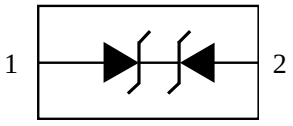
## Description

The PESDNC2XD5VB 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.




## Feature

- DFN0603-2L package
- Replacement for MLV(0201)
- Bidirectional configurations
- Response time is typically < 1 ns
- 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)

## Applications

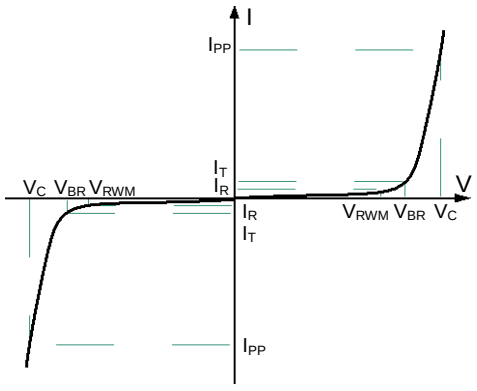
- Cellular phones
- Portable devices
- Digital cameras
- Power supplies

## Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 2 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness：≤3mil

## 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 | | | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$ = 5V T=25℃ | | | 1 | μA |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 1A $t_P$ = 8/20μs | | 5.5 | 7.5 | V |
| Clamping Voltage | $V_C$ | $I_{PP}$ = 5A $t_P$ = 8/20μs | | 7.5 | 9.5 | V |
| Junction Capacitance | $C_j$ | $V_R$=0V f = 1MHz | | 10 | 15 | pF |

## Absolute maximum rating@25℃

| Rating | Symbol | Value | Units |
|---|---|---|---|
| Operating Temperature | $T_J$ | -55 to +150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 to +150 | ℃ |
| Peak pulse power($t_p$=8/20us) | $P_{PK}$ | 40 | W |
| Peak pulse current($t_p$=8/20us) | $I_{PP}$ | 5 | A |

## Typical Characteristics

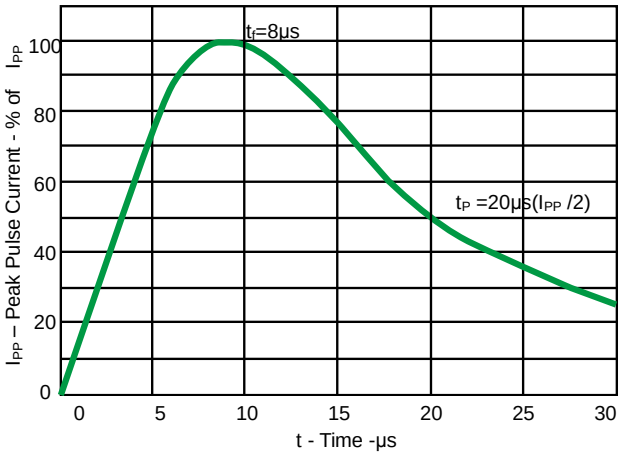



Fig 1.Pulse Waveform

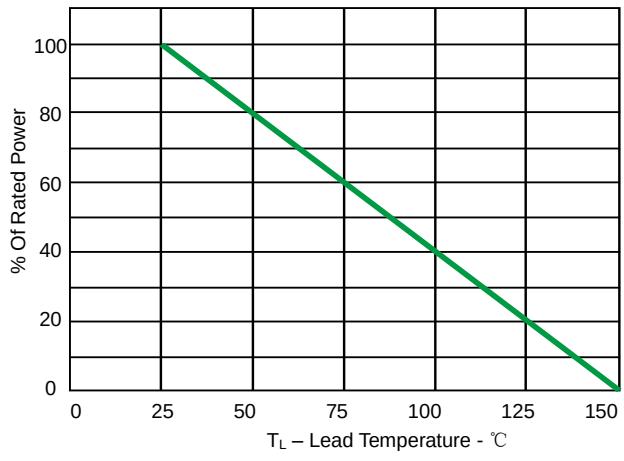



Fig 2.Power Derating Curve

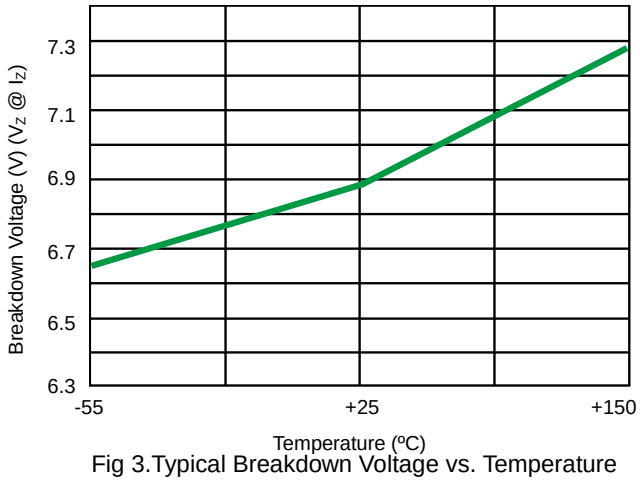



Fig 3.Typical Breakdown Voltage vs. Temperature

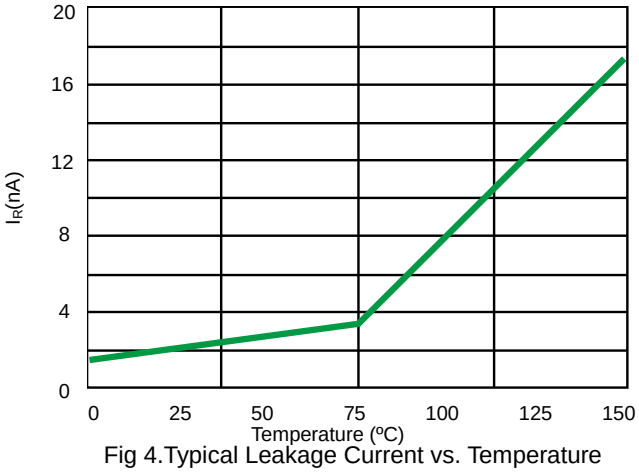



Fig 4.Typical Leakage Current vs. Temperature

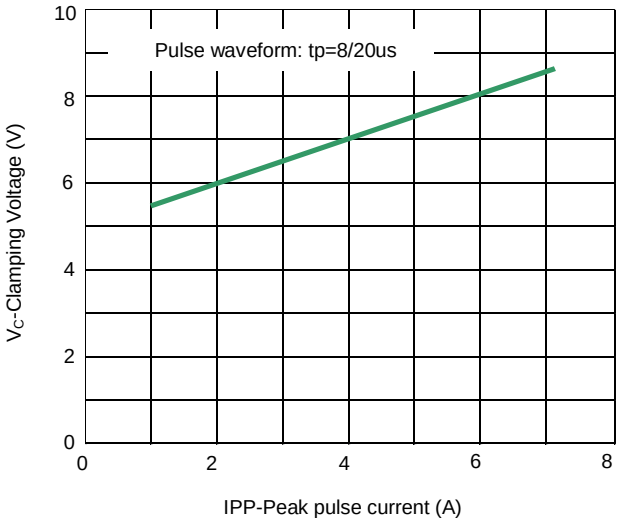



Fig 5. Clamping voltage vs. Peak pulse current

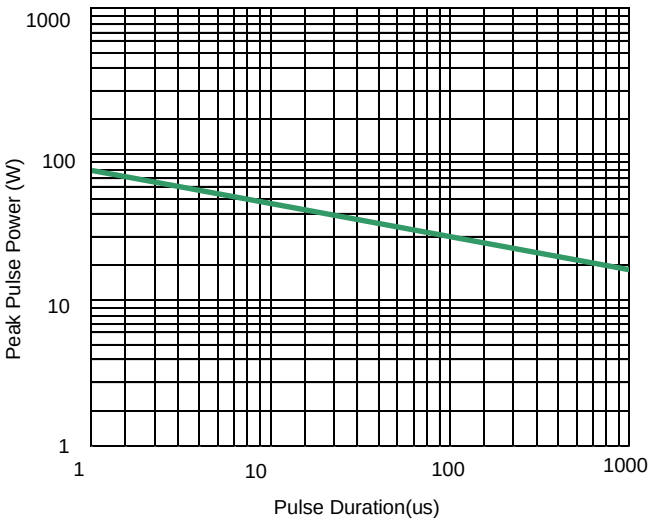



Fig 6. Non-Repetitive Peak Pulse Power vs. Pulse time

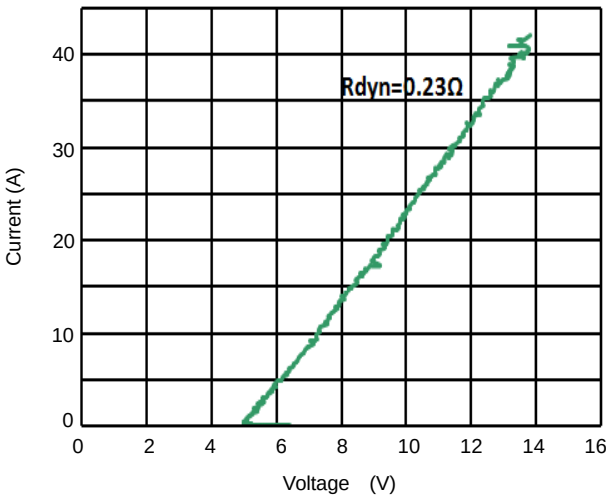
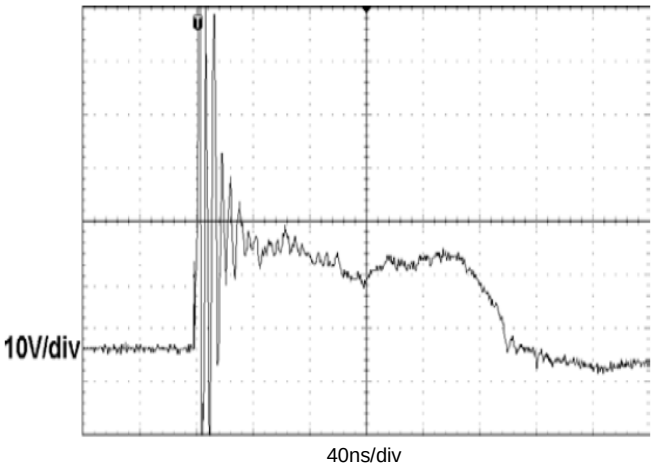
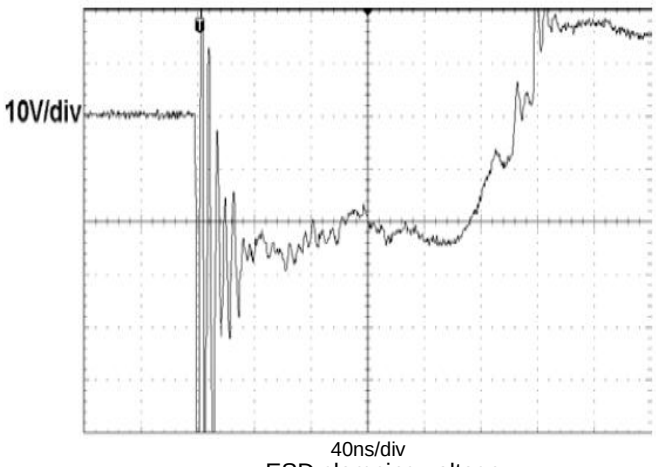



Fig 6. TLP Measurement



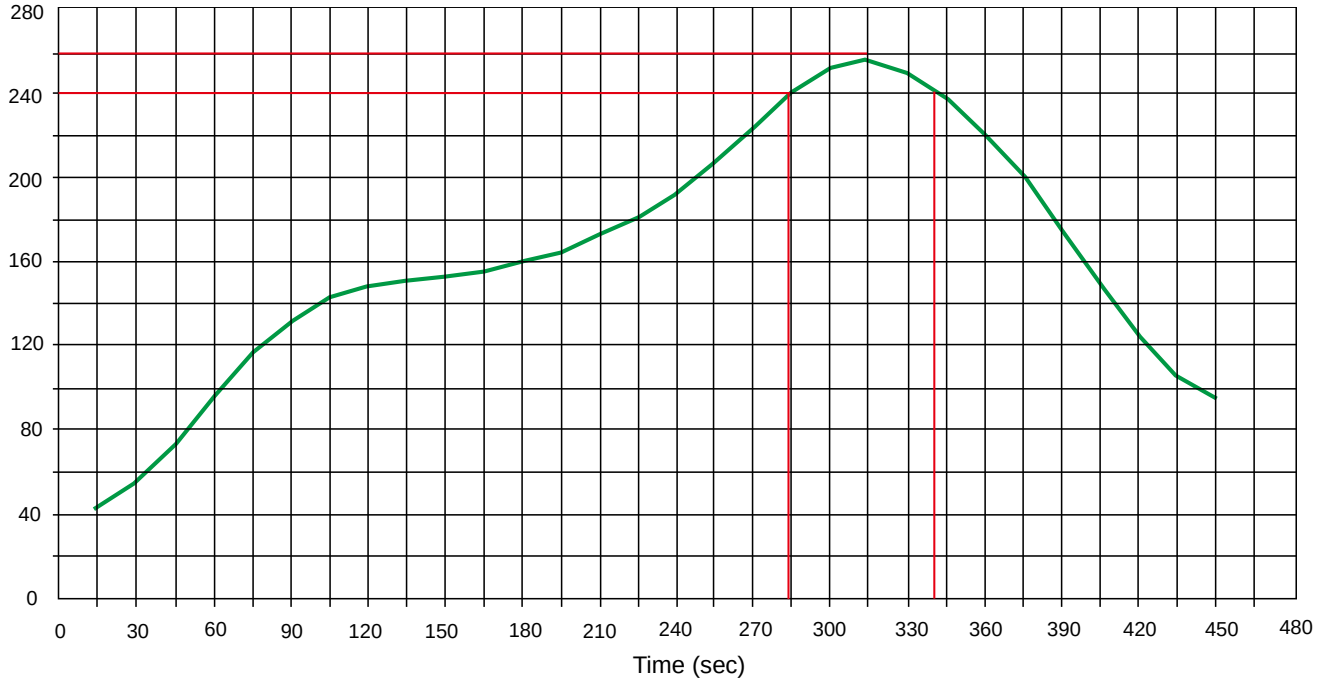

ESD clamping voltage
(IEC61000-4-2 +8KV contact)




ESD clamping voltage
(IEC61000-4-2-8KV contact)

## Solder Reflow Recommendation

Peak Temp=257℃, Ramp Rate=0.802deg. ℃/sec

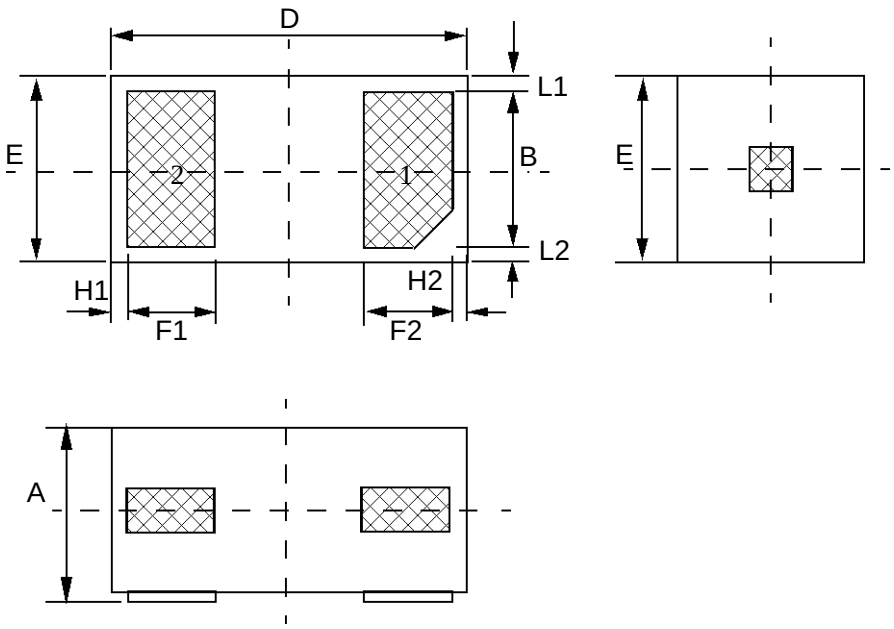


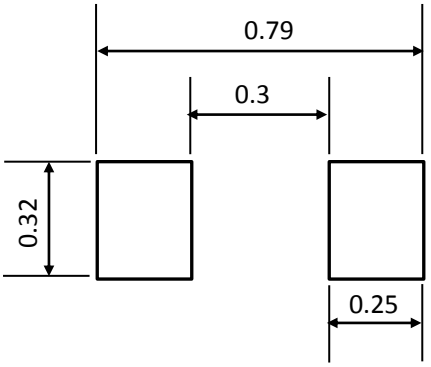

## PCB Design

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.

## Product dimension (DFN0603-2L)




Unit:mm

| Dim | Millimeters | | |
|---|---|---|---|
| | MIN | Typ. | MAX |
| A | 0.290 | 0.300 | 0.325 |
| B | 0.210 | 0.240 | 0.270 |
| D | 0.570 | 0.600 | 0.630 |
| E | 0.270 | 0.300 | 0.330 |
| F1 | 0.140 | 0.170 | 0.200 |
| F2 | 0.140 | 0.170 | 0.200 |
| L1 | 0.015 | 0.030 | 0.045 |
| L2 | 0.015 | 0.030 | 0.045 |
| H1 | 0.030 | 0.045 | 0.060 |
| H2 | 0.030 | 0.045 | 0.060 |

## Ordering information

| Device | Package | Shipping |
|---|---|---|
| PESDNC2XD5VB | DFN0603-2L (Pb-Free) | 10000 / Tape & Reel |

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PNM723T201E0 PSBD2FD40V1H PTVSHC3D12VU PTVSHC3D4V5B PZ3D4V2H PESDHC3D3V3U PTVSHC3D7VU PTVSHC3N4V5B PESDNC2FD3V3BS PTVSHC1DF7VB PTVSHC3D5VB PESDNC2FD3V3B PESDNC2FD8VB PSBD2FD30V01 PESDMC2FD5VB PESDUC2FD5VB PESDXC2FD5VU PSBD1DF40V3H PTVSHC3D4V5BH PPM6N12V10 PSBD1DF40V2L PSBD3D40V1H PSM712 PESDHC2FD4V5BH PNM523T201E0 PESDALC10N5VU PTVSHC1DF7VBH PTVSHC3N7VU PTVSLC3D24VB PTVSLC3D3V3B