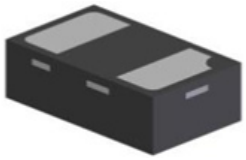
Uni-directional 4.8V High Capacitance ESD Protector

Description

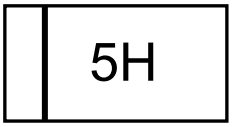
The PESDHC2FD4V8UF ESD protector is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers, and PDA's. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, lower operating voltage, lower clamping voltage and no device degradation when compared to MLVs. The PESDHC2FD4V8UF protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. The PESDHC2FD4V8UF is available in a DFN1006-2L package with working voltages of 4.8 volt. It gives designer the flexibility to protect one unidirectional line in applications where arrays are not practical. Additionally, it may be "sprinkled" around the board in applications where board space is at a premium.



DFN1006-2L(Bottom View)

Feature

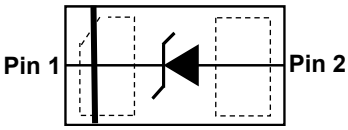
- 500W Peak pulse power per line (t_P = 8/20μs)
- DFN1006-2L package
- Replacement for MLV(0402)
- Unidirectional configurations
- Response time is typically < 1 ns
- Protect one I/O or power line
- Low clamping Voltage
- RoHS compliant
- Transient protection for data lines to
  IEC 61000-4-2(ESD) ±30kV(air), ±30kV(contact);
  IEC 61000-4-4 (EFT) 40A (5/50ns)



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
- MP3 players



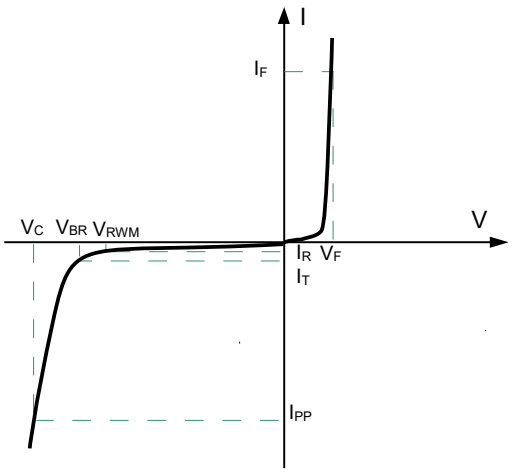
Circuit Diagram

Mechanical Characteristics

- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 requirements
- DFN1006-2L 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}				4.8	V
Breakdown Voltage	V_{BR}	I_T =1mA	5.0	5.8	6.5	V
Reverse Leakage Current	I_R	V_{RWM} =4.8V			100	nA
Forward Voltage	V_F	I_F =10mA			1.2	V
Clamping Voltage(1)	V_C	TLP=16A, t_P = 100ns		6.5		V
Clamping Voltage(2)	V_C	I_{PP}=20A, t_P=8/20μs		7.0	8.0	V
		I_{PP}=60A, t_P=8/20μs		9.0	11	V
Junction Capacitance	C_J	V_R=0V, f = 1MHz		160		pF

Notes: 1) TLP parameter: Z0=50Ω, tp=100ns, tr=2ns, averaging window from 60ns to 80ns.

2) Non-repetitive current pulse, according to IEC61000-4-5.

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μs)	P_{pp}	500	W
Peak Pulse Current (t_P = 8/20μs)	I_{PP}	60	A
Operating Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
ESD Protection-Contact Discharge	V_{ESD}	±30	kV
ESD Protection-Air Discharge	V_{ESD}	±30	kV

Typical Characteristics

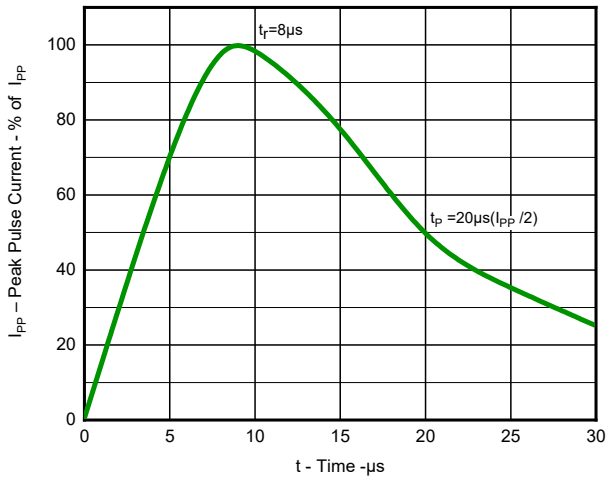


Fig 1.Pulse Waveform(8/20μs)

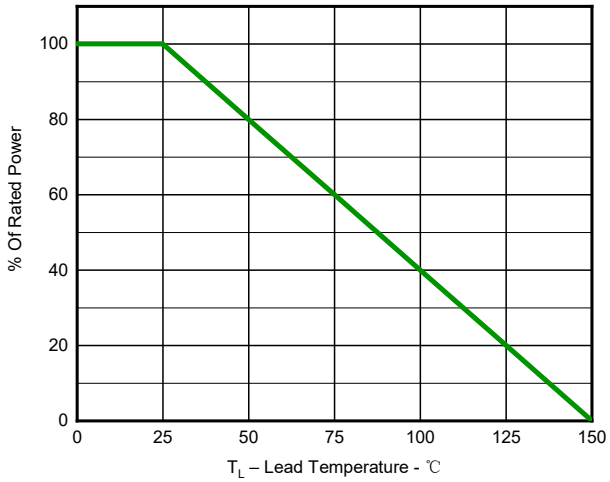


Fig 2.Power Derating Curve

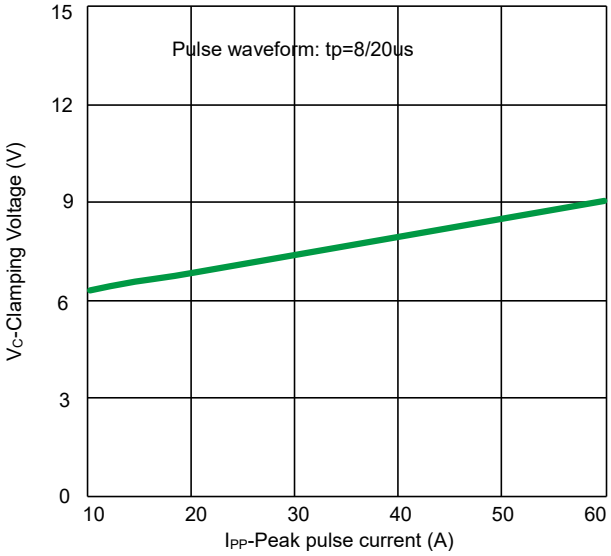


Fig 3. Clamping voltage vs. Peak pulse current

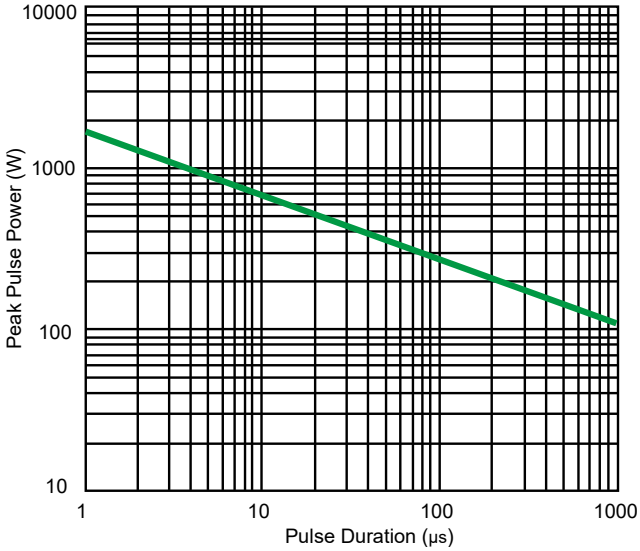


Fig 4. Non-Repetitive Peak Pulse Power vs. Pulse time

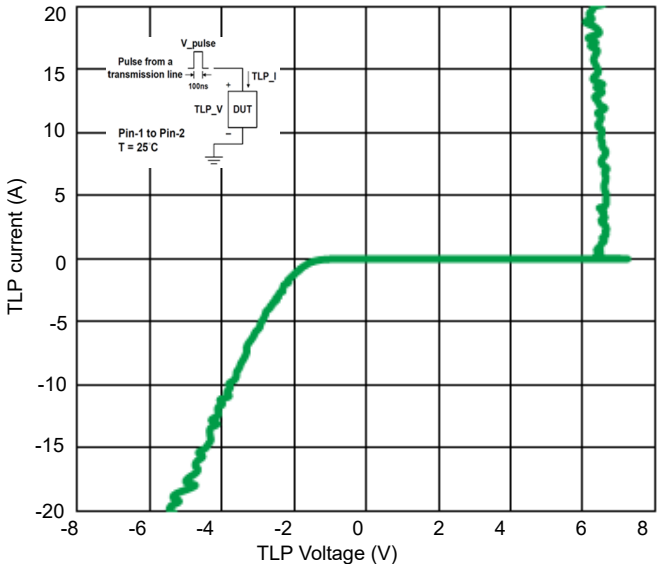


Fig 5. TLP Measurement

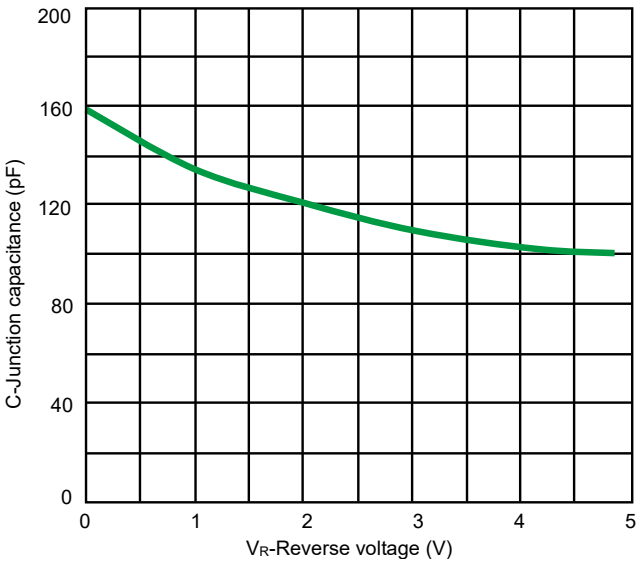


Fig 6. Capacitance vs. Reveres voltage

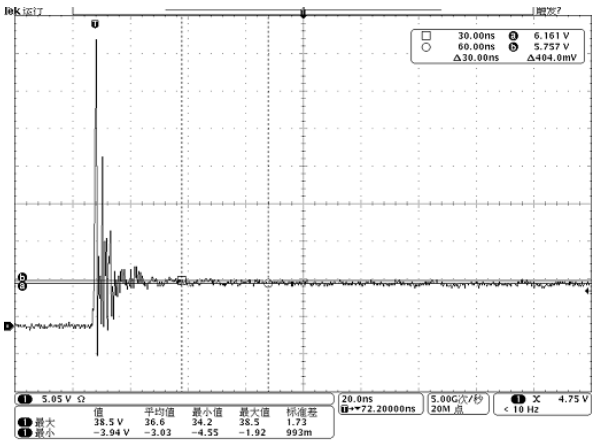


Fig 7. ESD clamping voltage
(IEC61000-4-2 +8kV contact)

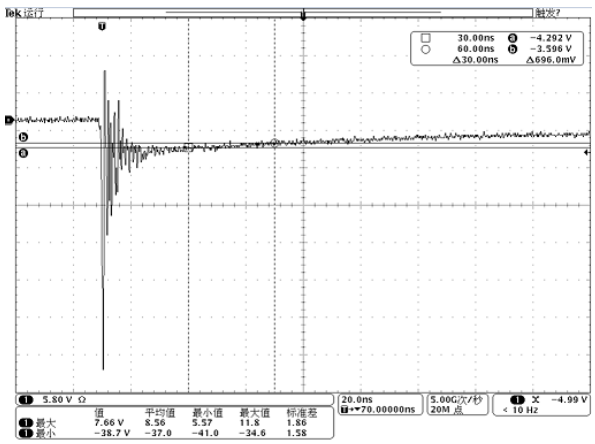
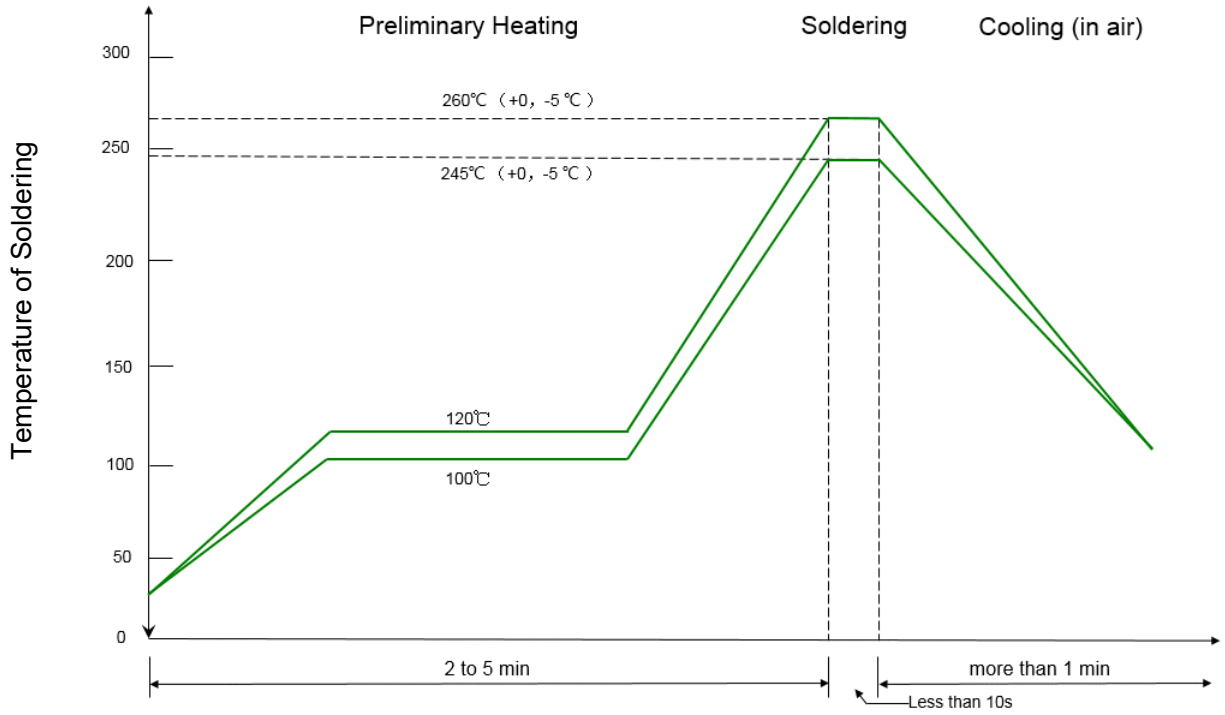


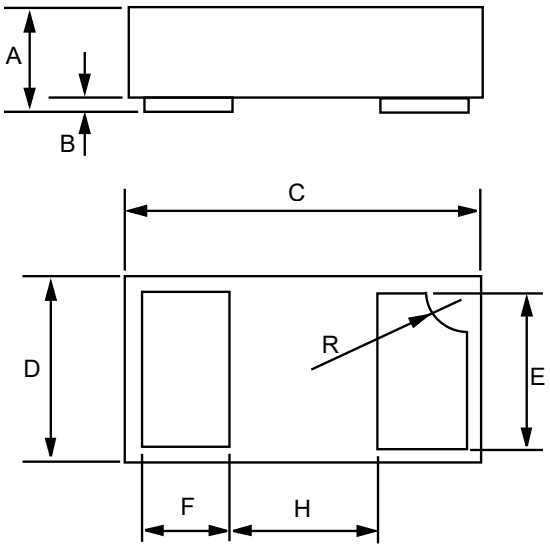
Fig 8. ESD clamping voltage
(IEC61000-4-2-8kV contact)

Solder Reflow Recommendation



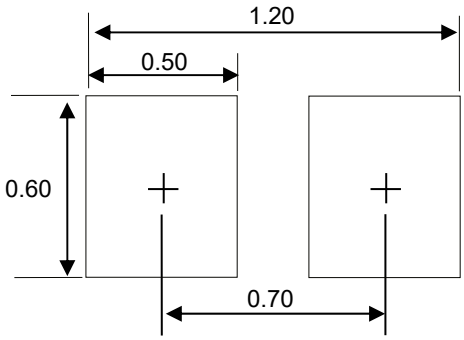
Remark: Pb free for 260℃；Pb for 245℃

Product dimension (DFN1006-2L)



Bottom View

Dim	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.013	0.020	0.34	0.498
B	0.000	0.002	0.00	0.05
C	0.037	0.043	0.95	1.080
D	0.022	0.027	0.55	0.68
E	0.016	0.024	0.40	0.60
F	0.008	0.012	0.20	0.30
H	0.015Typ.		0.40Typ.	
R	0.001	0.005	0.05	0.15



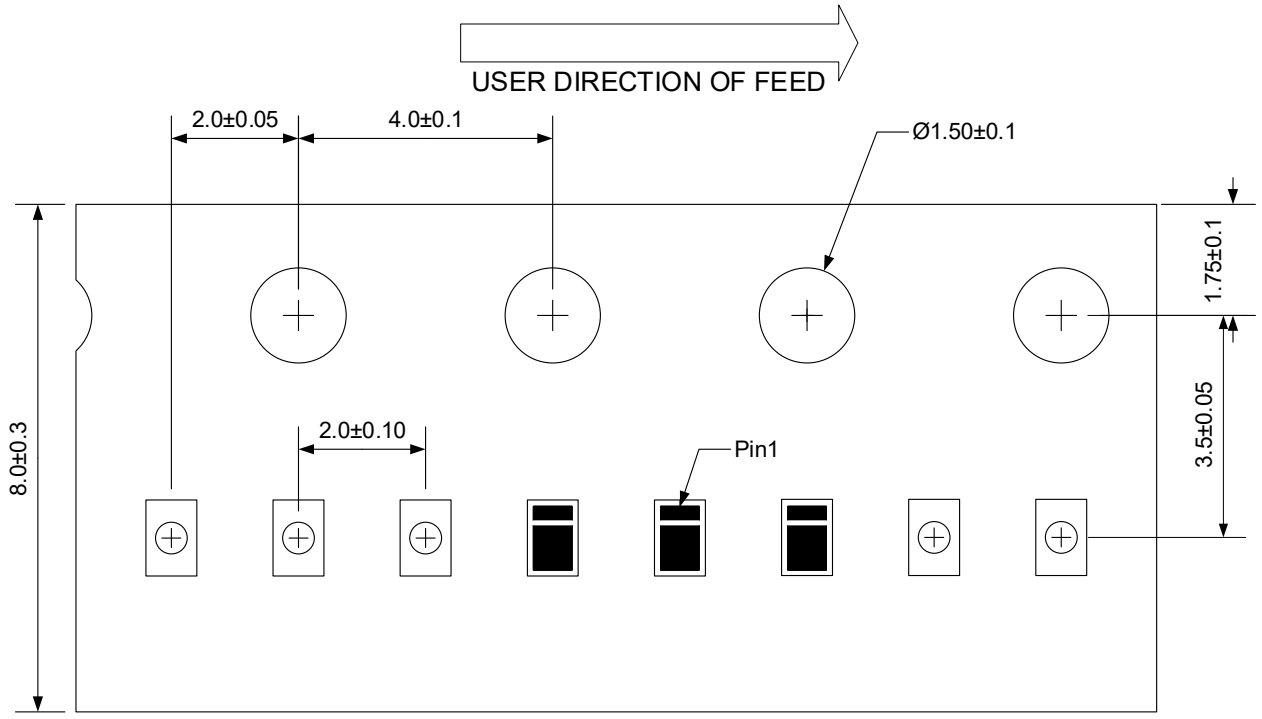
Unit: mm

Suggested PCB Layout

Ordering information

Device	Package	Reel	MPQ
PESDHC2FD4V8UF	DFN1006-2L	7"	10000 / Tape & Reel

Load with information



Unit:mm

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