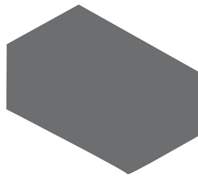
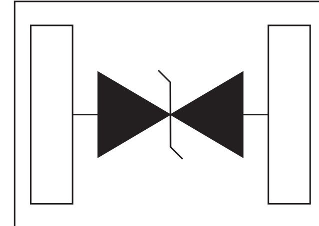
Surface Mount Epoxy Resin ESD Suppressor
EPESD Series/0402
Low Capacitance Bidirection ESD Protection

0402



Pin Configuration



Features

- Fast reponse time(<1ns)
- Low leakage current
- Low clamping voltage
- Bi-directional,single line protection
- Ultra low capacitance:0.05pf typ.(any I/O to GND.)
- Protection one line I/O port

IEC Compatibility

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) :40A (5/50ns)

Applications

- Smart Phone/Mobile Interment Device
- Laptop/Desktop Computer
- Antennas
- High Speed Ethernet
- Lightning and Thunder Bolt interface
- USB 2.0 and USB 3.0

Mechanical Characteristics

- JEDEC 0402 Package
- Molding Compound Flammability Rating : UL 94V-O
- Quantity Per Reel : 10,000pcs
- Reel Size : 7 inch
- Halgen Free

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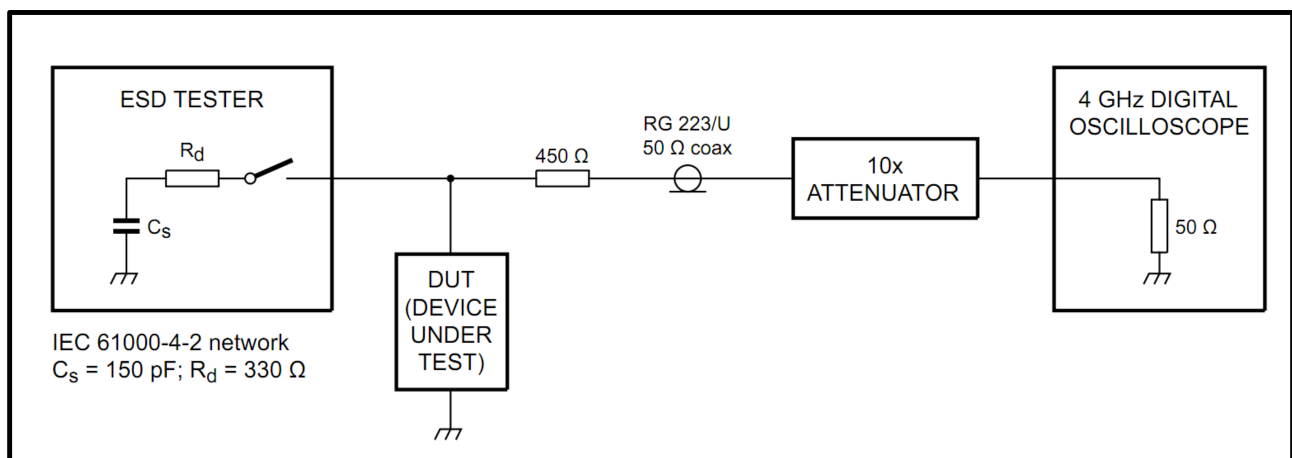
Maximum Ratings(T_A=25℃ unless otherwise specified)

Parameter	Symbol	Value	Units
Contact Dischage Voltage Per IEC61000-4-2	V_{ESD}	8	kV
AIR Dischage Voltage Per IEC61000-4-2	V_{ESD}	15	kV
Operating Temperature Range	T_J	-40~+90	℃
Storage Temperature Range	T_{STG}	-55~+125	℃

Electrical Characteristics

Part Number	Continuous operating Voltage (V)	Leakage Current I_L (μA)	Response time (ns)	Trigger Voltage V_T (V)	Clamping Voltage V_C (V)	Capacitance C_P@1MHz (pF)
EPESD040205A005FR	5	0.01	0.6	450	25	0.05
EPESD040212A005FR	12	0.01	0.6	450	30	0.05
EPESD040224A005FR	24	0.01	0.6	450	42	0.05

Typical ESD Response (IEC61000-4-2,8kv contact discharge)



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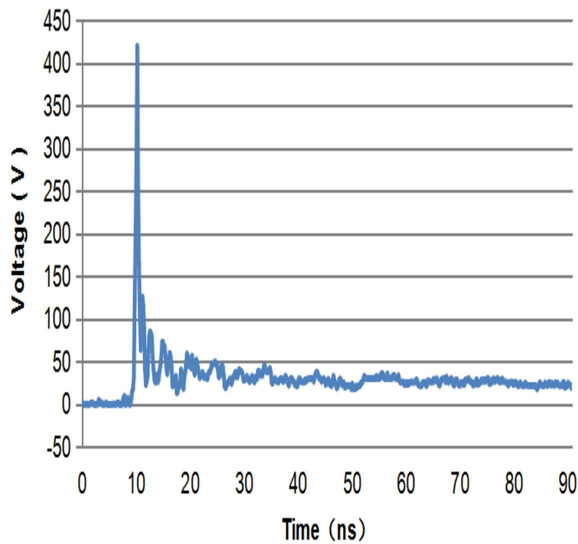
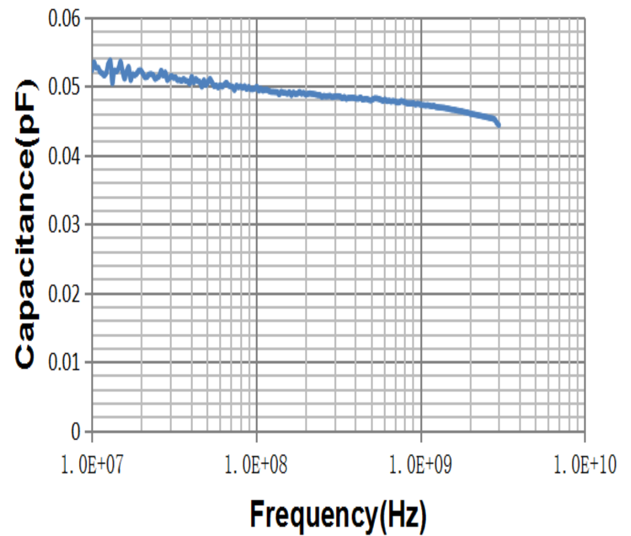
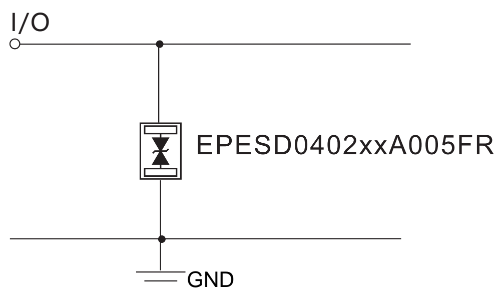
Typical Characteristics



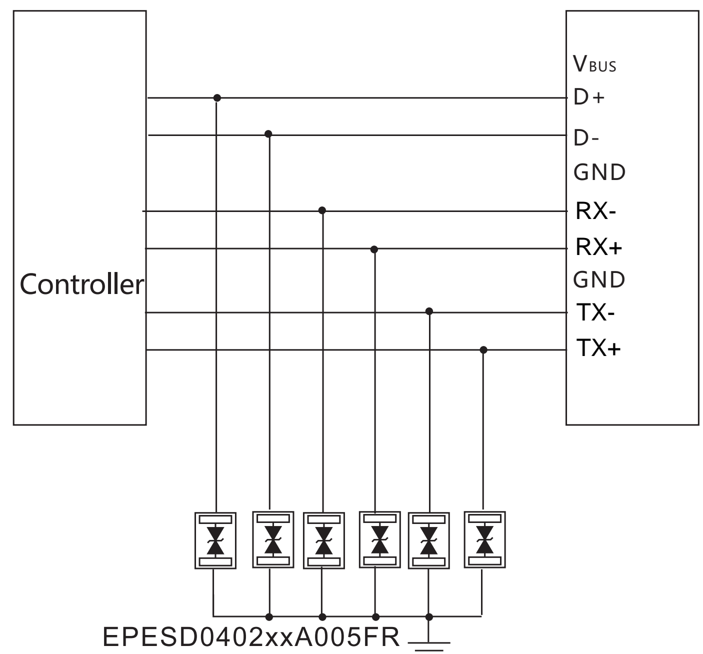


Application Information

I/O Protection



USB3.0 Protection



PCB Layout Recommendations

The following guidelines are recommended:

- Place the EPESD as close to the input terminal or connector as possible
- Minimize the lpath length between the EPESD and the protected signal line
- Use ground planes wherever possible to reduce the parasitic capacitance and inductance of the PCB that degrades the effectiveness of a filter device.

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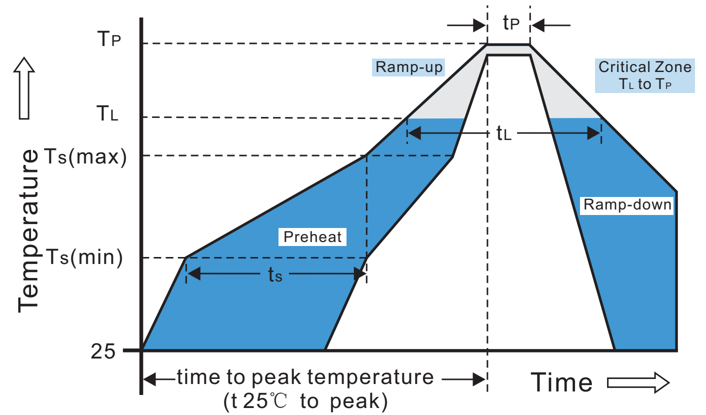
Recommended Soldering Conditions

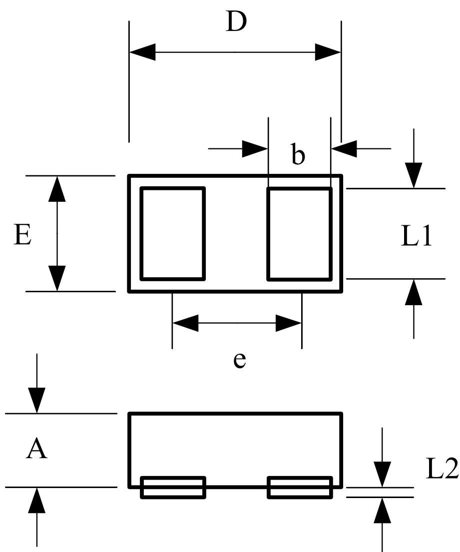
Recommended Conditions

Re”ow Condition		Pb-Free assembly (see Fig.1)
Pre Heat	-Temperature Min($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time(Min to Max)(t_s)	60-120secs
Average ramp up rate (Liquidus Temp(T_L) to peak)		3℃/sec.Max.
Re”ow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150secs
Peak Temp(T_P)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp(t_P)		30 secs.Max.
Ramp-down Rate		3℃/sec.Max.
Time 25℃ to Peak Temp(T_P)		8 min.Max.
Do not exceed		+260℃

Reflow Soldering

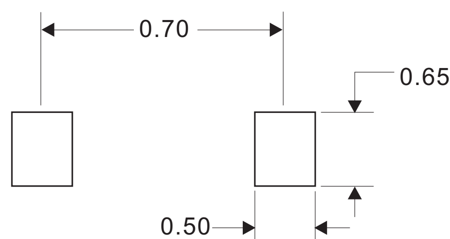


Dimensions(0402)



Dimension	Unit: Millimeters	
	Min.	Max.
A	0.25	0.45
b	0.15	0.40
D	0.90	1.10
E	0.40	0.60
e	0.65BSC	
L1	0.30	0.50
L2	0.00	0.05

Recommended Mounting Pad Layout



Dimensions in millimeters

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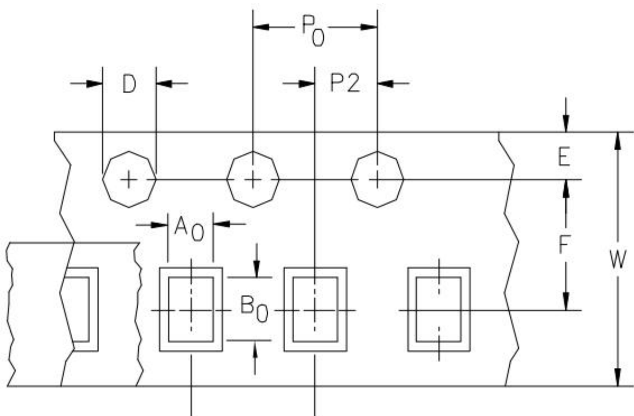
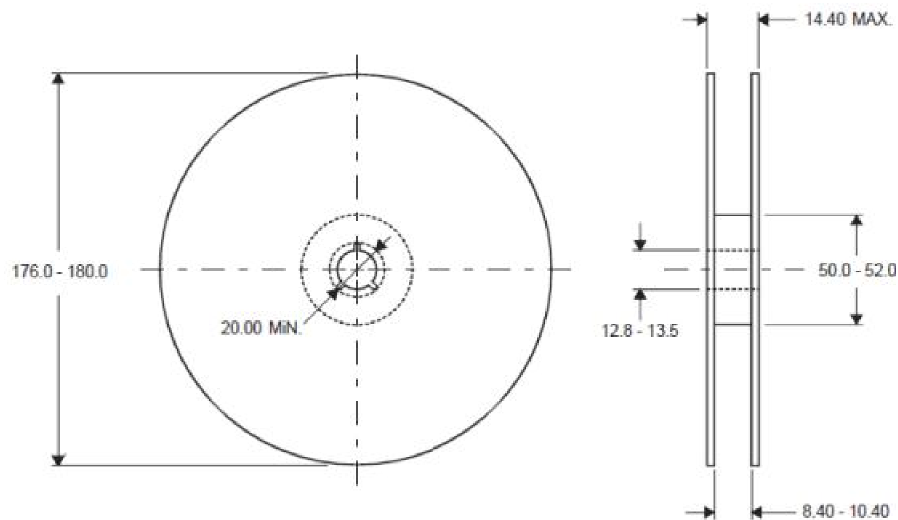
Package Information



Dimension	Typical	Unit
A0	0.75	mm
B0	1.22	
D	1.55	
P0	4.00	
P1	2.00	
P2	2.00	
E	1.75	
F	3.50	
W	8.00	



DIMENSIONS ARE: MILLIMETERS

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