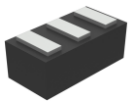
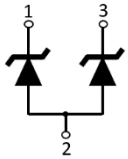
# PS2112-D33

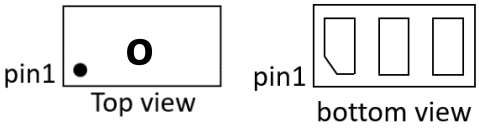
## Low Capacitance ESD Protection

**Voltage** | **1.5V**

**DFN0603-3L**






| Part Marking | Parameter |
|---|---|
| o | o = Marking Code |

## Features

- IEC61000-4-2(ESD): ±13kV Air, ±11kV Contact
- IEC61000-4-4(EFT): 40A(5/50ns)
- IEC61000-4-5(Lightning): 4A (8/20uS)
- Low leakage current, maximum of 0.5uA at rated voltage
- Low clamping voltage
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard
- Pb-Free/Halogen Free/BFR Free and RoHS Compliant

## Mechanical Data

- Case: DFN0603-3L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0004 grams

## Applications

- Thunderbolt
- USB 3.0/3.1/3.2 and 4.0
- USB Type-C
- Consumer electronics

## Maximum Ratings and Thermal Characteristics ($T_A$ = 25°C unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNITS |
|---|---|---|---|
| ESD IEC61000-4-2(Air)<br>ESD IEC61000-4-2(Contact) | $V_{ESD}$ | ±13<br>±11 | kV |
| Operating Junction Temperature Range | $T_J$ | -55~125 | °C |
| Storage Temperature Range | $T_{STG}$ | -55~150 | °C |

# PS2112-D33

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

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| Reverse Stand-Off Voltage (Note 2) | $V_{RWM}$ | Pin1/Pin3 to Pin2 | - | - | 1.5 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BR}$ = 1mA, Pin1/Pin3 to Pin2 | 5 | - | 10 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=1.5V, Pin1/Pin3 to Pin2 | - | - | 0.5 | uA |
| Surge Clamping Voltage (8/20 us) | $V_{CL}$ | $I_{PP}$ = 4A, Pin1/Pin3 to Pin2 | - | 4.2 | 5.2 | V |
| Clamping Voltage TLP (tperiod=100ns, tr=1ns) (Note 3) | $V_C$ | $I_{TLP}$ = 16A, Pin1/Pin3 to Pin2 | - | 4.9 | - | V |
| Off State Junction Capacitance(Note 4) | $C_J$ | $V_R$ = 0V, f=1MHz, Pin1/Pin3 to Pin2 | - | 0.13 | 0.18 | pF |

NOTES:

1. Mounted on a FR4 PCB, Single-sided copper, mini pad.
2. A transient suppressor is selected according to the working peak reverse voltage($V_{RWM}$), which should be equal to or greater than the DC or continuous peak operation voltage level.
3. Testing using Transmission Line Pulse (TLP) conditions: Z0 = 50 Ω, $t_P$ = 100 ns.
4. This parameter is guaranteed by design.
5. This snap-back behavior strongly reduces the clamping voltage to the system behind the ESD protection during an ESD event. Do not connect unlimited DC current sources to the data lines to avoid the ESD protection device maintain in snap-back state after exceeding breakdown voltage.

# PS2112-D33

## TYPICAL CHARACTERISTIC CURVES

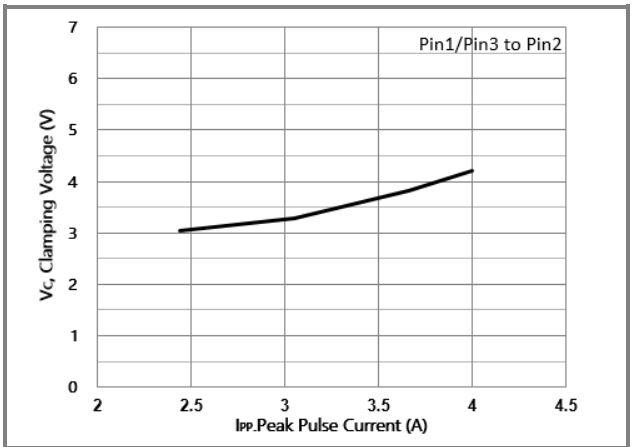



Fig.1 Typical Peak Clamping Voltage

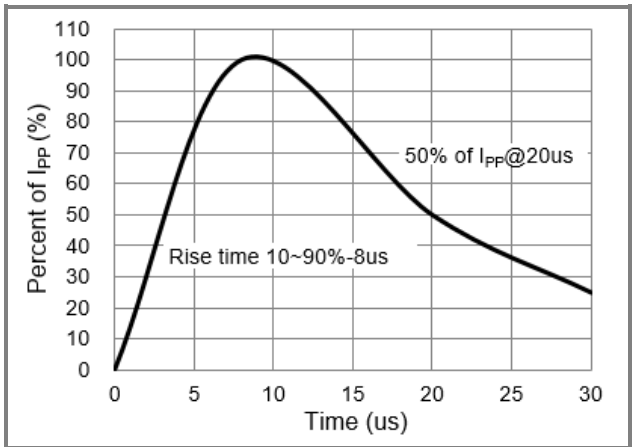



Fig.2 Pulse Waveform

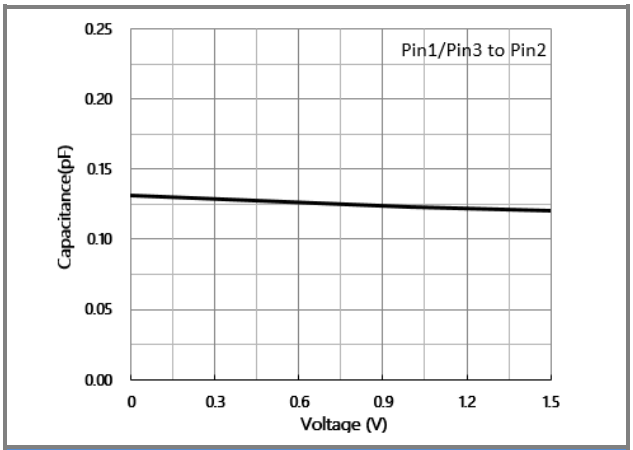



Fig.3 Typical Junction Capacitance

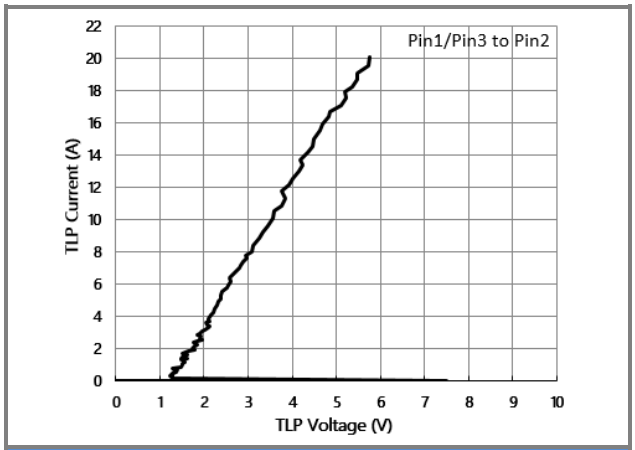



Fig.4 TLP Measurement

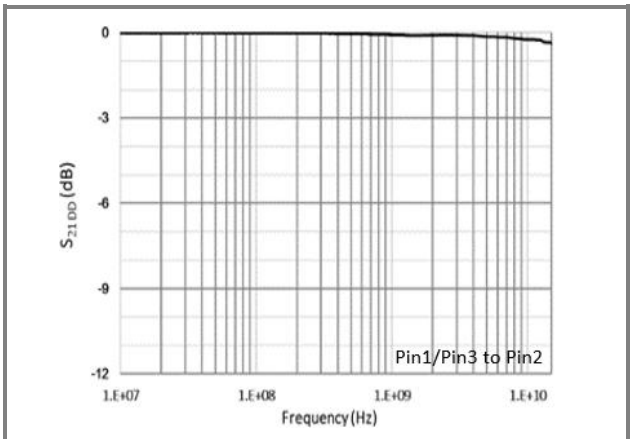



Fig.5 Insertion Loss $S_{21\ DD}$

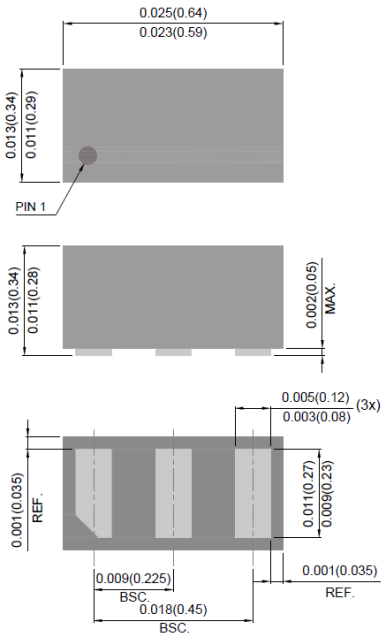
# PS2112-D33

## Product and Packing Information

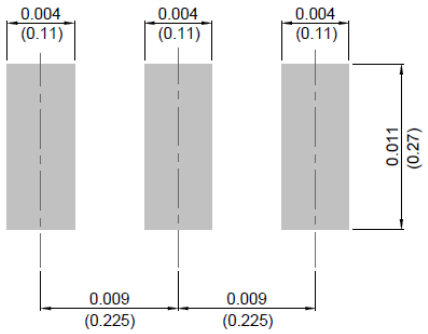
| Part No | Package Type | Packing Type | Marking |
|---|---|---|---|
| PS2112-D33 | DFN0603-3L | 10K pcs / 7" Reel | o |

## Packaging Information & Mounting Pad Layout

DFN0603-3L Dimension — Unit: inch(mm)




DFN0603-3L Pad Layout — Unit: inch(mm)



## Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.