Prisemi®

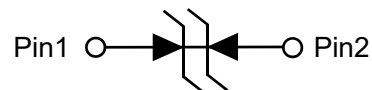## Bi-directional 5V Normal Capacitance ESD Protector

Description

The PESDNC2XD5VBLF 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 unidirectional line in applications where arrays are not practical.
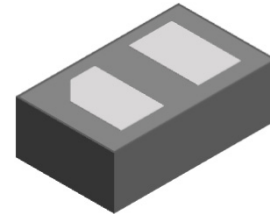
DFN0603-2L(Bottom View)

Feature

➢ 60W peak pulse power per line (t_P = 8/20μs)
➢ DFN0603-2L package
➢ Response time is typically < 1 ns
➢ Bidirectional configurations
➢ Low clamping voltage
➢ RoHS compliant
➢ Transient protection for data lines to
  IEC 61000-4-2(ESD) ±25kV(air), ± 25kV(contact);
  IEC 61000-4-5 (Lightning) 5A (8/20us)

Pin1 ○———|◁|▷|———○ Pin2

Circuit Diagram

C5:

Marking (Top View)

Applications

➢ Cell phone handsets and accessories
➢ Personal digital assistants (PDA's)
➢ Notebooks, desktops, and servers
➢ Portable instrumentation
➢ Cordless phones
➢ Digital cameras
➢ Peripherals

Mechanical Characteristics

➢ Mounting position: Any
➢ Qualified max reflow temperature:260℃
➢ Device meets MSL 1 requirements
➢ DFN0603-2L without plating

Electronics Parameter

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
C_J	Junction Capacitance
I_F	Forward Current
V_F	Forward Voltage @ I_F
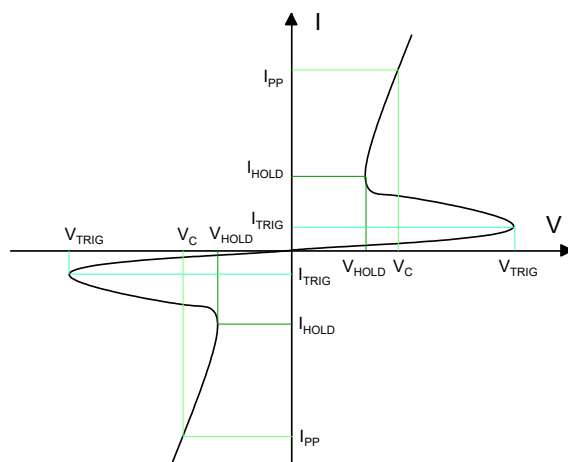
Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}	-	-	-	5.0	V
Breakdown Voltage	V_{BR}	I_t = 1mA	5.6	-	8.0	V
Reverse Leakage Current	I_R	V_{RWM} = 5V	-	-	1.0	μA
Clamping Voltage	V_C	I_{PP} = 1A,t_P = 8/20μs	-	-	10	V
		I_{PP} = 5A,t_P = 8/20μs	-	-	12	V
Junction Capacitance	C_J	V_R = 0V,f = 1MHz	-	15	25	pF

Absolute maximum rating@25℃

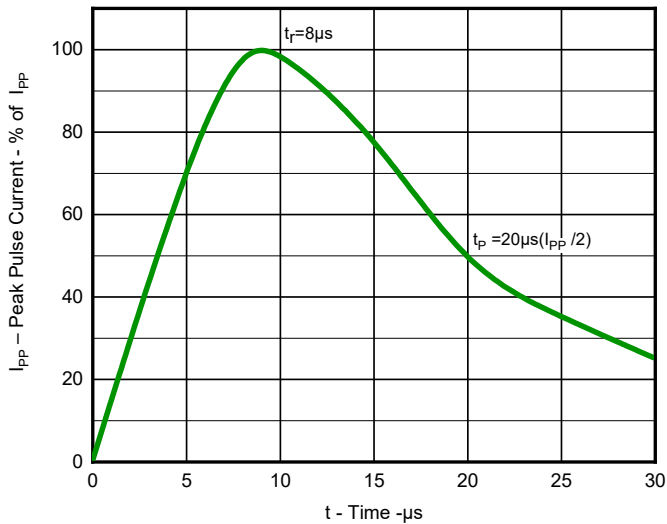| Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μs)	P_{PP}	60	W
Peak Pulse Current (t_P = 8/20μs)	I_{PP}	5.0	A
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	℃
ESD Protection-Contact Discharge	V_{ESD}	±25	kV
ESD Protection-Air Discharge	V_{ESD}	±25	kV

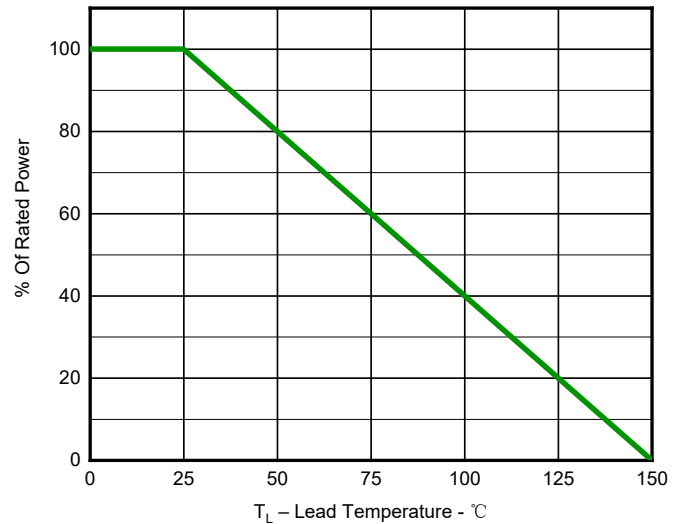## Typical Characteristics

Fig 1.Pulse Waveform(8/20μs)
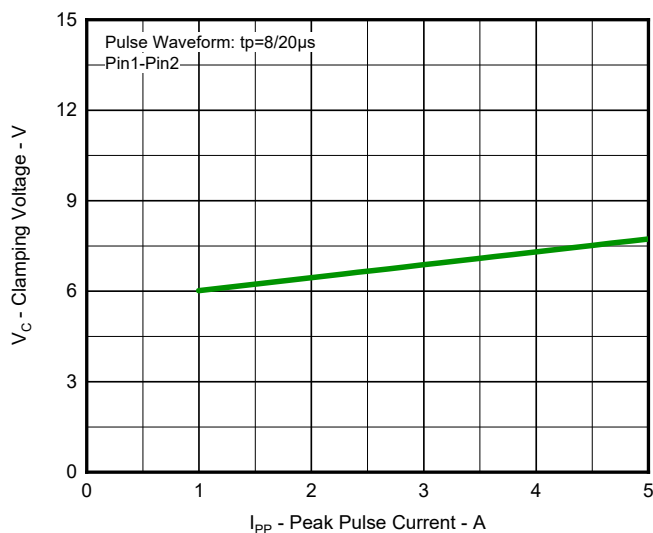

Fig 2.Power Derating Curve

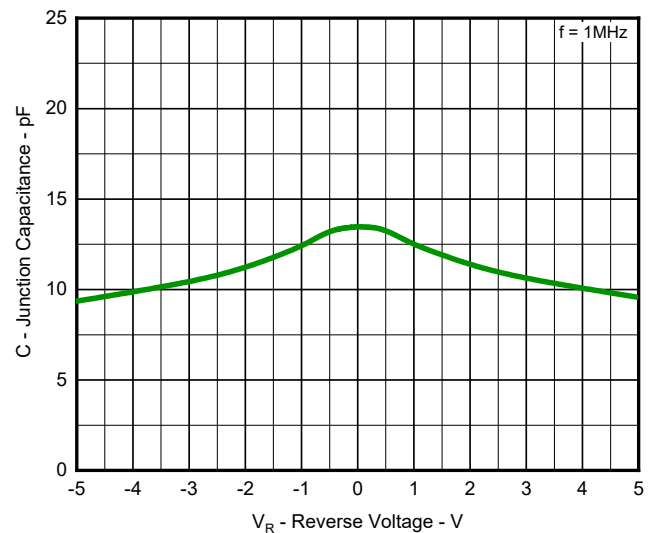

Fig 3. Clamping Voltage vs. Peak Pulse Current
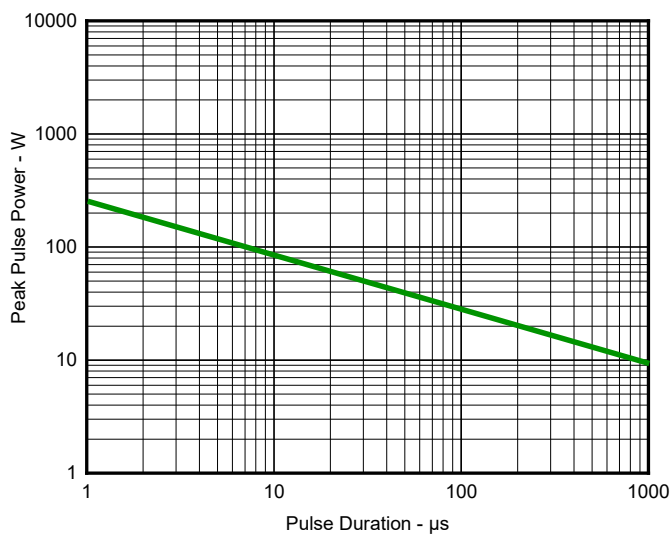

Fig 4. Capacitance vs. Reveres Voltage

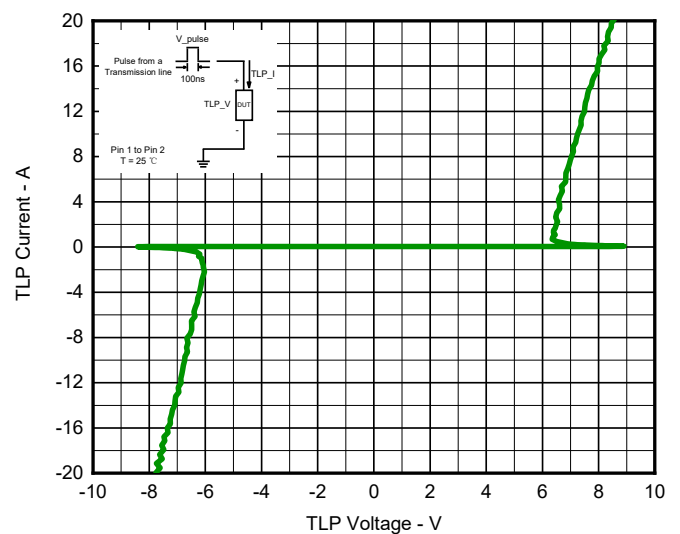**Fig 5. Non Repetitive Peak Pulse Power vs. Pulse Time**
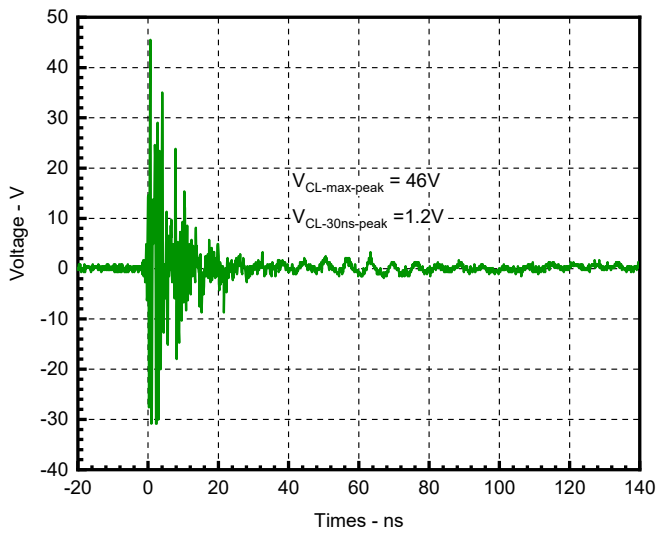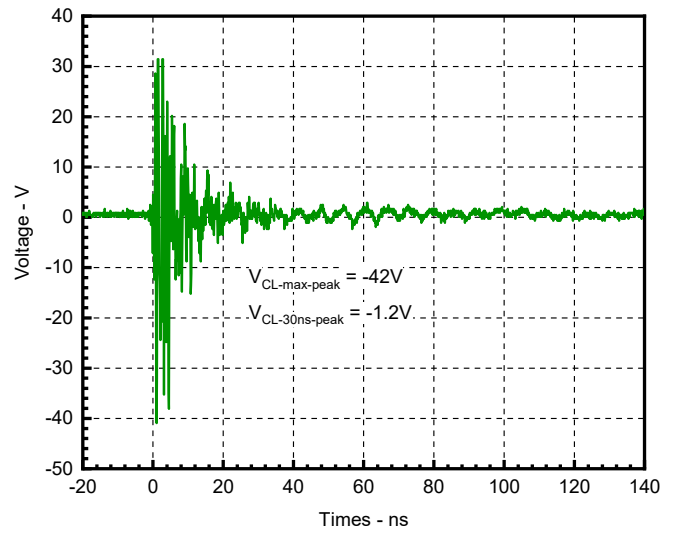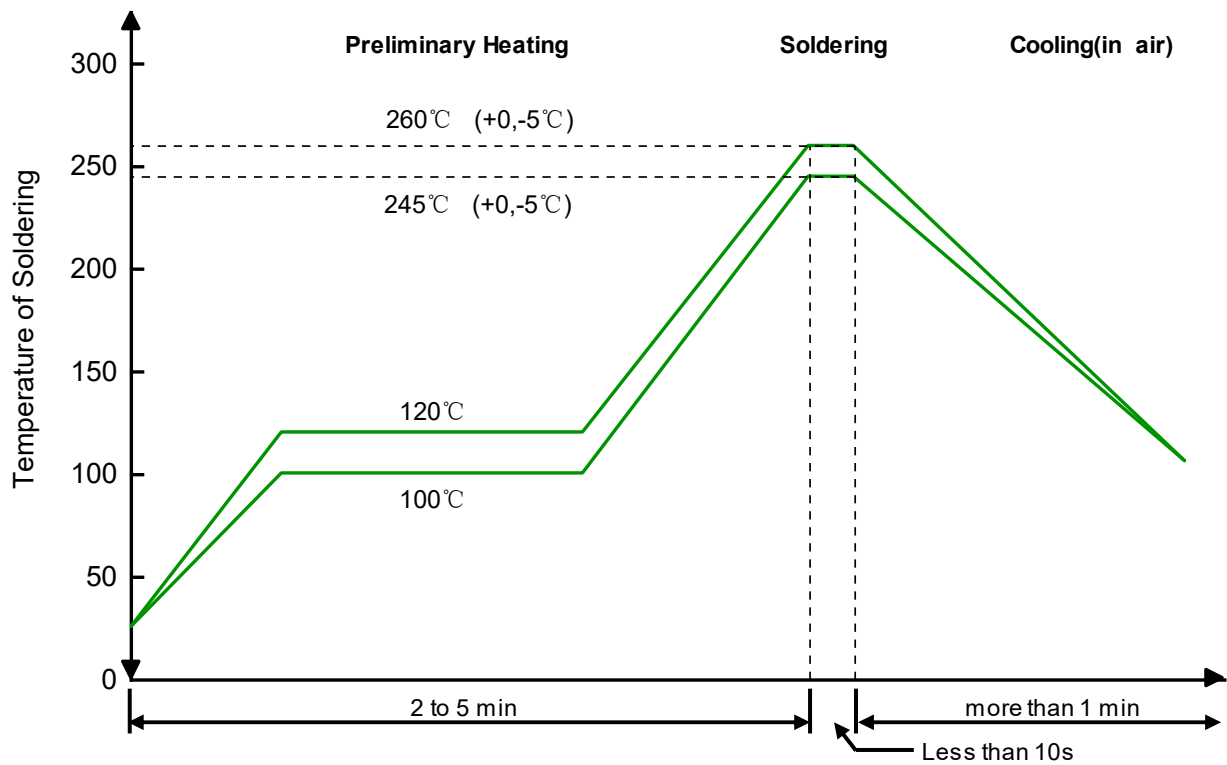

Fig 6. TLP Measurement

**Fig 7. Clamping Voltage at IEC61000-4-2
+8kV Pulse Waveform**

**Fig 8. Clamping Voltage at IEC61000-4-2
-8kV Pulse Waveform**

Solder Reflow Recommendation

Remark: Pb free for 260℃; Pb for 245℃.

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.
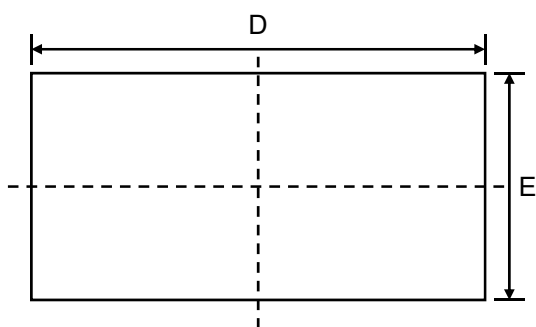➢ Keep the length of via holes in mind! The longer the more inductance they will have.

Ordering information

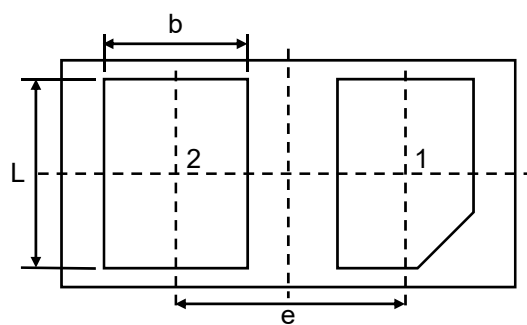| Device	Package	Reel	Shipping
PESDNC2XD5VBLF	DFN0603-2L	7"	15000 / Tape & Reel

Load with information

USER DIRECTION OF FEED
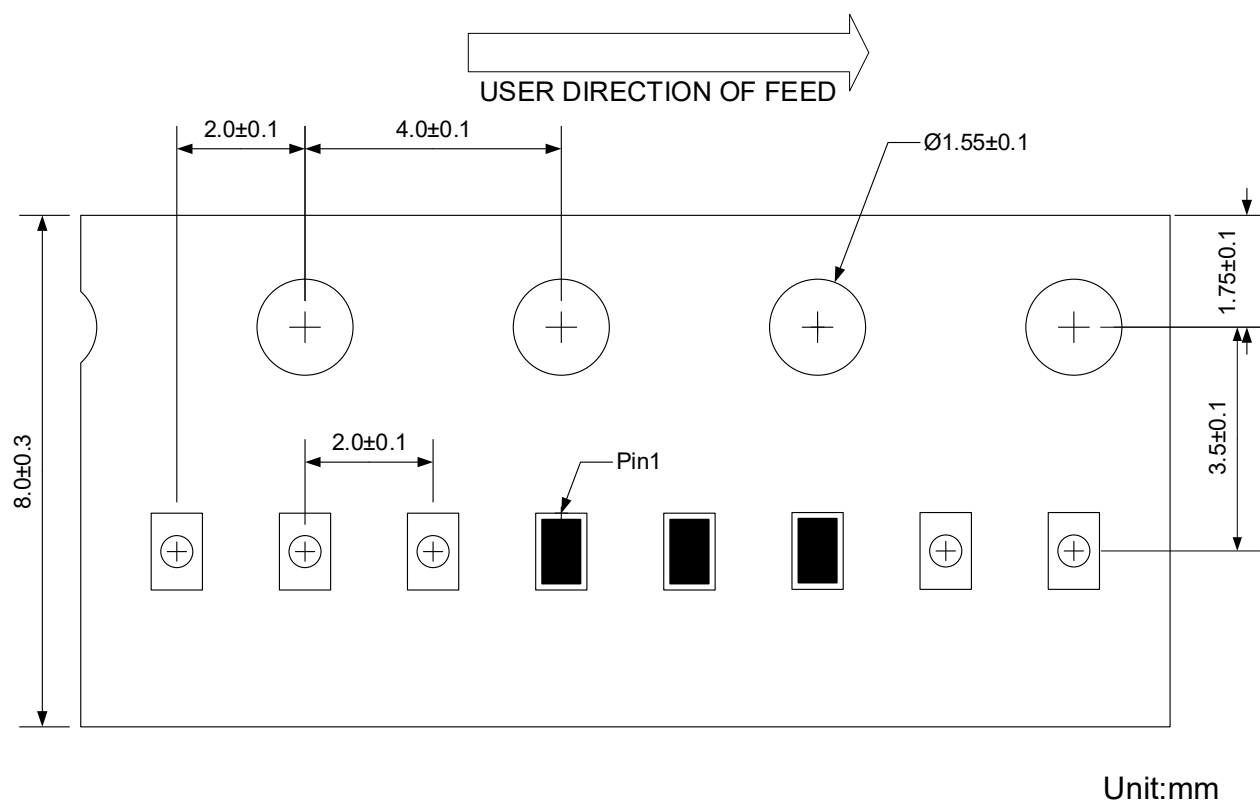
Unit:mm

Product dimension (DFN0603-2L)

Top View

Bottom View
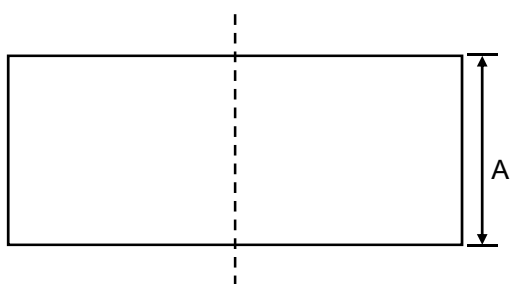
Side View

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.27	0.37	0.011	0.015
b	0.14	0.24	0.006	0.009
D	0.57	0.67	0.022	0.026
e	0.37 BSC		0.015 BSC	
E	0.27	0.37	0.011	0.015
L	0.19	0.29	0.007	0.011
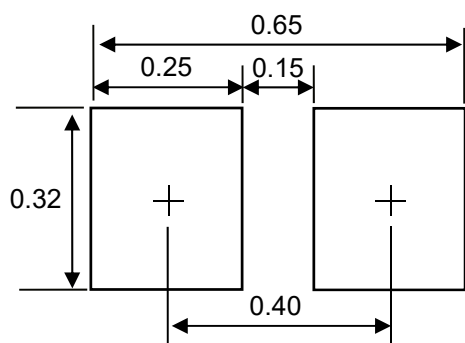
Unit: mm

Suggested PCB Layout

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