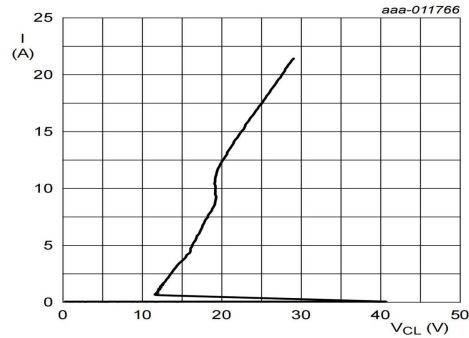


Fig. 4. V-I characteristics for a bidirectional ESD protection diode

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$t_p = 100$ ns; Transmission Line Pulse (TLP)

Fig. 5. Dynamic resistance

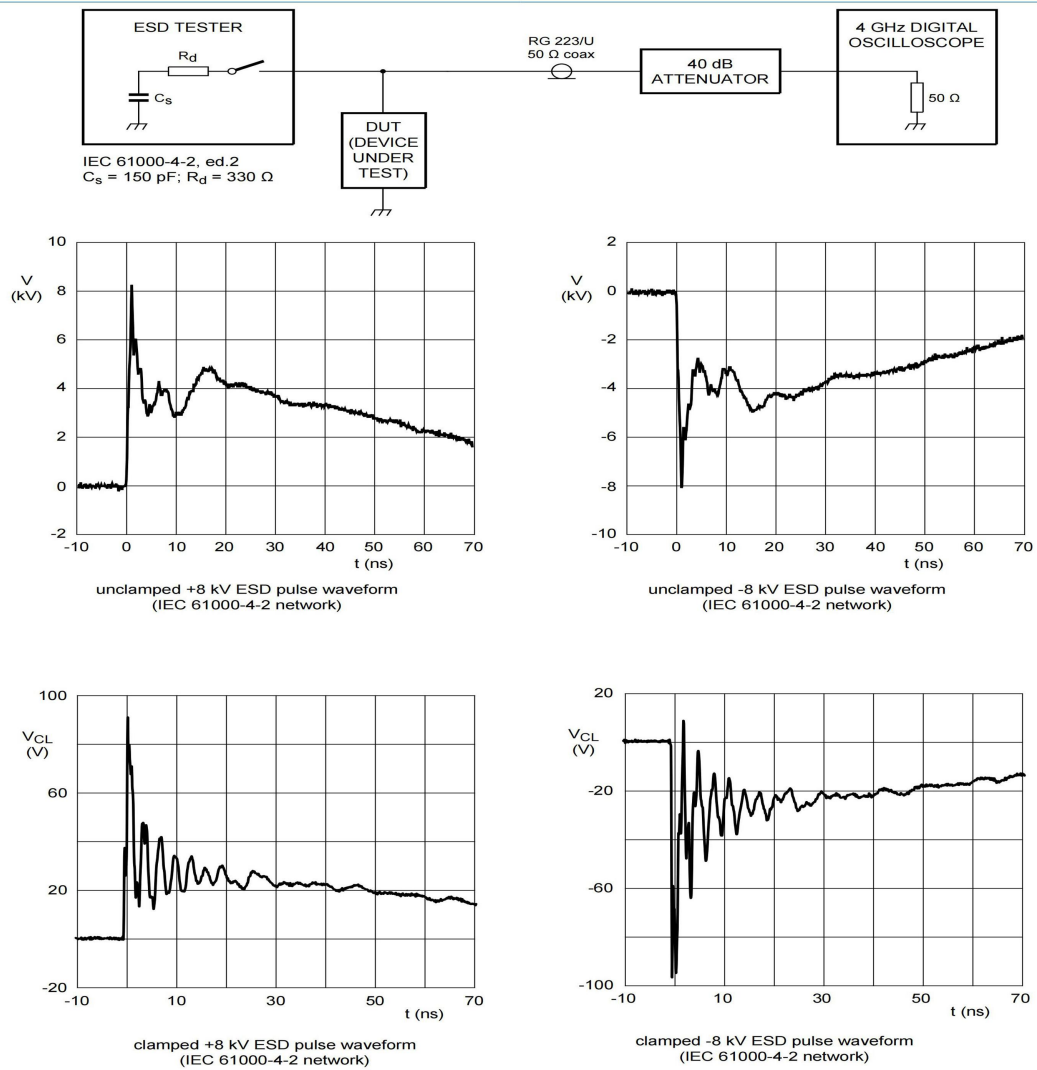


Fig. 6. ESD clamping test setup and waveforms

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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