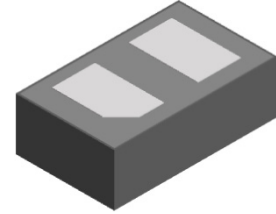


Bi-directional Low Capacitance ESD Protector

Description

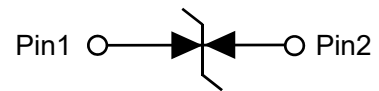
The PESDRCH2FD7VBHIN protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for 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.



DFN1006-2L(Bottom View)

Feature

- 320W peak pulse power per line ($t_p = 8/20\mu s$)
- Low clamping voltage
- DFN1006-2L package
- Response time is typically $< 1\text{ ns}$
- Bidirectional configurations
- RoHS compliant
- Transient protection for data lines to IEC 61000-4-2(ESD) $\pm 30\text{kV}(\text{air}), \pm 30\text{kV}(\text{contact});$
IEC 61000-4-5 (Lightning) 20A (8/20us)



Circuit Diagram



Marking (Top View)

Applications

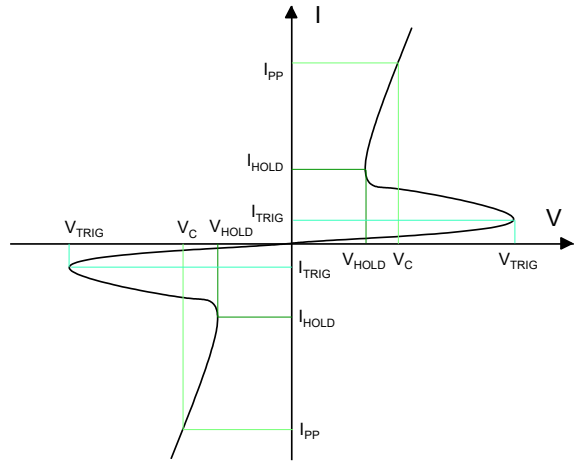
- Cellular phones
- Portable devices
- Digital cameras
- Power supplies
- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4

Mechanical Characteristics

- Mounting position: Any
- Qualified max reflow temperature: 260°C
- Device meets MSL 1 requirements

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} |
| I_{TRIG} | Reverse Trigger Current |
| V_{TRIG} | Reverse Trigger Voltage |
| I_{HOLD} | Reverse Holding Current |
| V_{HOLD} | Reverse Holding Voltage |



Electrical characteristics per line@25°C (unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|----------------------------------|-----------|---------------------------------|------|------|------|----------|
| Peak Reverse Working Voltage | V_{RWM} | - | - | - | 7.0 | V |
| Breakdown Voltage | V_{BR} | $I_t = 1mA$ | 8.0 | - | 11 | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 7V$ | - | - | 1.0 | μA |
| Clamping Voltage ¹⁾ | V_C | TLP = 16A, $t_p = 100ns$ | - | 11 | - | V |
| Dynamic resistance ¹⁾ | R_{DYN} | - | - | 0.18 | - | Ω |
| Clamping Voltage | V_C | $I_{PP} = 20A, t_p = 8/20\mu s$ | - | 16 | 19 | V |
| Junction Capacitance | C_J | $V_R = 0V, f = 1MHz$ | - | 0.4 | 0.6 | pF |

Notes:

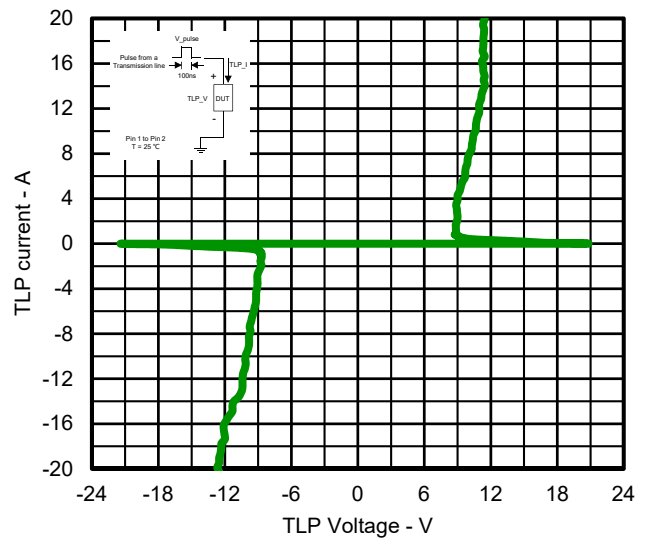
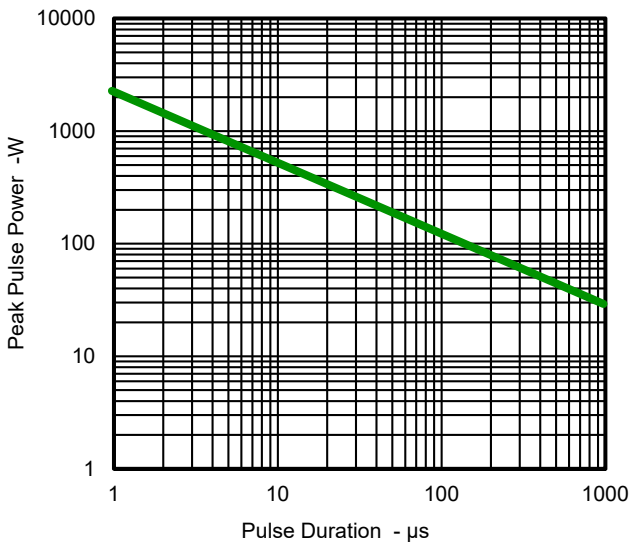
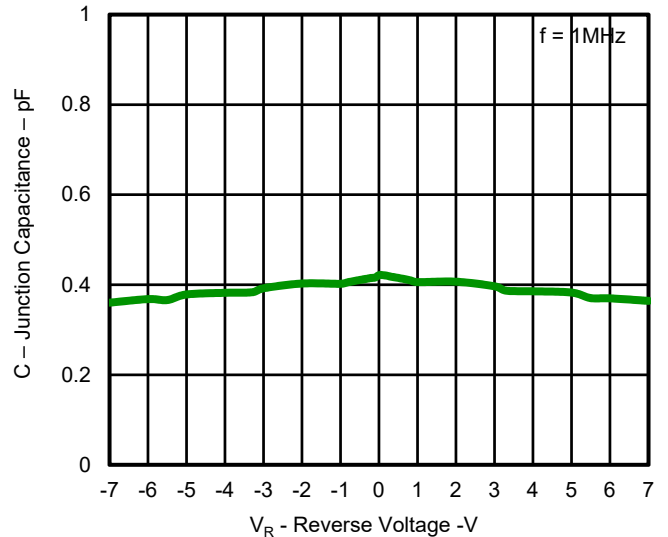
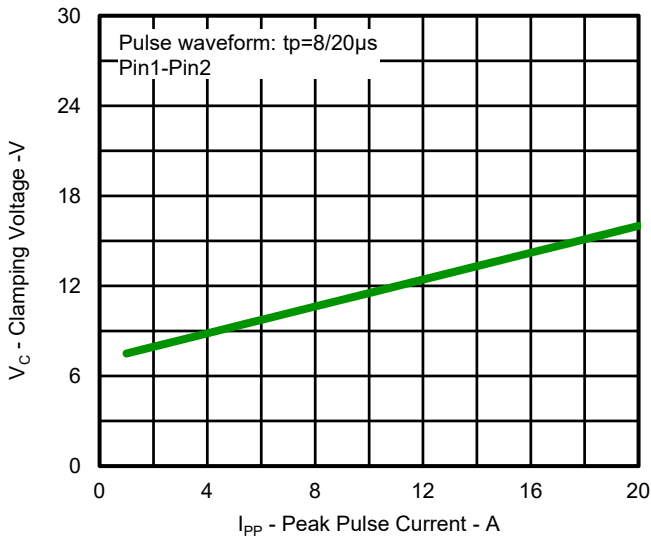
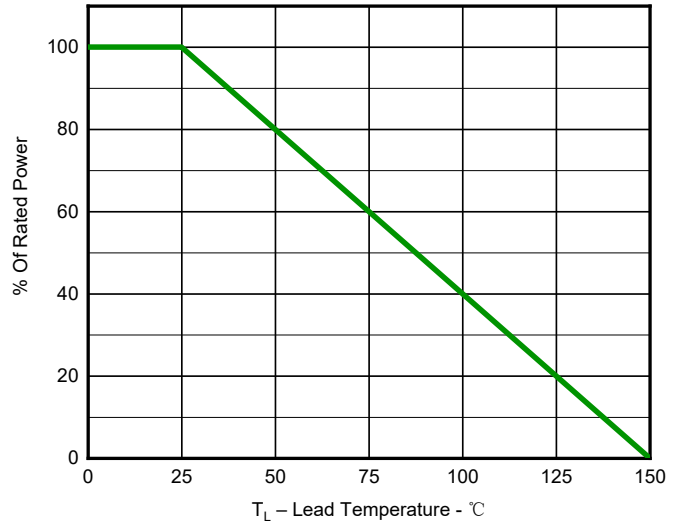
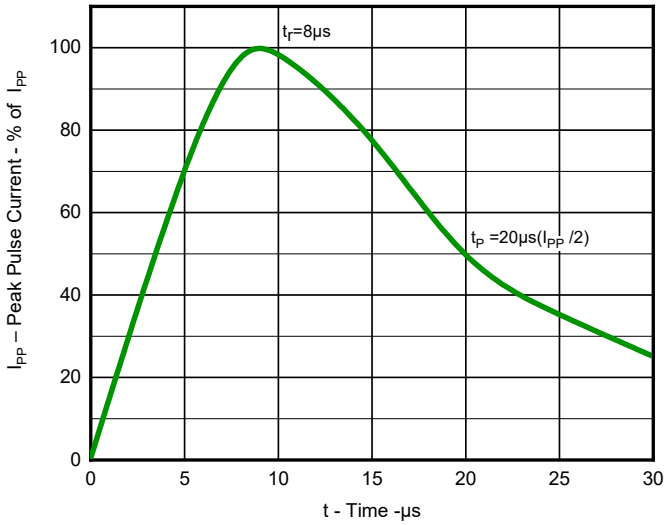
1. TLP parameter: $Z_0=50\Omega, t_p=100ns, t_r=2ns$, averaging window from 70ns to 90ns. R_{DYN} is calculated from 4A to 16A.

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

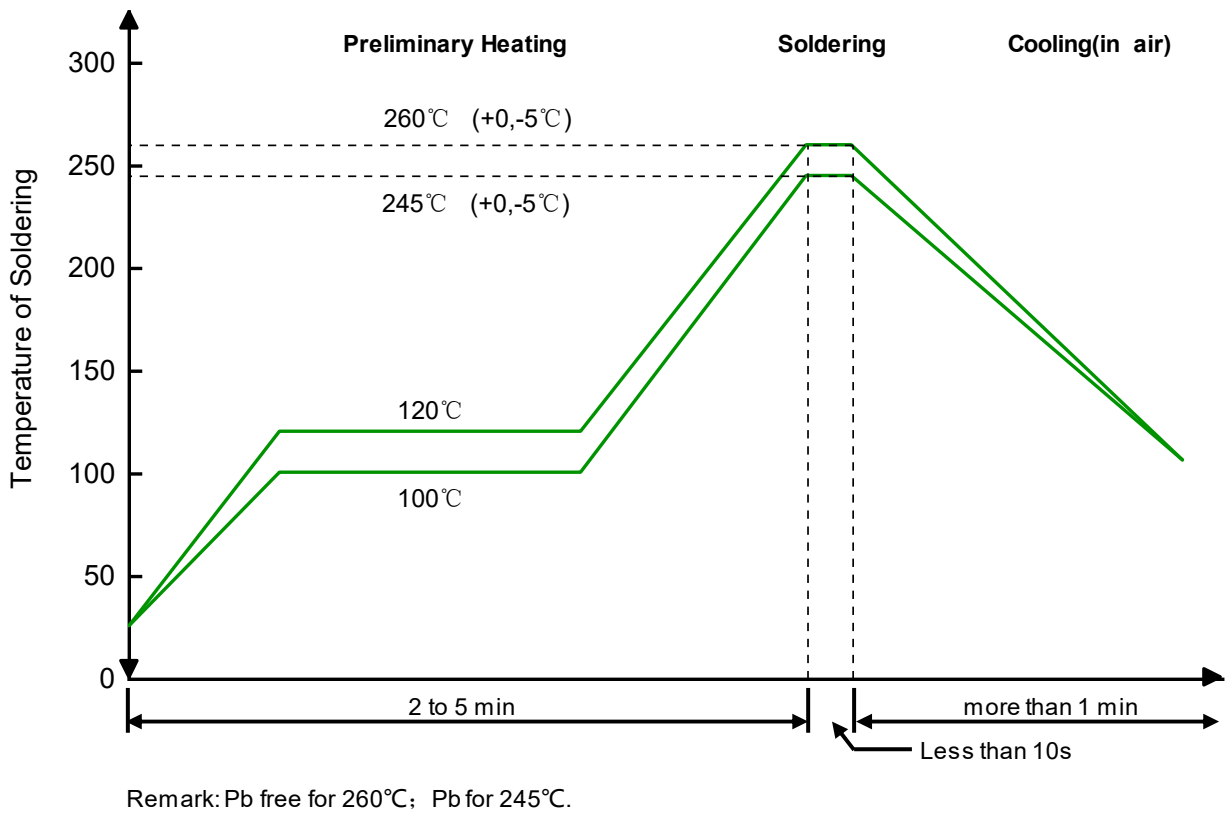
Absolute maximum rating@25°C

| Rating | Symbol | Value | Units |
|--|----------------|--------------|-------------|
| Peak Pulse Power ($t_p = 8/20\mu s$) | P_{PP} | 320 | W |
| Peak Pulse Current ($t_p = 8/20\mu s$) | I_{PP} | 20 | A |
| Lead Soldering Temperature | T_L | 260 (10 sec) | $^{\circ}C$ |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^{\circ}C$ |
| ESD Protection-Contact Discharge | V_{ESD} | ± 30 | kV |
| ESD Protection-Air Discharge | V_{ESD} | ± 30 | kV |

Typical Characteristics



Solder Reflow Recommendation



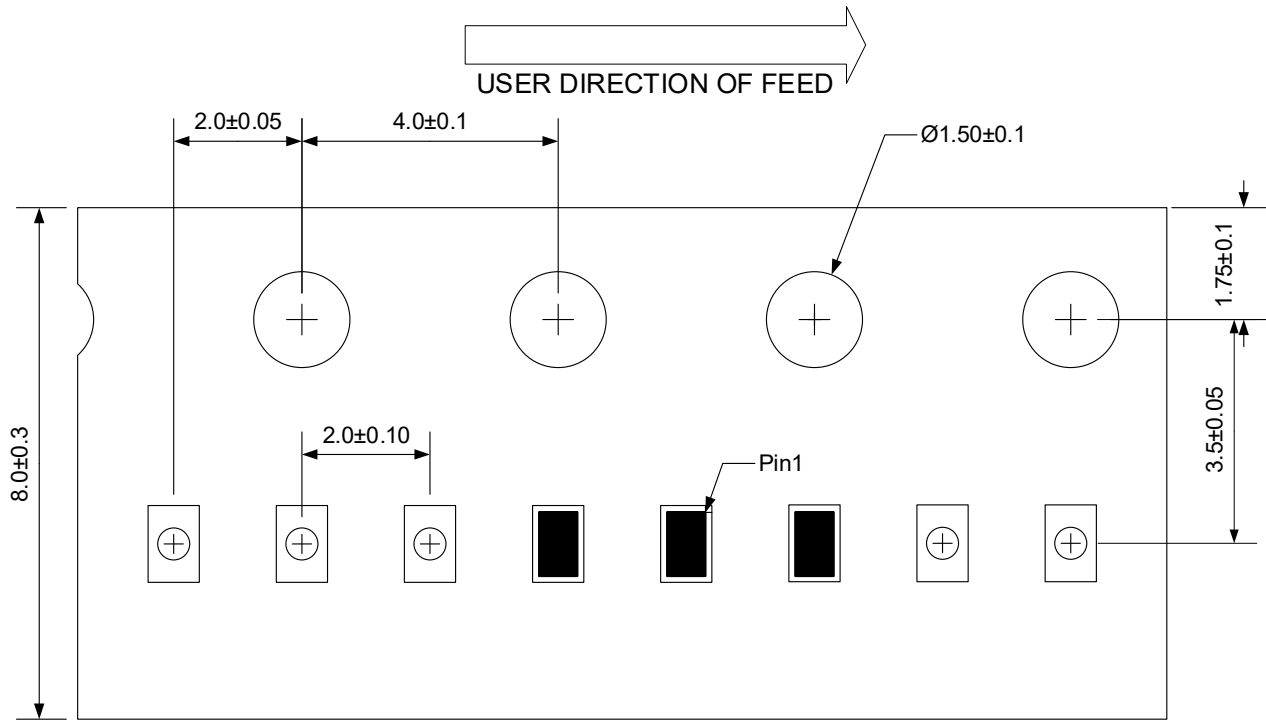
PCB Design

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.

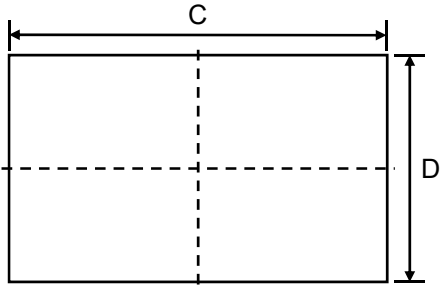
Ordering information

| Package | Reel | Shipping |
|------------|------|---------------------|
| DFN1006-2L | 7" | 10000 / Tape & Reel |

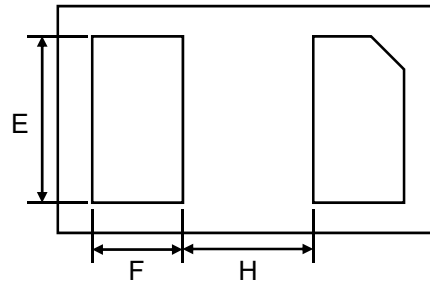


Unit:mm

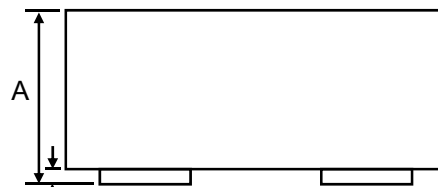
Product Dimension (DFN1006-2L)



Top View

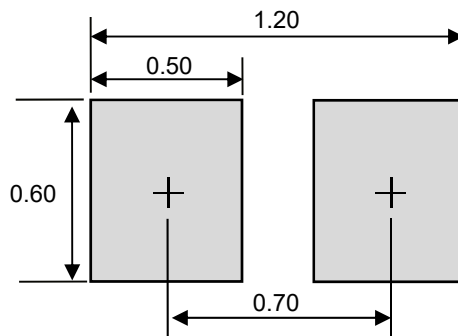


Bottom View



Side View


| 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 | 0.95 | 1.08 | 0.037 | 0.043 |
| D | 0.55 | 0.68 | 0.022 | 0.027 |
| E | 0.45 | 0.55 | 0.018 | 0.022 |
| F | 0.15 | 0.35 | 0.006 | 0.014 |
| H | 0.40 Typ. | | 0.015 Typ. | |



Unit:mm

Suggested PCB Layout


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