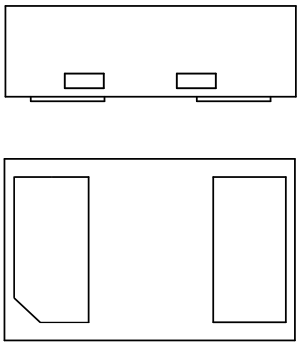
DFN1006-2L Plastic-Encapsulate Diodes

ESN2F5B1AA Bi-directional ESD Protection Diode **DFN1006-2L** RoHS COMPLIANT

Features

- Ultra-Low capacitance:15pF(typ.)
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
- IEC 61000-4-2 (ESD):
  Air discharge: ±30KV ; Contact discharge: ±30KV;
- IEC 61000-4-5 (Lightning) 8A (8/20μs)



Equivalent circuit

Applications

- Cell Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Audio Players
- Keypads, Side Keys, LCD Displays

Mechanical Characteristics

- Molding compound flammability Rating: UL 94V-0
- DFN1006-2L package
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

Description

The ESN2F5B1AA is a bi-directional TVS diode,utilizing leading monolithic silicon technology to pro-vide fast response time and low ESD clamping voltage,making this device an ideal solution for protecting voltage sensitive data and power line .The ESN2F5B1AA complies with the IEC 61000-4-2 (ESD) standard with ±30 kV air and ±30kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free 0402 package. The small size and high ESD surge protection make ESN2F5B1AA an ideal choice to pro-tect cell phone,digital cameras, audio players and many other portable applications.

Marking

PB = Device code

Front side

Absolute Maximum Ratings (TA=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Contact) ESD per IEC 61000−4−2 (Air)	V_{ESD}	± 30 ± 30	KV
Peak Pulse Power (tp =8/20μs)	P_{PP}	104	W
Peak Pulse Current (tp =8/20μs) (note1)	I_{PP}	8	A
Junction Temperature	T_J	−55 to +125	°C
Storage Temperature	T_{STG}	−55 to +125	°C

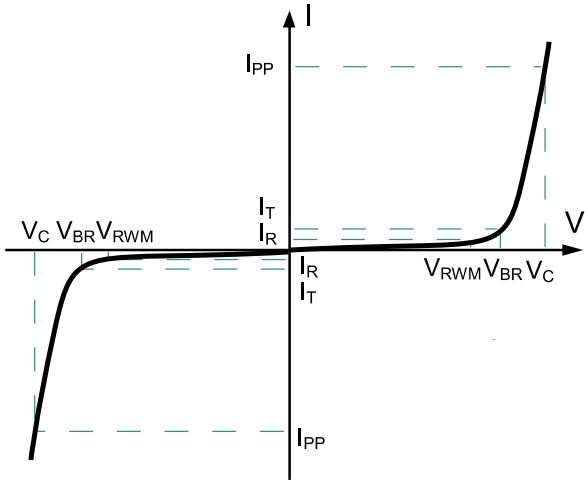
Electrical Characteristics (TA=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	IT=1mA	5.6	6.2	7.5	V
Reverse Leakage Current	I_R	VRWM=12.0V ,T=25°C			0.1	μA
Clamping Voltage	V_C	IPP=1A, tp=8/20μs			8	V
Clamping Voltage	V_C	IPP=8A, tp=8/20μs			13	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		15	20	pF

Electrical Parameters (TA = 25°C unless otherwise noted)

Symbol	Parameter
IPP	Maximum Reverse Peak Pulse Current
VC	Clamping Voltage @ IPP
VRWM	Working Peak Reverse Voltage
IR	Maximum Reverse Leakage Current @ VRWM
VBR	Breakdown Voltage @ IT
IT	Test Current

Note:. 8/20μs pulse waveform.



V-I characteristics for a Bi-directional ESD Protection Diode

Typical Characteristics

Fig 1 8/20μs Waveform per IEC61000-4-5

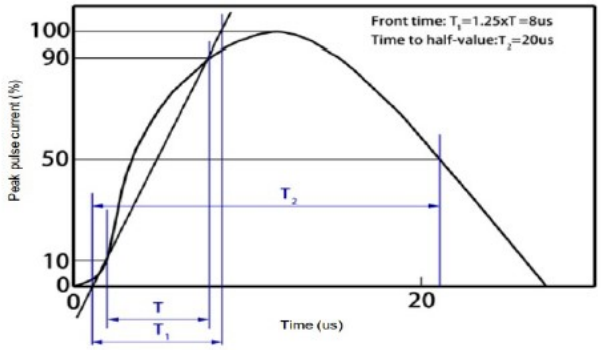


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

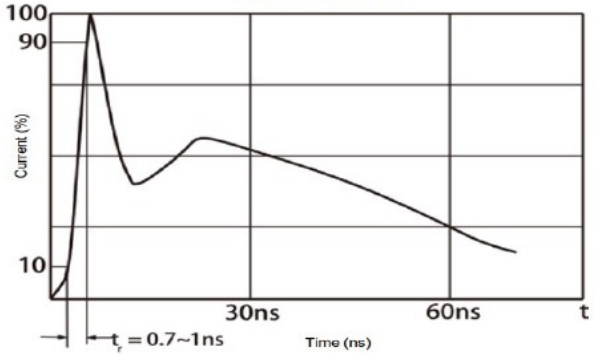


Fig 3 Power Derating Curve

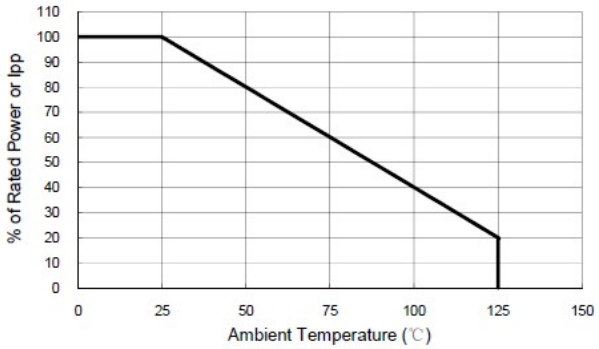


Fig 4 Voltage vs Capacitance

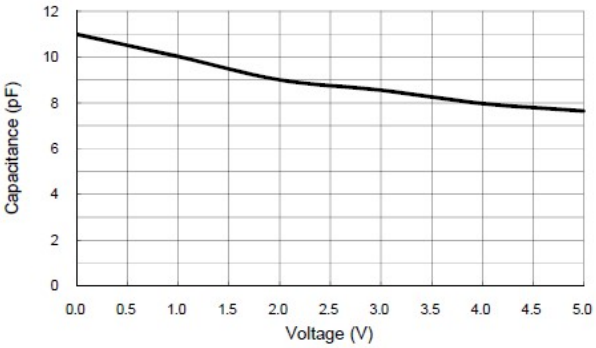


Fig 5 Voltage Sweeping

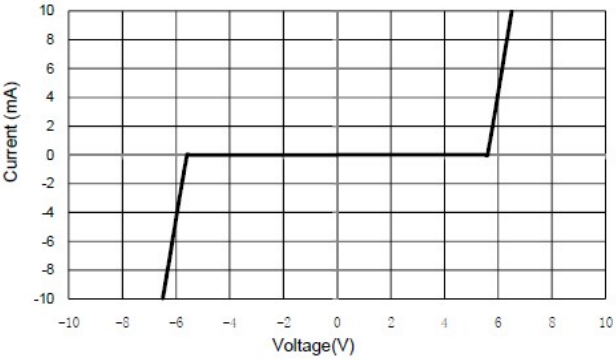
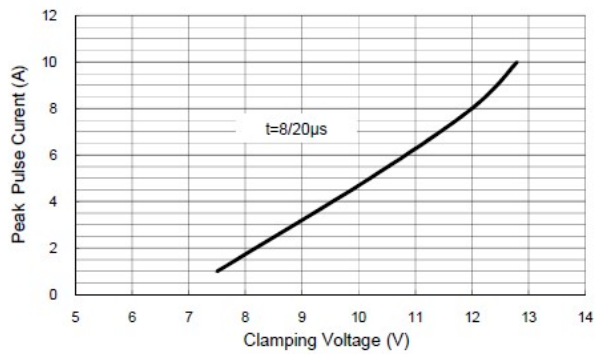
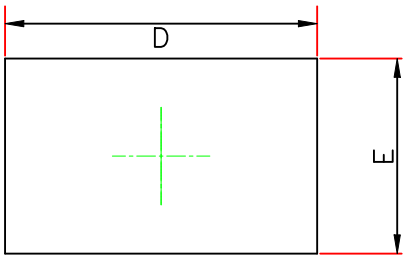


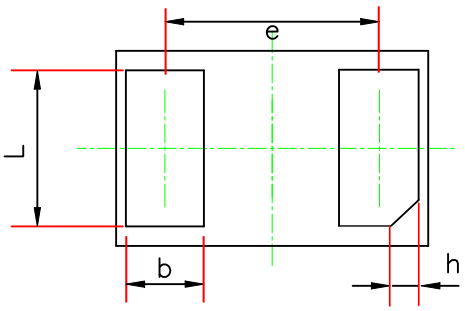
Fig 6 Clamping Voltage vs Peak Pulse Current



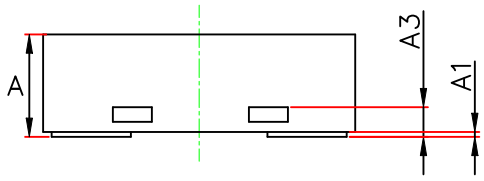
DFN1006-2L Package Outline Dimensions



TOP VIEW



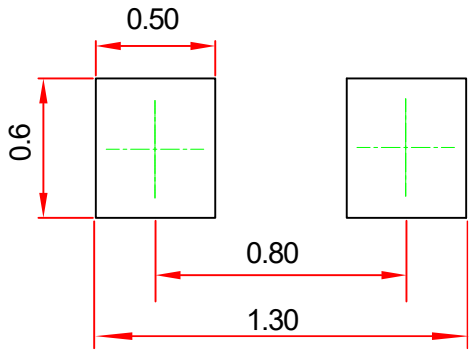
BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
A3	0.120	0.180	0.005	0.007
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b	0.200	0.300	0.008	0.012
e	0.650TYP.		0.026TYP.	
L	0.450	0.550	0.018	0.022
h	0.007	0.170	0.003	0.007

Suggested Pad Layout



Note:
1. Controlling dimension:in/millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

Package and Ordering Information

Package	Outline	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)
DFN1006-2L	TAPING	7"	330	10000