# 1-Line , Bi-directional , Transient Voltage Supperssor

## Description

PESDU0511P0T is a bi-directional TVS (Transient Voltage Suppressor). It has been specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge) and Lightning . PESDU0511P0T may be used to provide ESD protection up to ±30KV (air and contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 6.5A(8/20μs) according to IEC61000-4-5 . PESDU0511P0T is available in DFN0603-2 package. Standard products are Pb-free and Halogen-free.

## Features

- Operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - —IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - —IEC61000-4-5 (Lightning) 6.5A (8/20μs)
- RoHS Compliant

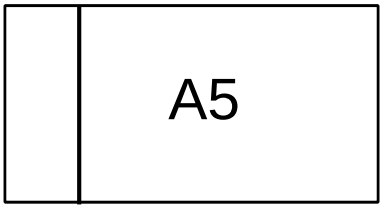
## Mechanical Characteristics

- Package: DFN0603-2 (0.6×0.3×0.3mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

## Applications

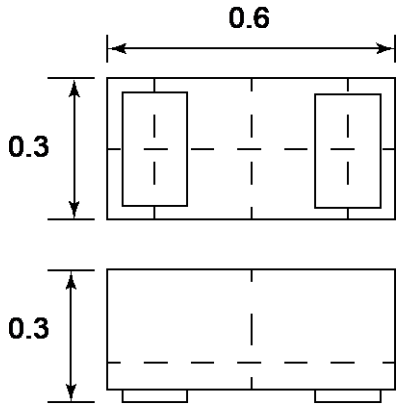
- Cellular Handsets
- USB $V_{BUS}$ and CC Line Protection
- Microphone Line Protection
- GPIO Protection

## Marking Information

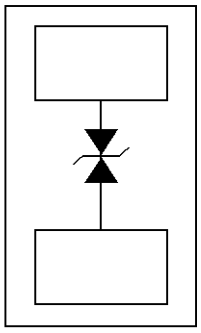



**A5** = Device Marking Code

## Dimensions and Pin Configuration




Package Dimensions



Circuit and Pin Schematic

## Ordering Information

| Part Number | Shipping | Reel Size |
|---|---|---|
| PESDU0511P0T | 10000/Tape & Reel | 7 inch |

## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | $P_{PK}$ | 84 | W |
| Peak Pulse Current (8/20μs) | $I_{PP}$ | 6.5 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±30<br>±30 | kV |
| Lead temperature | $T_L$ | 260 | ℃ |
| Operating Temperature Range | $T_{OP}$ | −40 ~ +85 | ℃ |
| Storage Temperature Range | $T_{STG}$ | −55 ~ +150 | ℃ |

## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | 5 | V | |
| Breakdown Voltage | $V_{BR}$ | 5.3 | | | V | $I_T$ = 1mA |
| Reverse Leakage Current | $I_R$ | | | 0.1 | μA | $V_{RWM}$ =5V |
| Clamping voltage[1)] | $V_{CL}$ | | 9.0 | | V | $I_{PP}$ = 16A, $t_p$ = 100ns |
| Dynamic resistance[1)] | $R_{DYN}$ | | 0.2 | | Ω | |
| Clamping voltage[2)] | $V_{CL}$ | | 9.0 | | V | $V_{ESD}$ = 8kV |
| Clamping Voltage[3)] | $V_C$ | | | 8 | V | $I_{PP}$ = 1A(8/20μs pulse) |
| Clamping Voltage[3)] | $V_C$ | | | 13 | V | $I_{PP}$ = 6.5A(8/20μs pulse) |
| Junction Capacitance | $C_J$ | | 15 | 18 | pF | $V_R$ = 0V, f = 1MHz |

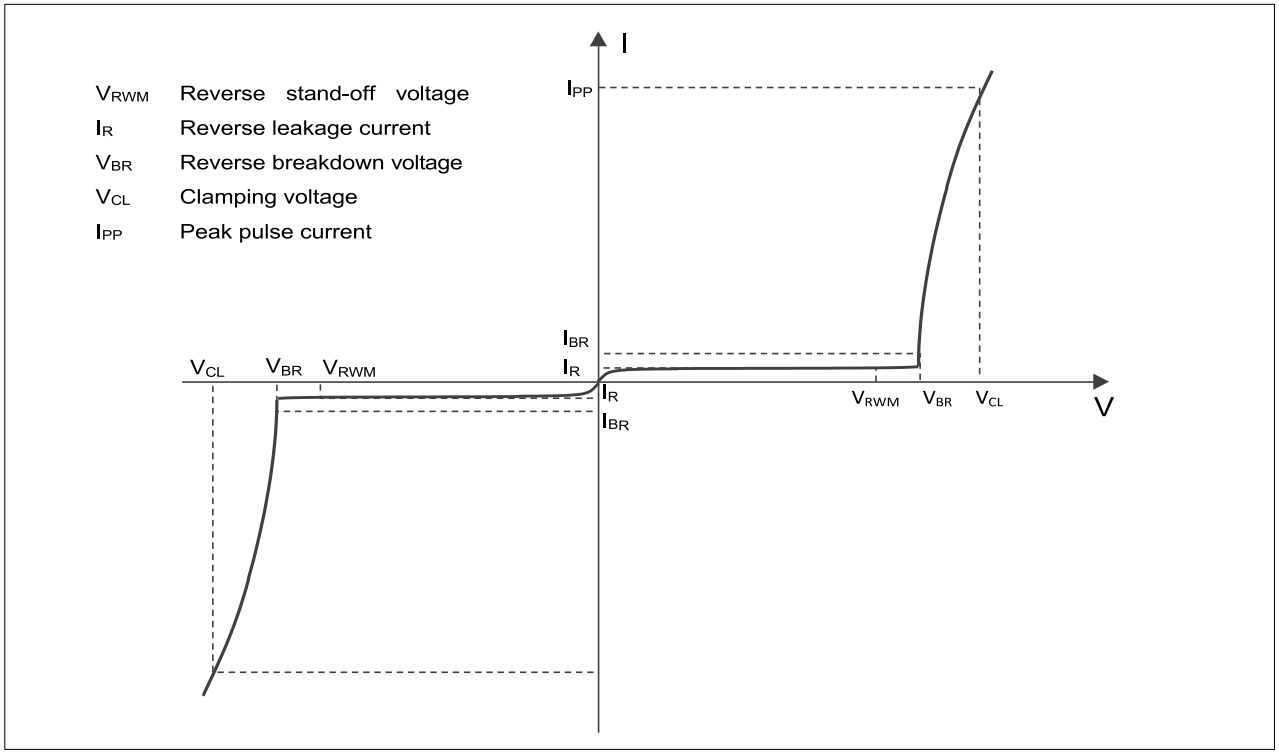
*Notes:*

*1) TLP parameter: Z0 = 50Ω, tp = 100ns, tr = 2ns, averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.*

*2) Contact discharge mode, according to IEC61000-4-2.*

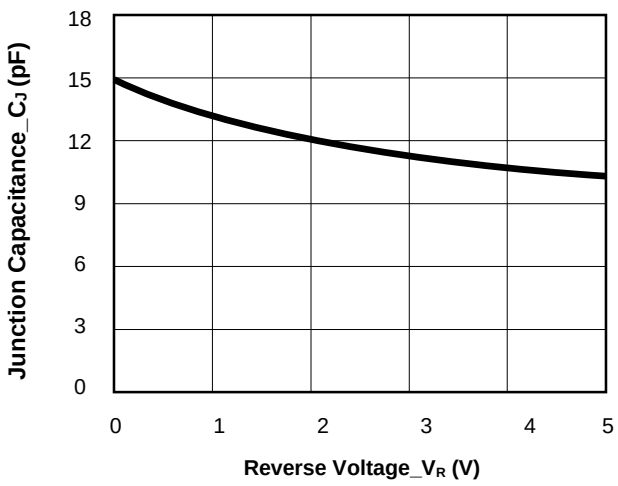
*3) Non-repetitive current pulse, according to IEC61000-4-5.*

## Electrical characteristics ($T_A$ = 25℃, unless otherwise noted)

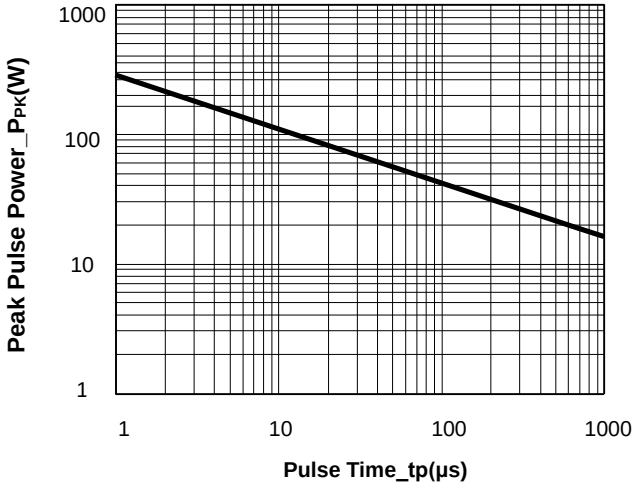



Definitions of electrical characteristics

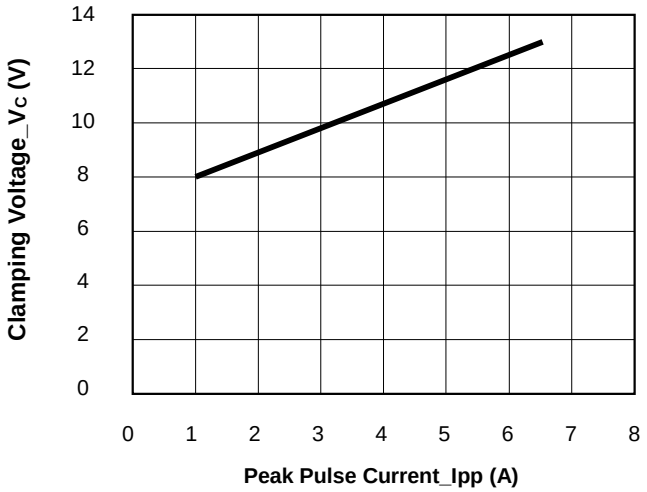
## Typical Performance Characteristics ($T_A$=25°C unless otherwise Specified)



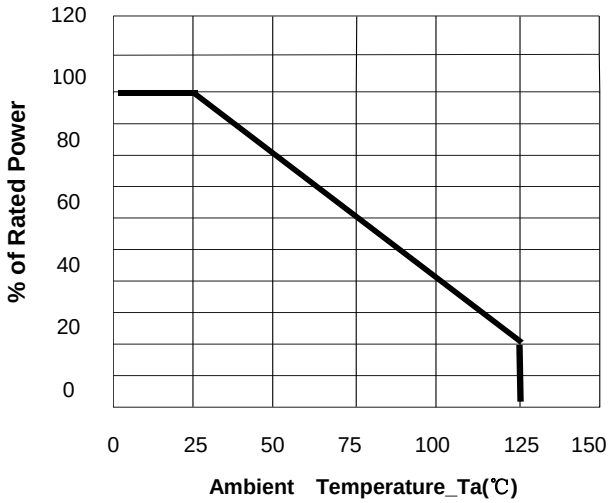

Junction Capacitance vs. Reverse Voltage



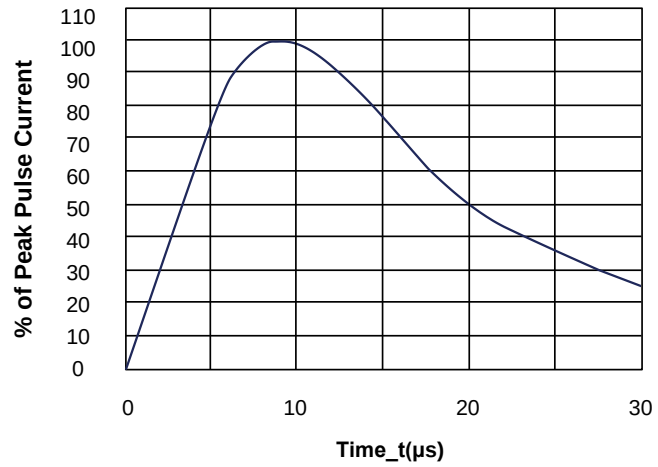

Peak Pulse Power vs. Pulse Time



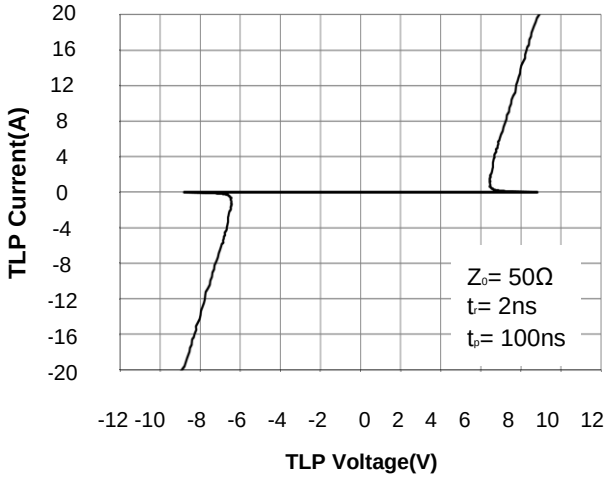

Clamping Voltage vs. Peak Pulse Current




Power Derating Curve

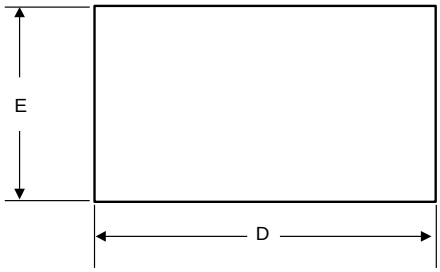



8/20μs Pulse Waveform

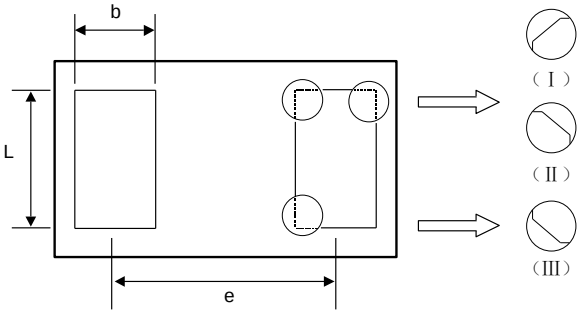



TLP Measurement

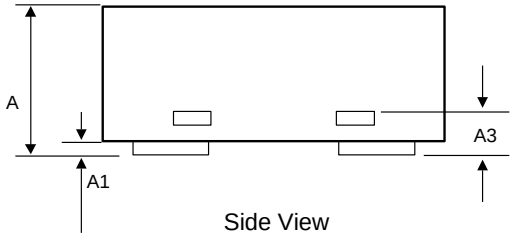
## DFN0603-2 Package Outline Drawing




Top View



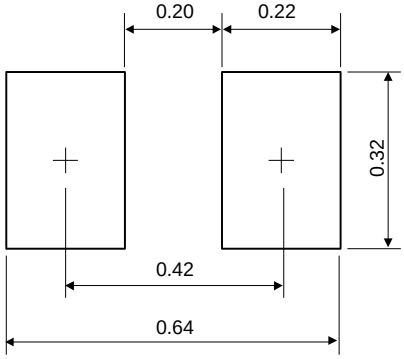

Bottom View




Side View

| Symbol | Dimensions in Millimeters | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.230 | 0.300 | 0.350 |
| A1 | 0.000 | - | 0.050 |
| A3 | 0.102REF. | | |
| D | 0.550 | 0.600 | 0.670 |
| E | 0.250 | 0.300 | 0.370 |
| b | 0.160 | 0.190 | 0.230 |
| L | 0.215 | 0.245 | 0.275 |
| e | 0.360 BSC | | |

## Recommended PCB Layout (Unit: mm)

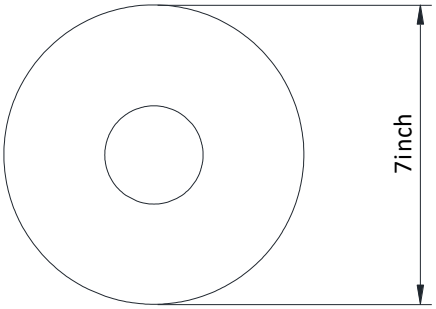



Notes:

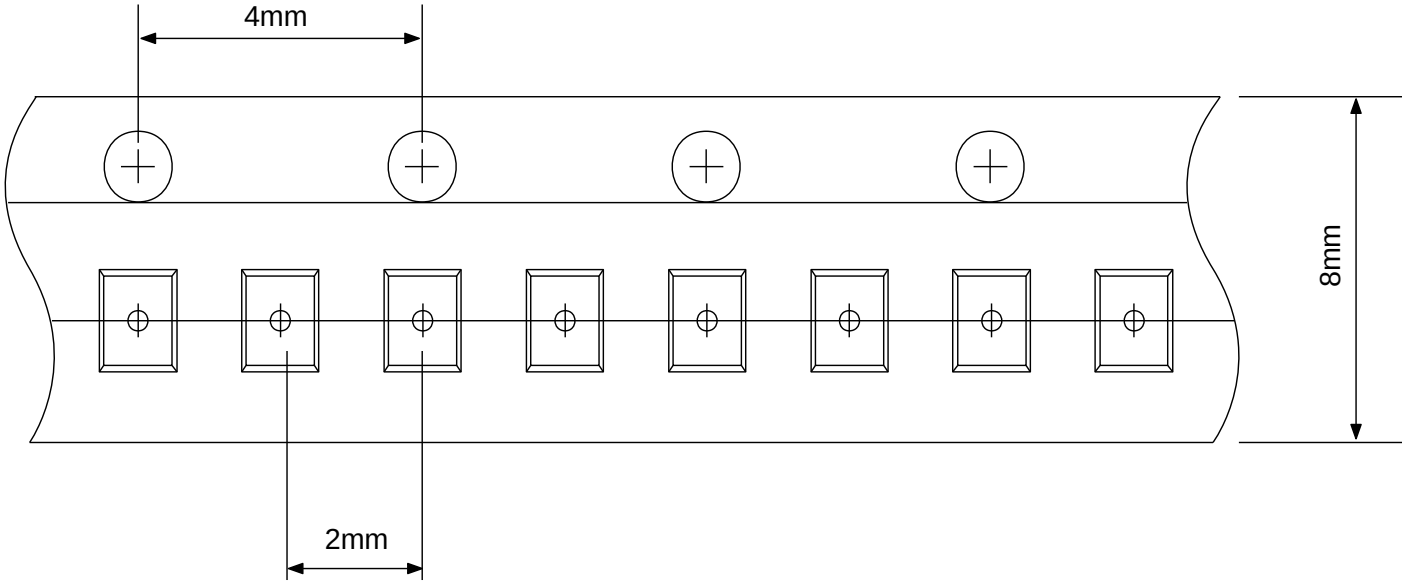
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

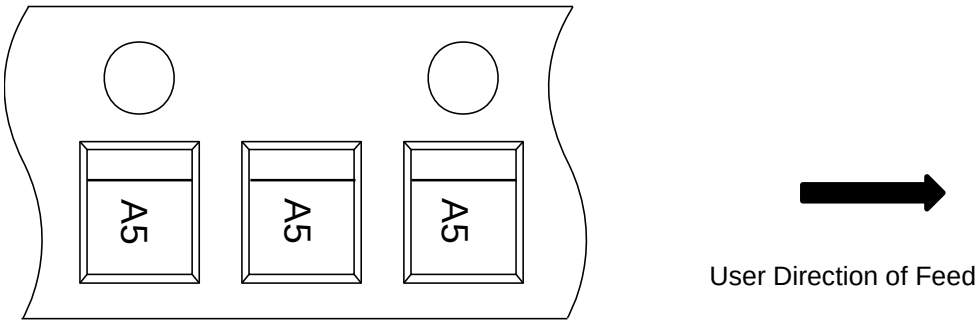
## TAPE AND REEL INFORMATION

Reel Dimensions




Tape Dimensions




User Direction of Feed

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