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PESD3V3L1BSL

ESD protection device



1. General description

Bidirectional ElectroStatic Discharge (ESD) protection diode in a DFN1006-2 (SOD882-S1) 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

- Bidirectional protection of one line
- Reverse stand-off voltage: $V_{RWM} = 3.3\text{ V}$
- Surge robustness: $I_{PPM} = 7.5\text{ A}$ for $8/20\text{ }\mu\text{s}$ pulse
- Ultra low clamping voltage: $V_{CL} = 11.3\text{ V max.}$ at $I_{PPM} = 7.5\text{ A}$

3. Applications

- Portable electronics
- Computers and peripherals
- Audio and video equipment
- Communication systems

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	3.3	V
I_{PPM}	rated peak pulse current	$t_p = 8/20\text{ }\mu\text{s}$	[1]	-	-	7.5	A
V_{CL}	clamping voltage	$I_{PPM} = 7.5\text{ A}$; $t_p = 8/20\text{ }\mu\text{s}$; $T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	-	11.3	V

[1] Device stressed with $8/20\text{ }\mu\text{s}$ exponential decay waveform according to IEC 61000-4-5.

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-S1)	006aab041
2	K2	cathode (diode 2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PESD3V3L1BSL	DFN1006-2	plastic, leadless ultra small outline package; 2 terminals; 0.60 mm pitch; 1 mm x 0.6 mm x 0.4 mm body	SOD882-S1

7. Marking

Table 4. Marking codes

Type number	Marking code
PESD3V3L1BSL	0H

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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}	rated peak pulse current	$t_p = 8/20 \mu s$	[1]	-	7.5	A
T_j	junction temperature			-	125	°C
T_{amb}	ambient temperature			-55	125	°C
T_{stg}	storage temperature			-55	150	°C
ESD maximum ratings						
V_{ESD}	electrostatic discharge voltage	IEC 61000-4-2; contact discharge	[2]	-	25	kV
		IEC 61000-4-2; air discharge	[2]	-	25	kV

[1] Device stressed with 8/20 μs exponential decay waveform according to IEC 61000-4-5.

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

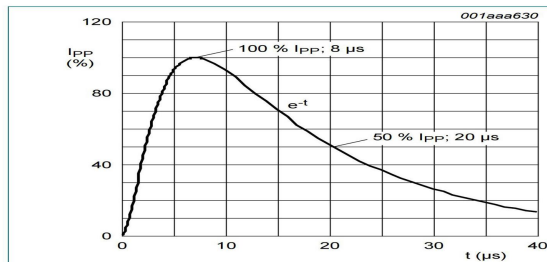


Fig. 1. 8/20 μs pulse waveform according to IEC 61000-4-5

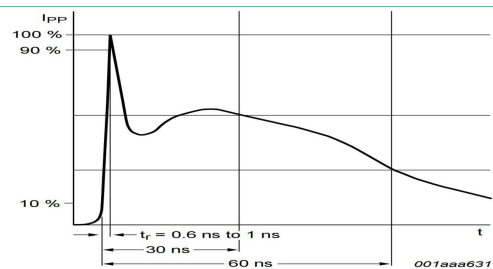


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RWM}	reverse standoff voltage	$T_{amb} = 25^\circ C$		-	-	3.3	V
V_{BR}	breakdown voltage	$I_R = 1 \text{ mA}; T_{amb} = 25^\circ C$		5.2	-	-	V
I_{RM}	reverse leakage current	$V_{RWM} = 3.3 \text{ V}; T_{amb} = 25^\circ C$		-	-	100	nA
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; T_{amb} = 25^\circ C$		-	15.5	18	pF
V_{CL}	clamping voltage	$I_{pp} = 1 \text{ A}; t_p = 8/20 \mu s; T_{amb} = 25^\circ C$	[1]	-	-	8.3	V
		$I_{PPM} = 7.5 \text{ A}; t_p = 8/20 \mu s; T_{amb} = 25^\circ C$	[1]	-	-	11.3	V
		$I_{PPM} = 16 \text{ A}; t_p = \text{TLP}; T_{amb} = 25^\circ C$	[2]	-	9	-	V
R_{dyn}	dynamic resistance	$I_R = 10 \text{ A}; T_{amb} = 25^\circ C$	[2]	-	0.18	-	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) $t_p = 100 \text{ ns}$; square pulse; ANSI / ESD STM5.5.1-2008.

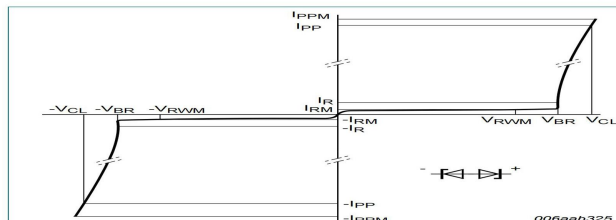


Fig. 3. V-I characteristics for a bidirectional ESD protection diode

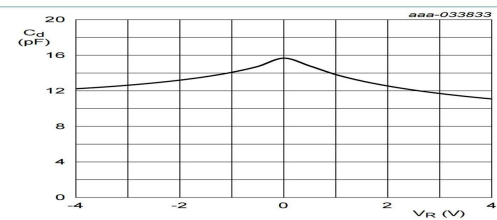


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

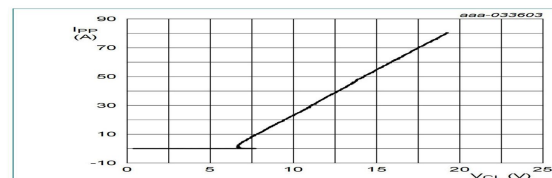


Fig. 5. Transmission Line Pulse (TLP); $t_p = 100 \text{ ns}$; $t_r = 1 \text{ ns}$. Dynamic resistance with positive clamping; typical values

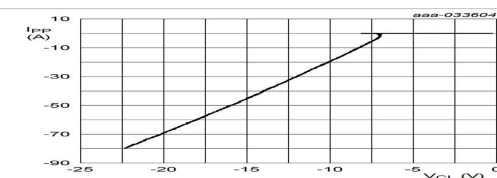


Fig. 6. Transmission Line Pulse (TLP); $t_p = 100 \text{ ns}$; $t_r = 1 \text{ ns}$. Dynamic resistance with negative clamping; typical values

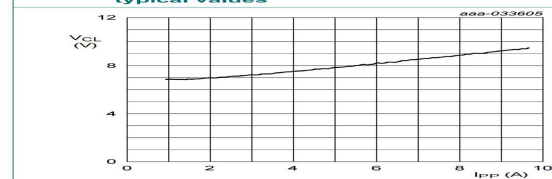


Fig. 7. IEC 61000-4-5; $t_p = 8/20 \mu s$; positive pulse. Dynamic resistance with positive clamping; typical values

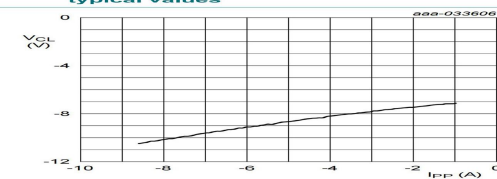


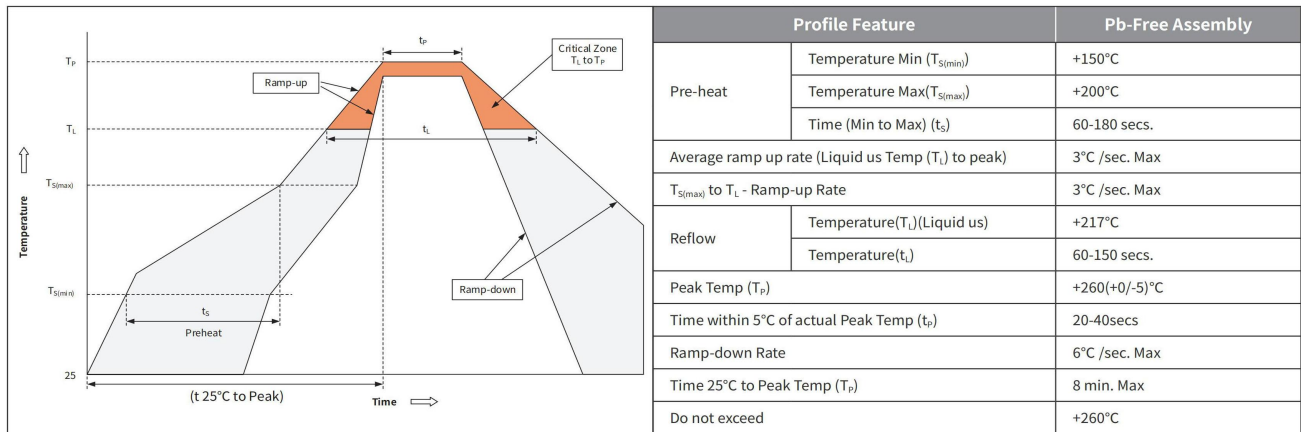
Fig. 8. IEC 61000-4-5; $t_p = 8/20 \mu s$; negative pulse. Dynamic resistance with negative clamping; typical values

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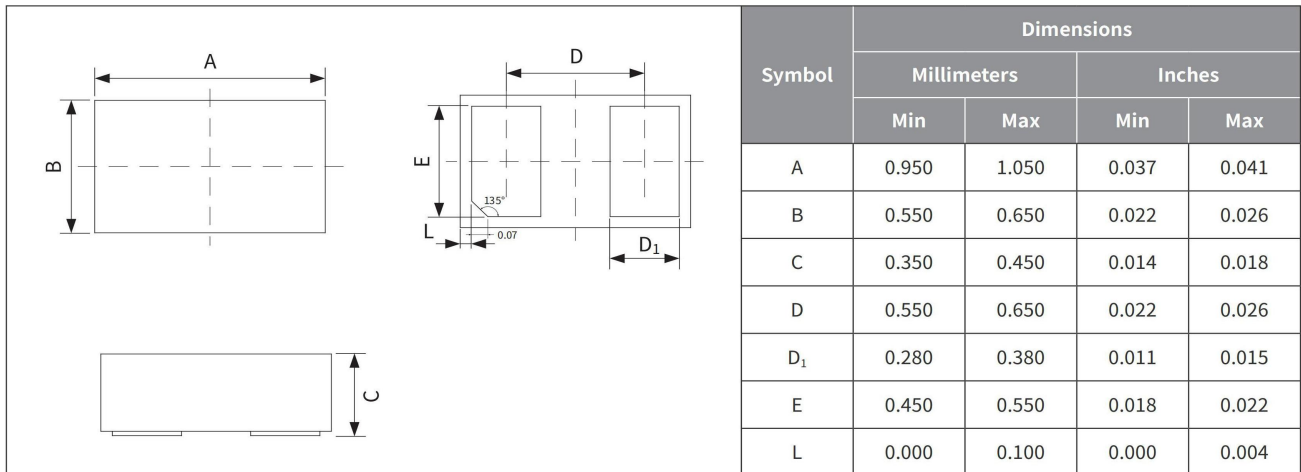
Ordering Information

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)



Suggested Pad Layout

