

Polymeric ESD Protection Device

DESCRIPTION

PESD05V0402 help protect sensitive electronic equipment against electrostatic discharge (ESD). This device is an ultra low capacitance ESD product designed to protect very high-speed data interfaces. PESD05V0402 has a typical capacitance of only 0.05 pF (I/O to GND), and it can be used to meet the ESD immunity requirements of IEC61000-4-2 (15KV air, 8KV contact discharge).

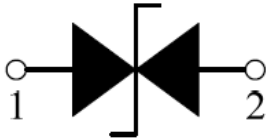
FEATURES

- ◆ 0.05 pF (typical) capacitance
- ◆ Low-leakage current
- ◆ Low-clamping voltage
- ◆ Fast response time (<1ns)
- ◆ Bi-directional, single line protection
- ◆ Surface mount
- ◆ Halogen free
- ◆ RoHS compliant

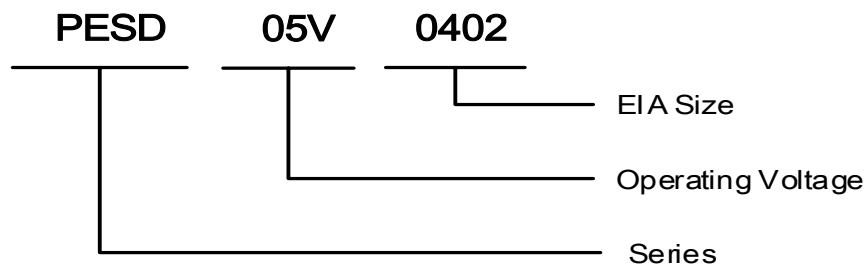
APPLICATIONS

- ◆ USB 2.0 and USB 3.0
- ◆ Laptop/Desktop Computer
- ◆ Smart Phone/Mobile Internet Device
- ◆ Antennas
- ◆ Cellular phones
- ◆ GPS systems
- ◆ High Speed Ethernet
- ◆ Lightning and Thunder Bolt Interface

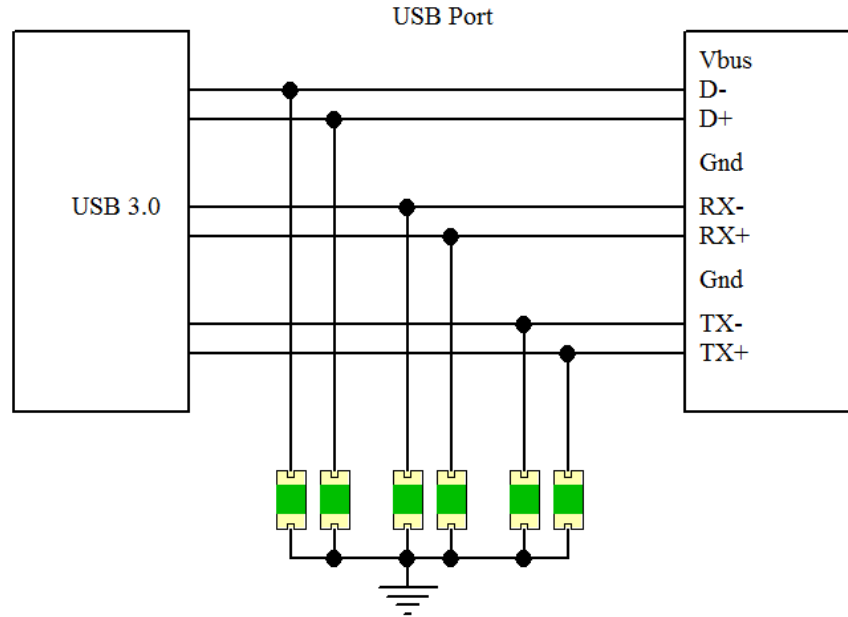
PIN CONFIGURATION



Part Numbering System



ESD Protection for USB 3.0



General Characteristics

Parameter	Value	Unit
Maximum Operating Temperature	-40 to +90	°C
Maximum Storage Temperature	-55 to +125	°C
Air Discharge Mode Per IEC61000-4-2	15K	V
Contact Discharge Mode Per IEC61000-4-2	8K	V

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

Electrical Characteristics (TA = 25°C)

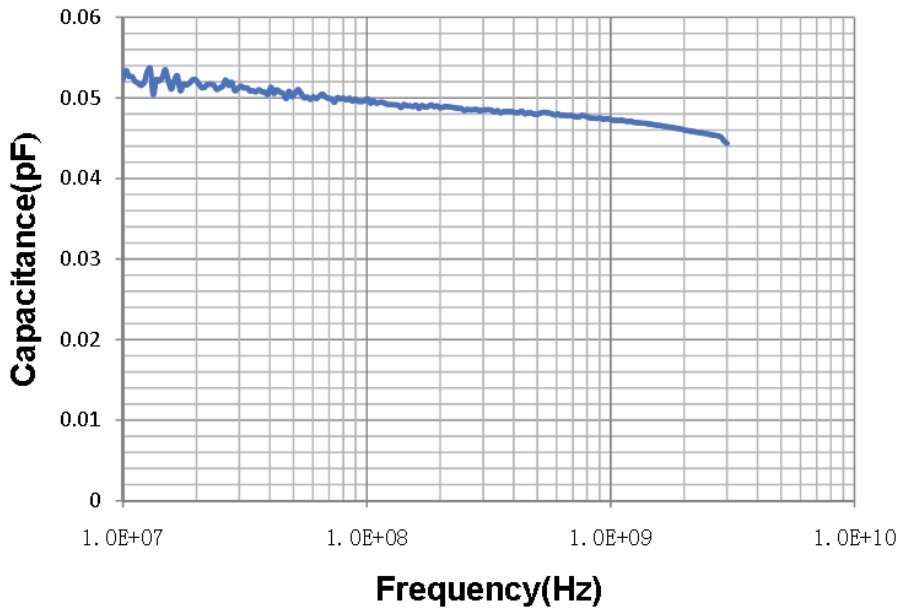
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Operating Voltage	V _{DC}	---	---	---	5	V
Capacitance	C _P	Measured at 10MHz	---	0.05	---	pF
Leakage Current	I _L	DC 5V shall be applied on component	---	---	10	nA
Trigger Voltage	V _T	IEC61000-4-2 8KV contact discharge	---	450	---	V
Clamping Voltage	V _C	IEC61000-4-2 8KV contact discharge	---	40	---	V

ESD Pulse Withstand	Pulses	IEC61000-4-2 8KV contact discharge	1000	---	---	---
---------------------	--------	---------------------------------------	------	-----	-----	-----

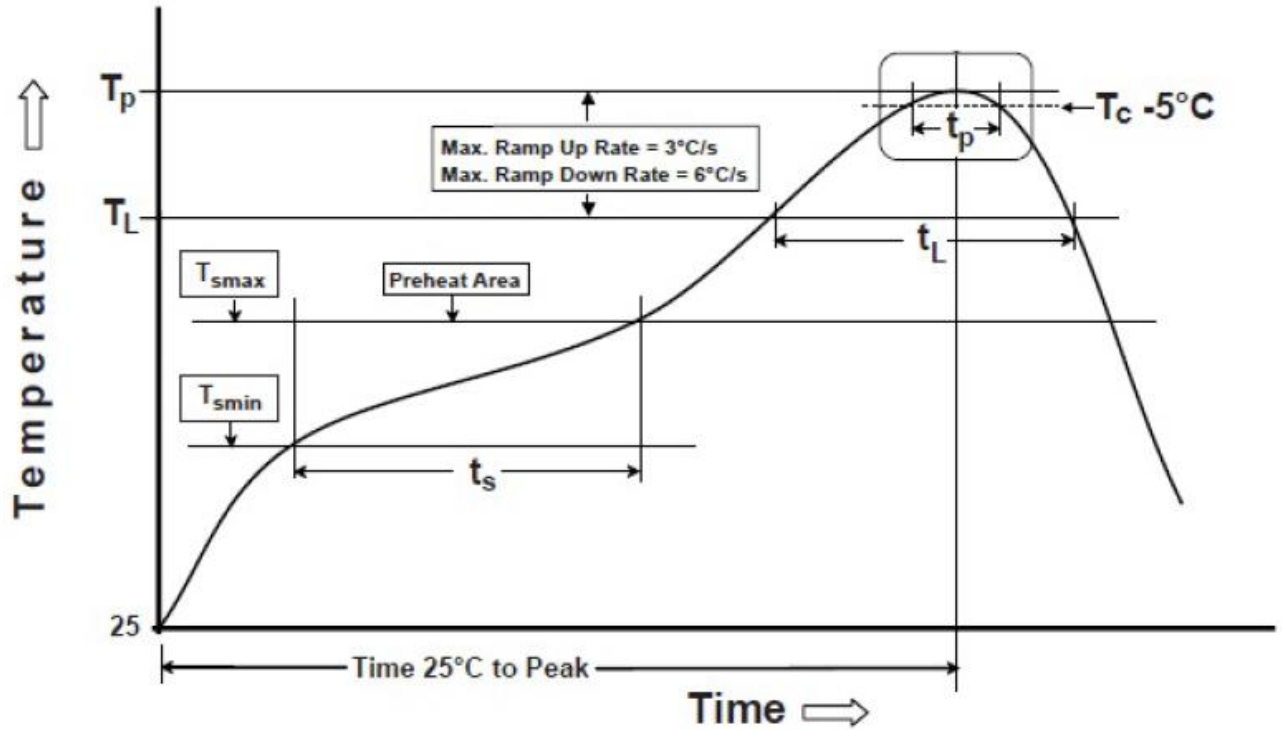
Notes:

1. **Operation Voltage (V_{DC}):** Defined as DC voltage, under which device is in OFF state and leakage current below certain threshold.
2. **Leakage Current (I_L):** Current through device under Operation Voltage V_{DC}.
3. **Trigger Voltage (V_T):** Voltage at which the device switches from the OFF to the ON state, during the IEC waveform.
4. **Clamping Voltage (V_C):** Voltage cross device under 8 kV per IEC.
5. **Capacitance (C_P):** Capacitance of the device measured at 10 MHz with 0V and max operating voltage bias.

Typical Device Capacitance VS. Frequency

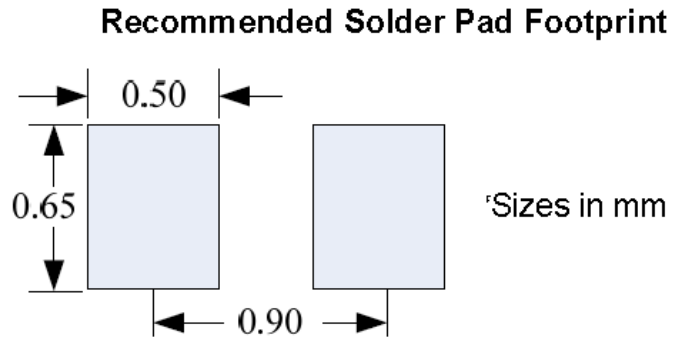
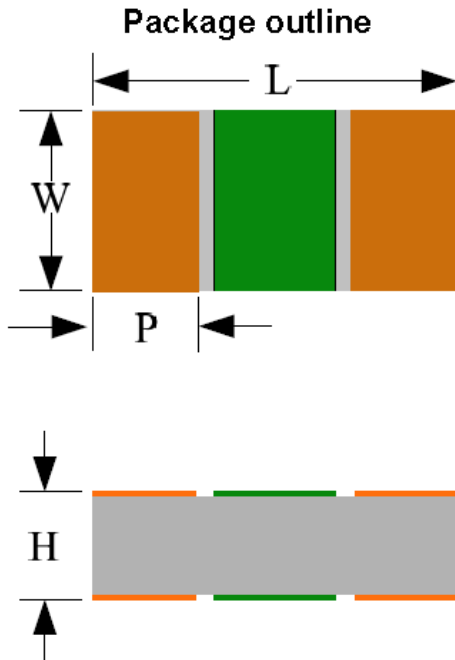


Soldering Parameters



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+0/-5 °C
Time (t _p)* within 5 °C of the specified classification temperature (T _c)	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.	

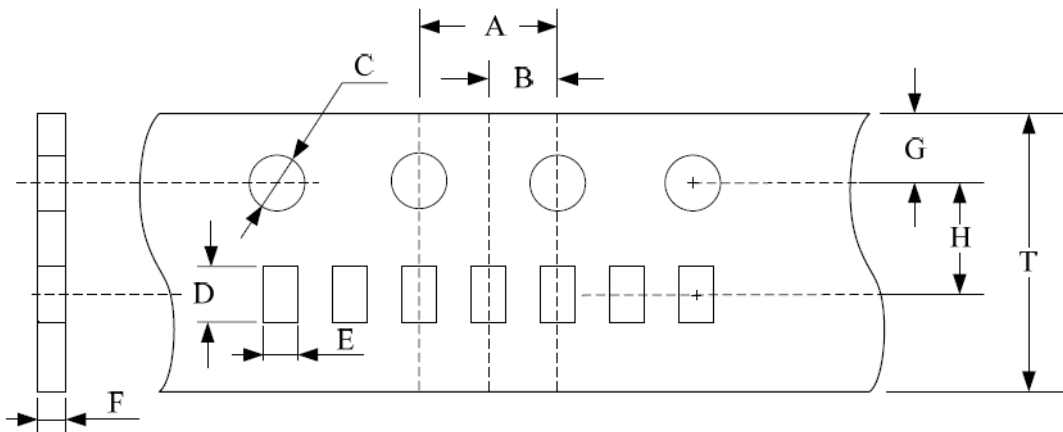
Package Dimension



Dimension	Unit: Millimeters		
	Min.	Typ.	Max.
L	0.90	1.05	1.20
W	0.45	0.55	0.65
P	0.15	0.25	0.35
H	0.25	0.36	0.45

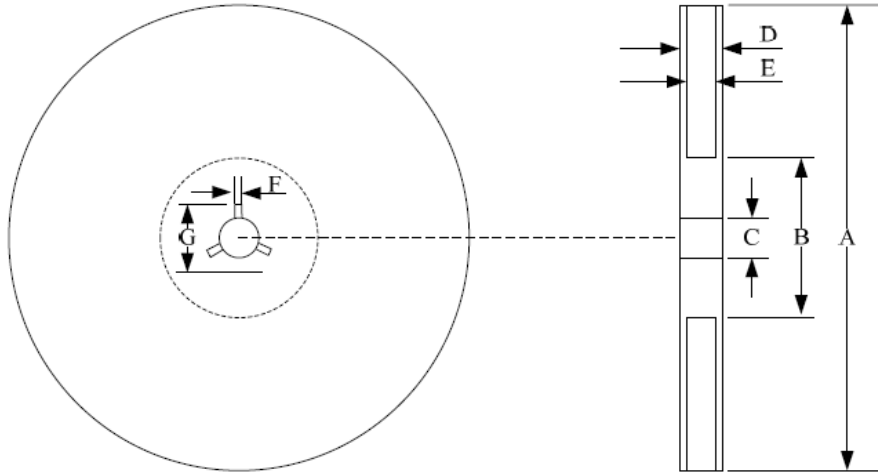
Taping Specification

1. Tape Dimension
Unit: Millimeters



A	B	C	D	E	F	G	H	T
4.00±0.10	2.00±0.10	∅1.50±0.10	1.12±0.05	0.68±0.05	0.48±0.05	1.75±0.10	3.50±0.05	8.00±0.30

2. Reel Dimension
Unit: Millimeters



A	B min.	C	D	E	F	G
178.0 ±2.0	57.0	13.0±0.5	13.0±1.0	9.0±0.5	2.0 ±0.5	21.0±0.8

CAUTION / WARNING

- The information described herein is subject to change without notice.
- CHIPLINK Technology is not responsible for any problems caused by circuits or diagrams described herein whose related industrial properties, patents, or other rights belong to third parties. The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- When the products described herein are regulated products subject to the Wassenaar Arrangement or other agreements, they may not be exported without authorization from the appropriate governmental authority.
- Use of the information described herein for other purposes and/or reproduction or copying without the express permission of CHIPLINK Technology is strictly prohibited.
- The products described herein cannot be used as part of any device or equipment affecting the human body, such as exercise equipment, medical equipment, security systems, gas equipment, or any apparatus installed in airplanes and other vehicles, without prior written permission of CHIPLINK Technology.
- Although CHIPLINK Technology exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.

Chiplink Semiconductor