

Description

The PESDNC2FD5VBN protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, low operating voltage. It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.

Feature

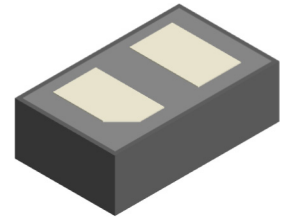
- 45W peak pulse power per line ($t_P = 8/20\mu s$)
- DFN1006-2L package
- Replacement for MLV (0402)
- Bidirectional configurations
- Response time is typically $< 1ns$
- Low clamping voltage
- Transient protection for data lines to
IEC61000-4-2(ESD) $\pm 25KV$ (air), $\pm 25KV$ (contact);
IEC61000-4-4 (EFT) 40A (5/50ns)

Applications

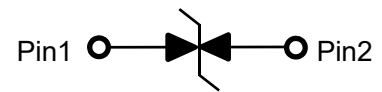
- Cellular phones
- Portable devices
- Digital cameras
- Power supplies

Mechanical Characteristics

- Qualified max reflow temperature: $260^{\circ}C$
- Device meets MSL 1 requirements
- RoHS compliant



DFN1006-2L(Bottom View)



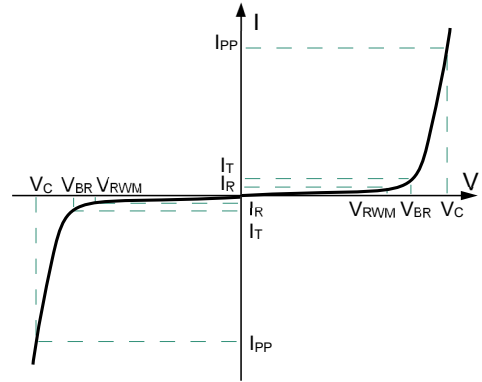
Circuit Diagram



Marking (Top View)

Electronics Parameter Definitions

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power



Electrical characteristics at @25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5.6	7.0	7.8	V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			1.0	μA
Clamping Voltage ¹⁾	V_{CL}	$I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$		9.3		V
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$,		7.5	8.0	V
Clamping Voltage ²⁾	V_C	$I_{PP} = 3\text{A}$, $t_p = 8/20\mu\text{s}$		8.0	9.0	V
Clamping Voltage ²⁾	V_C	$I_{PP} = 5.5\text{A}$, $t_p = 8/20\mu\text{s}$		8.5	9.5	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$		15	20	pF

Notes:

1. TLP parameter: $Z_0 = 50\Omega$, $t_p = 100\text{ns}$, $t_r = 2\text{ns}$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
2. Non-repetitive current pulse, according to IEC61000-4-5.

Absolute maximum rating@25°C

Rating	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{pp}	45	W
Peak Pulse Current ($t_p = 8/20\mu\text{s}$)	I_{pp}	5.5	A
Operating Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
ESD Protection-Contact Discharge	V_{ESD}	± 30	kV
ESD Protection-Air Discharge	V_{ESD}	± 30	kV

Typical Characteristics

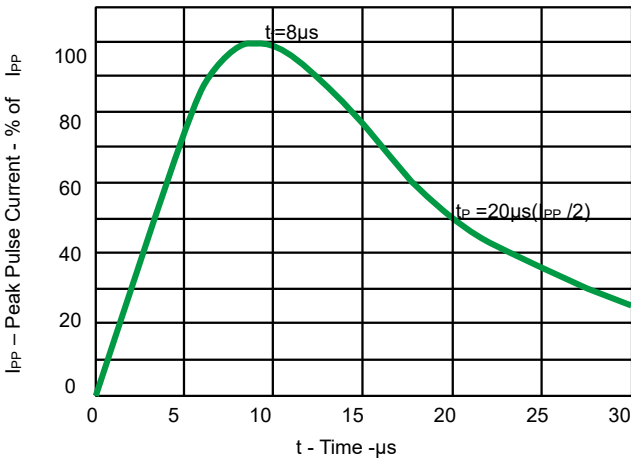


Fig 1. Pulse Waveform

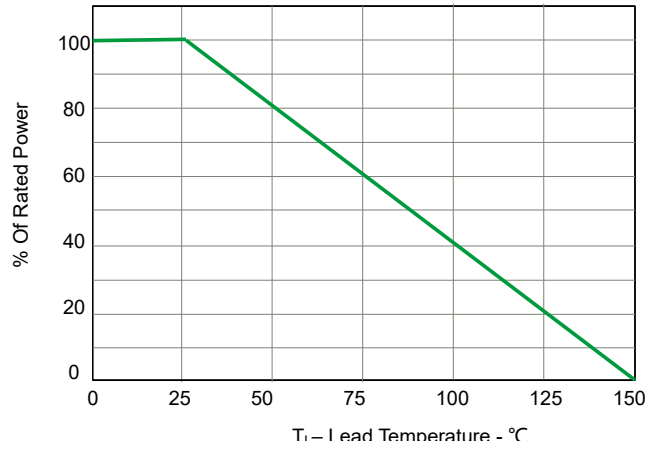


Fig 2. Power Derating Curve

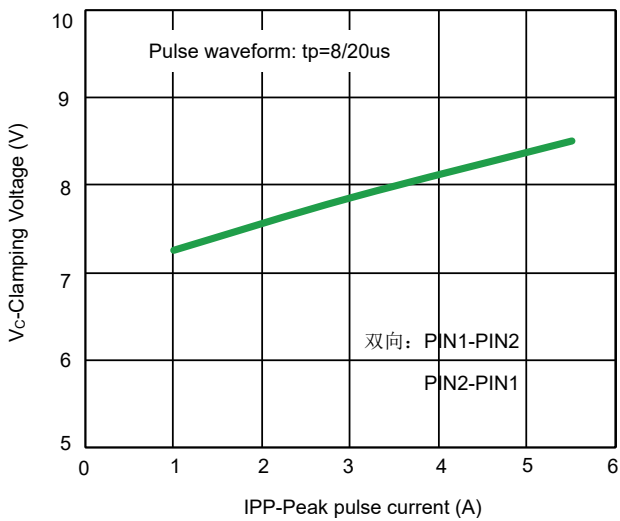


Fig 3. Clamping voltage vs. Peak pulse current

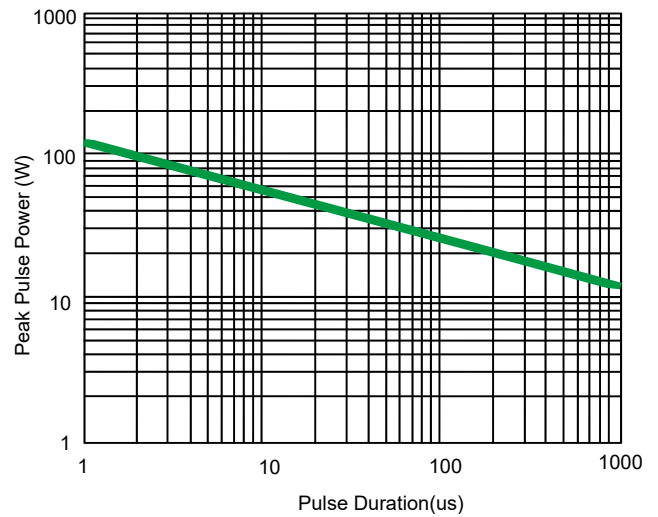


Fig 4. Non-Repetitive Peak Pulse Power vs. Pulse time

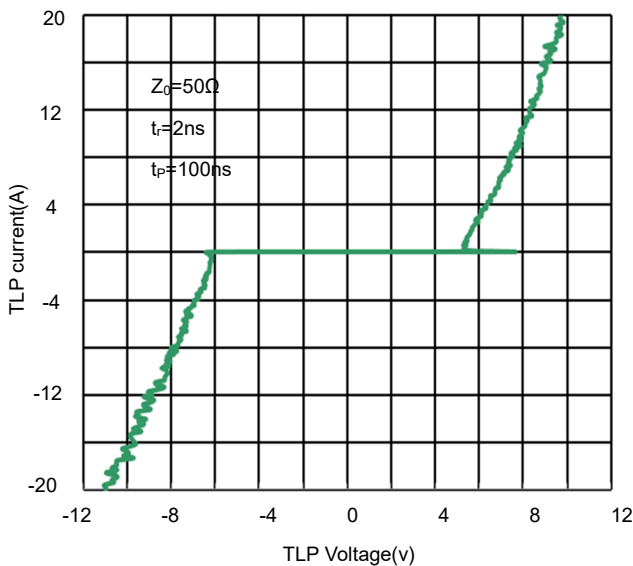


Fig 5. TLP Measurement

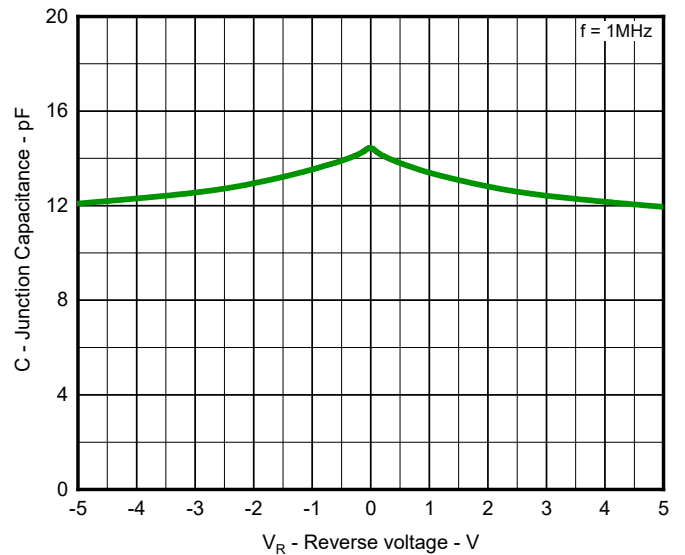
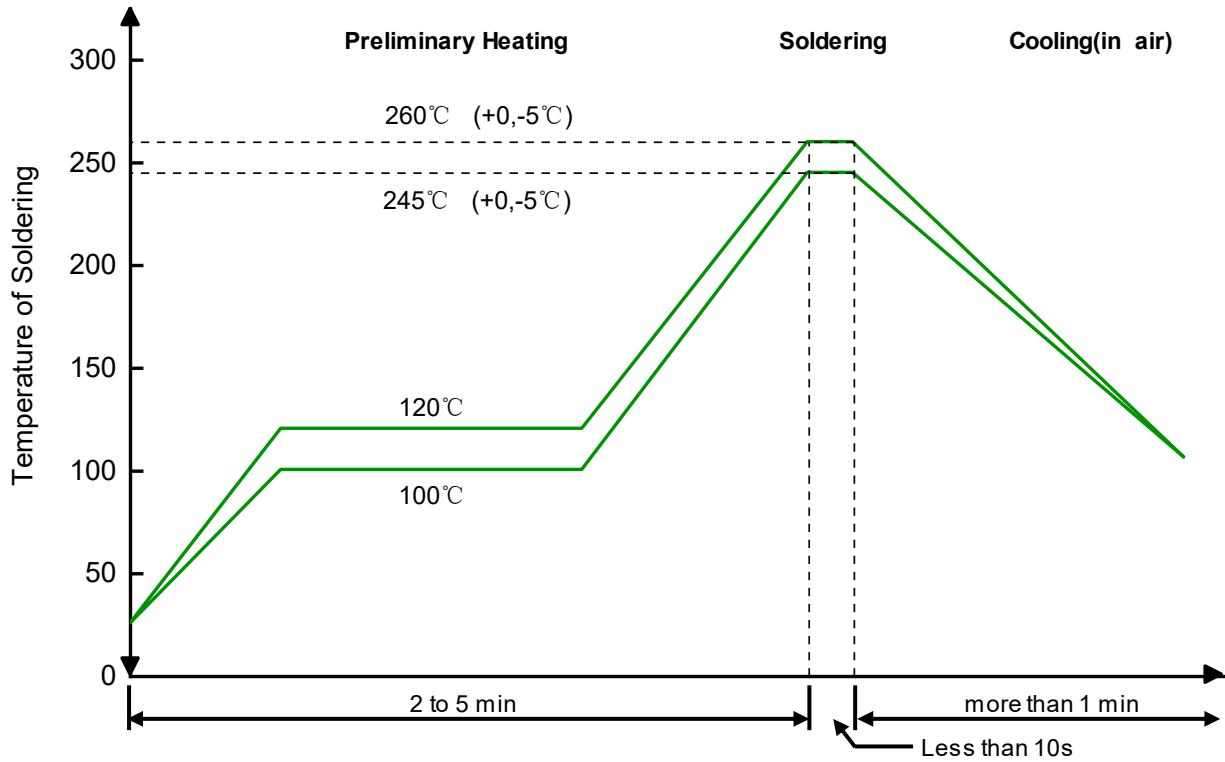


Fig 6. Capacitance vs. Reverse voltage

Solder Reflow Recommendation



Remark: Pb free for 260°C; Pb for 245°C.

PCB Design

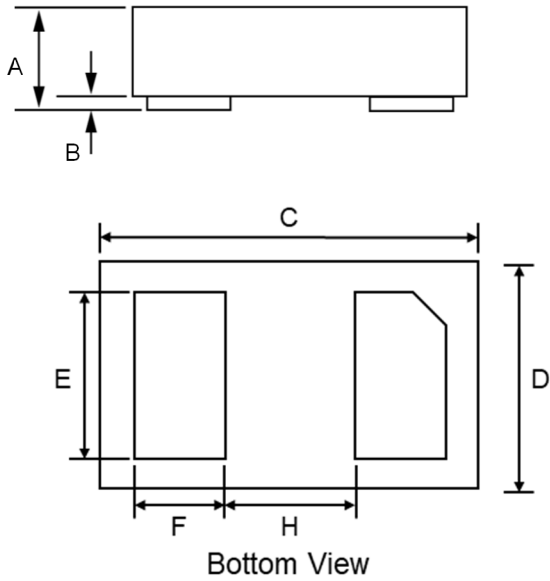
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- Do not use stubs, but place the cathode of the TVS diode directly on the signal trace.
- Do not make false economies and save copper for the ground connection.
- Place via holes to ground as close as possible to the anode of the TVS diode.
- Use as many via holes as possible for the ground connection.
- Keep the length of via holes in mind! The longer the more inductance they will have.

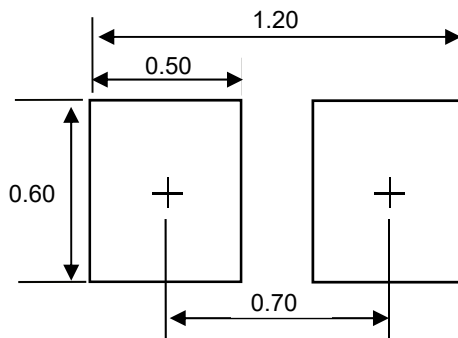
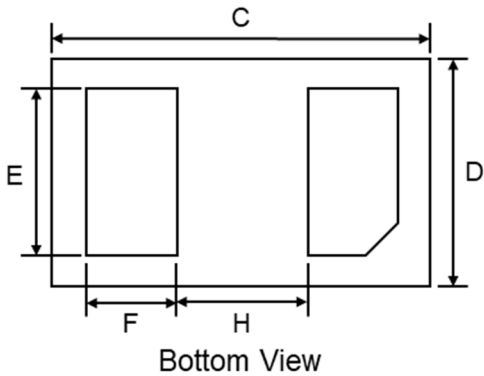
Ordering information

Device	Package	Reel Size	MPQ
PESDNC2FD5VBN	DFN1006-2L (Pb-Free)	7"	10000 / Tape & Reel

Product dimension (DFN1006-2L)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.40	0.55	0.016	0.022
B	0.00	0.05	0.000	0.002
C	0.90	1.10	0.035	0.043
D	0.55	0.65	0.022	0.026
E	0.35	0.55	0.014	0.022
F	0.15	0.30	0.006	0.012
H	0.40 Typ.		0.015 Typ.	



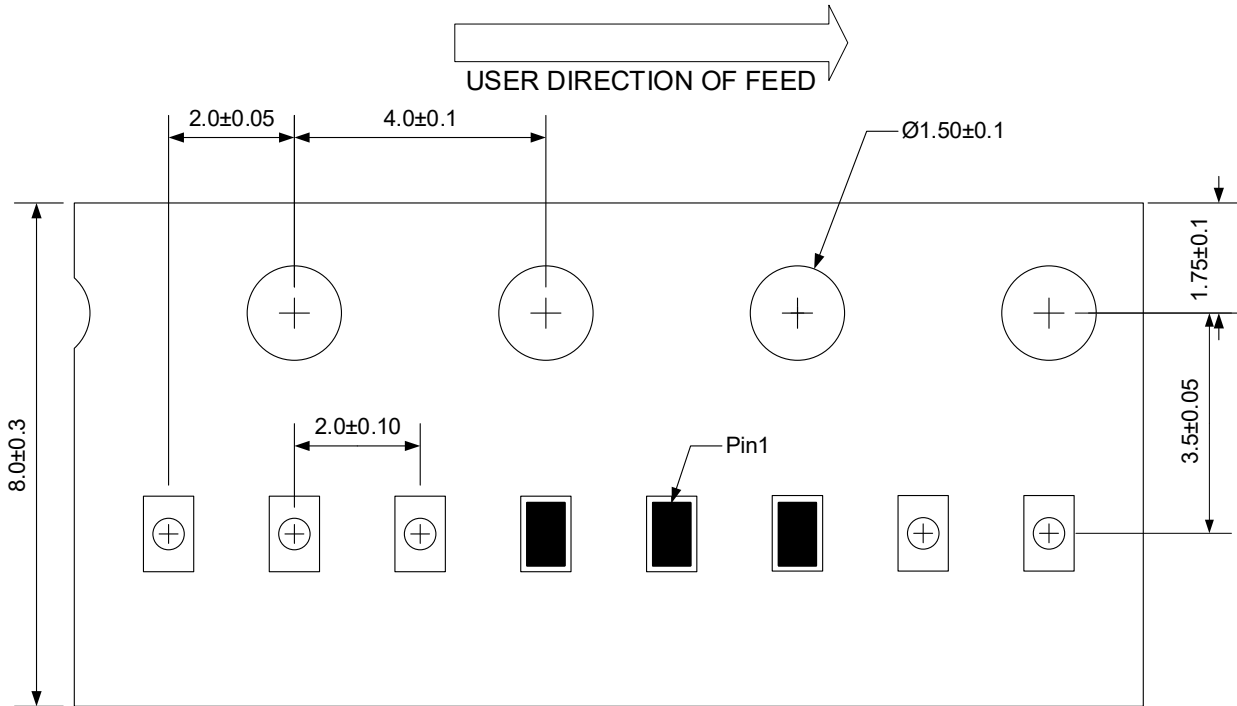
Unit:mm

Suggested PCB Layout

Notes:


This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

Load with information



Unit:mm


IMPORTANT NOTICE

 and **Prisemi**[®] are registered trademarks of **Prisemi Electronics Co., Ltd (Prisemi)** ,Prisemi reserves the right to make changes without further notice to any products herein. Prisemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Prisemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. “Typical” parameters which may be provided in Prisemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals” must be validated for each customer application by customer’s technical experts. Prisemi does not convey any license under its patent rights nor the rights of others. The products listed in this document are designed to be used with ordinary electronic equipment or devices, Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Website: <http://www.prisemi.com>

For additional information, please contact your local Sales Representative.

©Copyright 2009, Prisemi Electronics

 **Prisemi**[®] is a registered trademark of Prisemi Electronics.

All rights are reserved.