

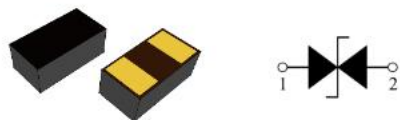
1 Feature

- Ultra-low capacitance:0.05pF(Typ.)
- Low leakage current(<10nA)
- Fast response time(<1ns)
- IEC61000-4-2(Contact) : 8KV
IEC61000-4-2(Air) : 15KV
- Bi-directional, single line protection

3 Application

- HDTV/Smart TV
- Set-Top Box
- Laptop/Desktop Computer
- HDMI 、USB 3.0
- USB3.1 、Lightning 、Thunderbolt

5 Pin Description



2 Description

PESD1642U005 polymeric ESD suppressor help protect sensitive electronic equipment against electrostatic discharge (ESD) without distorting data signals. This protection is a result of its ultra-low capacitance of only 0.05 pF (I/O to GND), and it can be used to help equipment to pass IEC61000-4-2 level 4 test (15KV air, 8KV contact discharge).

Caution: This component is designed for signal line protection only, not intended to be used on power lines or for power bus applications.

4 Device Information

| Model | Package | Size |
|--------------|---------|-----------------------------|
| PESD1642U005 | 0402-2 | 1.00 mm × 0.52 mm × 0.38 mm |

6 General Characteristics

| Parameter | Value | Unit |
|--|-------------|------|
| Contact Discharge Voltage Per IEC61000-4-2 | 8 | KV |
| Air Discharge Voltage Per IEC61000-4-2 | 15 | KV |
| Operating Temperature | -55 to +125 | °C |
| Storage Temperature | -40 to +85 | °C |

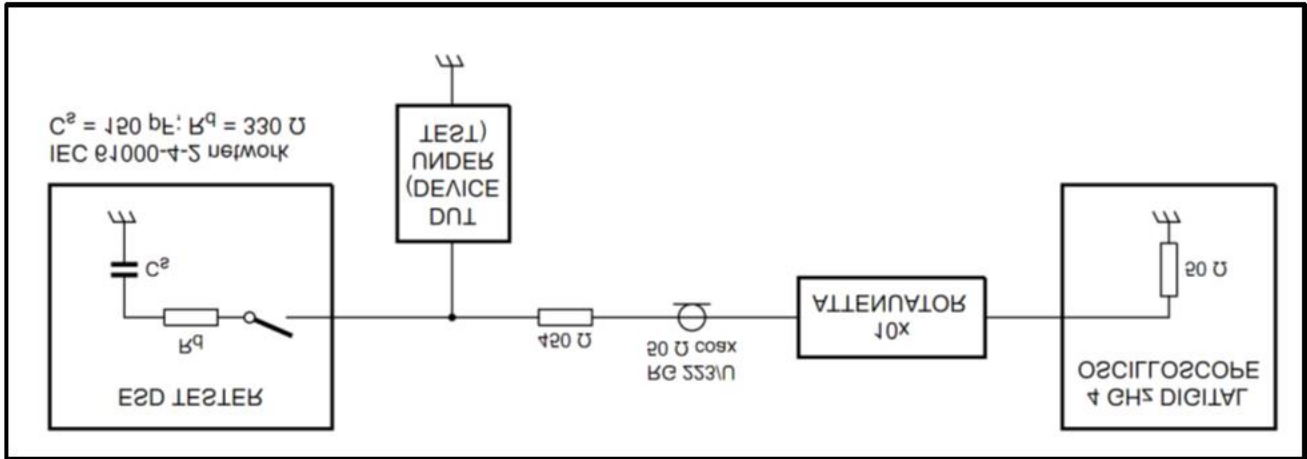
7 Electrical Characteristics (T =25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------------|--------------------------------------|------|------|------|-------|
| Continuous Operating Voltage | V _{DC} | --- | --- | --- | 16 | V |
| Trigger Voltage | V _T | IEC61000-4-2 8KV contact discharge | --- | 450 | --- | V |
| Clamping Voltage | V _C | IEC61000-4-2 8KV contact discharge | --- | 40 | --- | V |
| Leakage Current | I _L | DC 18V shall be applied on component | --- | --- | 10 | nA |
| Capacitance | C _P | Measured at 10MHz | --- | 0.05 | --- | pF |
| ESD Pulse Withstand | Pulses | IEC61000-4-2 8KV contact discharge | 1000 | --- | --- | --- |

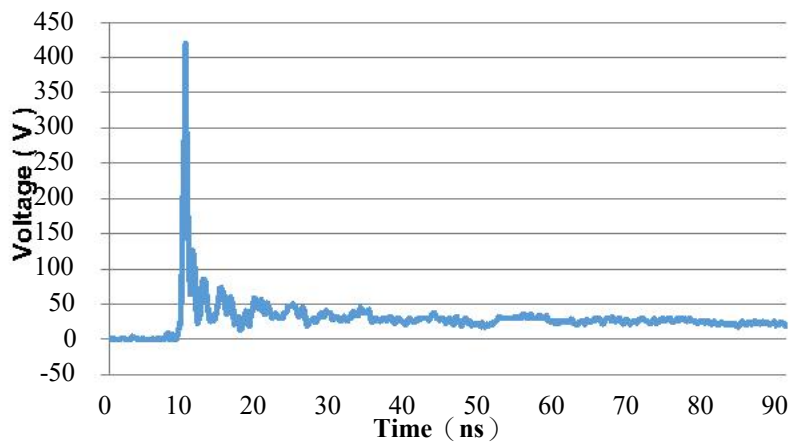
Notes: 1.Trigger and clamping voltage are measured per IEC 61000-4-2, 8KV contact discharge method.

2.After reliability tests such as high Temp storage, Temp cycles, continuous ESD strike etc, the maximum leakage current is less than 1uA maximum leakage current is less than 1uA.

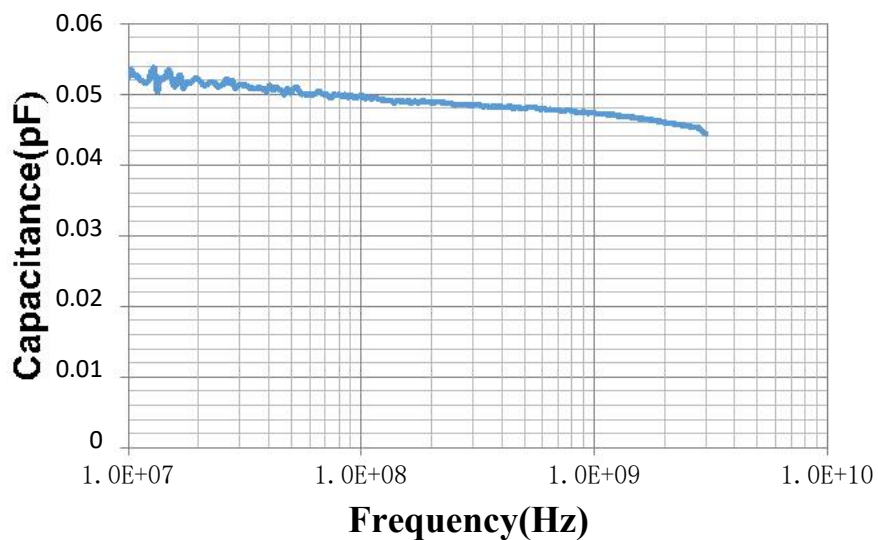
8 Typical ESD Response (IEC 61000-4-2, 8KV contact discharge)



9 Typical ESD Response (IEC 61000-4-2, 8KV contact discharge)

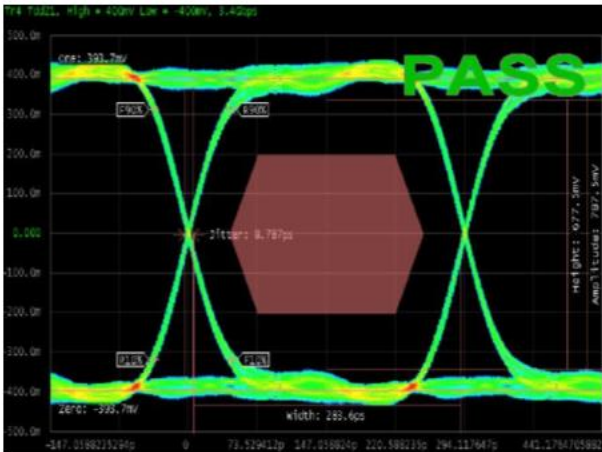


10 Typical Device Capacitance VS. Frequency



11 Eye Diagram Measurement

HDMI Mask at 3.4 Gbps



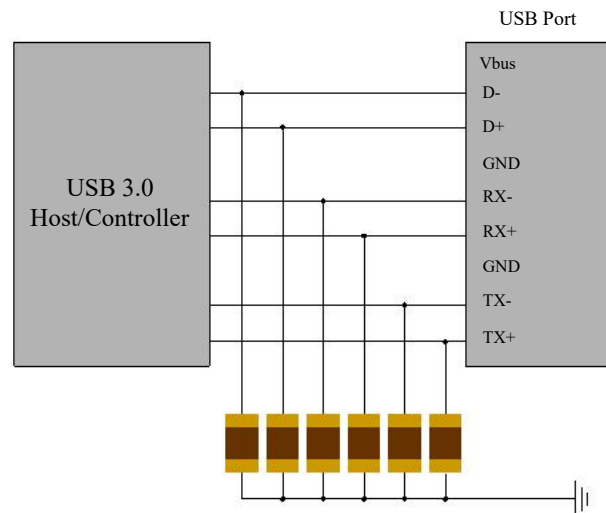
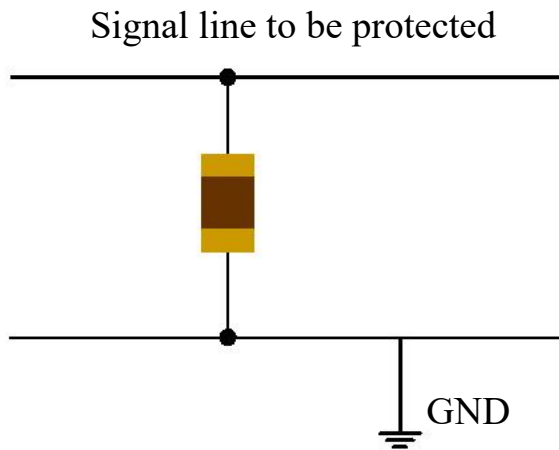
USB3.0 Mask at 5.0 Gbps



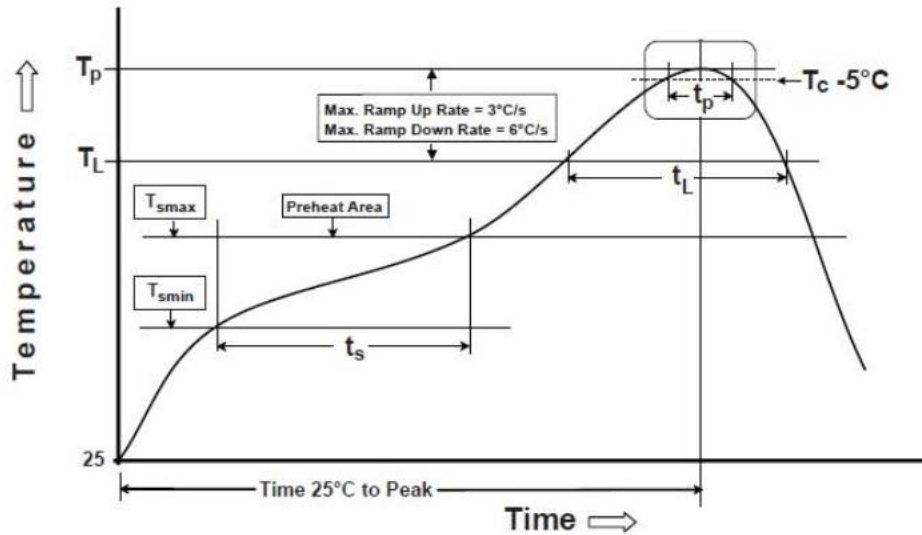
12 ESD Protection for Signal Line

The PESD is designed for the protection of one bidirectional data line from ESD damage.

- Place the PESD as close to the input terminal or connector as possible.
- Minimize the path length between the PESD and the protected signal line.
- Use ground planes whenever possible.



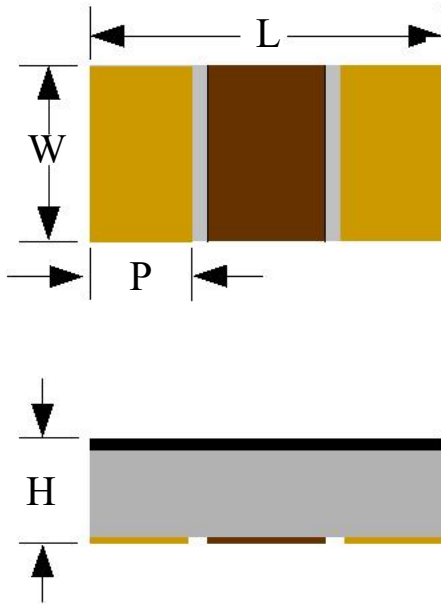
12 Soldering Parameters



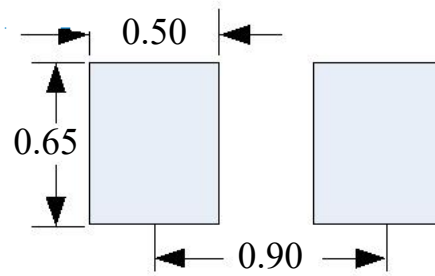
| Profile Feature | Pb-Free Assembly |
|---|---------------------------------|
| Pre Heat | |
| Temperature Min (T_{smin}) | 150 °C |
| Temperature Max (T_{smax}) | 200 °C |
| Time (t_s) from (T_{smin} to T_{smax}) | 60-120 seconds |
| Ramp-up Rate (T_L to T_p) | 3 °C/second max. |
| Liquidus temperature (T_L) | 217 °C |
| Time (t_L) maintained above T_L | 60-150 seconds |
| Peak package body temperature (T_p) | 260 °C |
| Time (t_p)* within 5 °C of the specified classification temperature (T_c) | ^{+0/-5} 30* seconds |
| Ramp-down Rate (T_p to T_L) | 6 °C/second max. |
| Time 25 °C to peak temperature | 8 minutes max. |
| * Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum. | |

0402-2 Package

13 Package Dimension



Recommended Solder Pad Footprint



*Sizes in mm

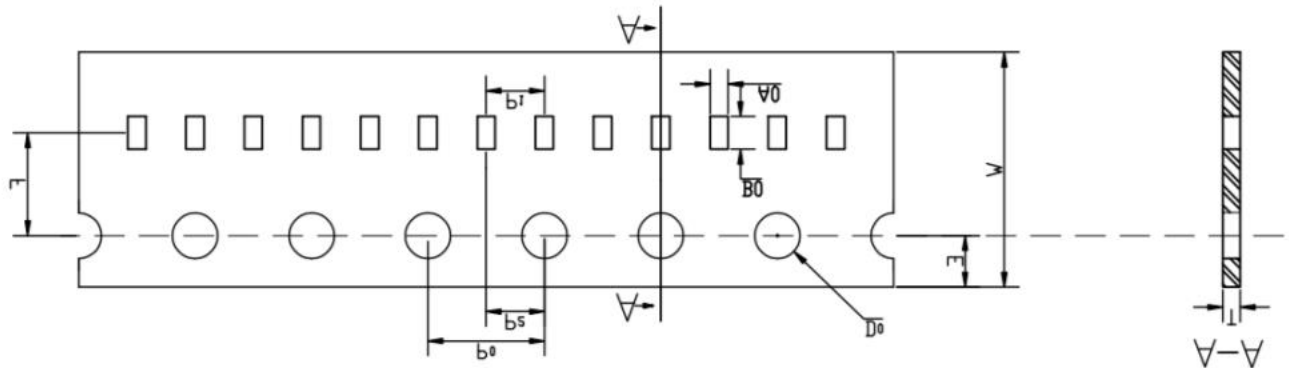
Notes :

This solder pad layout is for reference purposes only.

| Dimension | Unit: Millimeters | | |
|-----------|-------------------|------|------|
| | Min. | Typ. | Max. |
| L | 0.90 | 1.00 | 1.10 |
| W | 0.42 | 0.52 | 0.62 |
| P | 0.15 | 0.25 | 0.35 |
| H | 0.25 | 0.38 | 0.45 |

14 Taping Specification

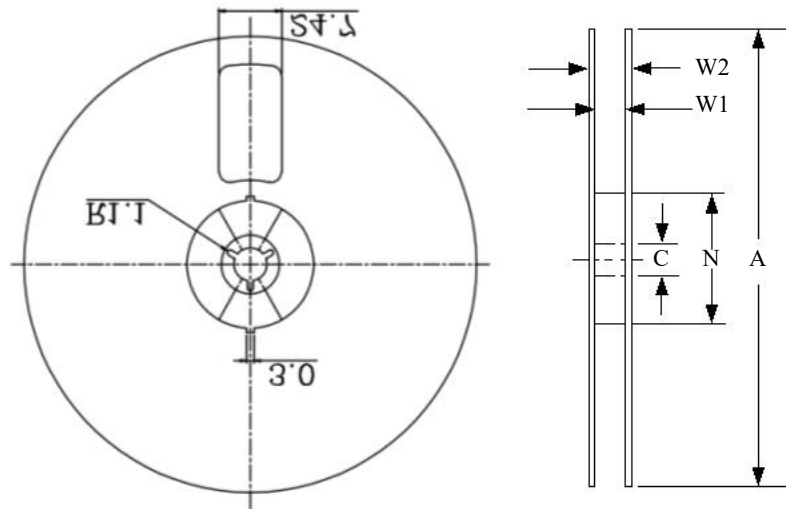
Unit: Millimeters



| A ₀ | B ₀ | W | F | E | P ₁ | P ₂ | P ₀ | D ₀ | T |
|----------------|----------------|-----------|-----------|-----------|----------------|----------------|----------------|----------------|-----------|
| 0.68±0.03 | 1.17±0.03 | 8.00±0.10 | 3.50±0.05 | 1.75±0.10 | 2.00±0.05 | 2.00±0.05 | 4.00±0.10 | 1.55±0.05 | 0.43±0.03 |

Reel Dimension

Unit: Millimeters



| A | N Min. | C | W2 Max. | W1 Min. | W1 Max. |
|-----------|--------|----------|---------|---------|---------|
| 178.0±2.0 | 50.0 | 13.0±0.2 | 14.4 | 8.4 | 9.9 |

15 Ordering & Contact Information

| Ordering Code | Package | Net Weight | Delivery Form | Delivery Quantity |
|---------------|---------|-----------------|---------------|-------------------|
| PESD1642U005 | 0402-2 | 0.62 mg / 1 pce | Mini T&R (7") | 10,000 pcs/reel |