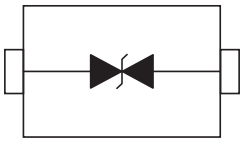
MLSEP12A-0402

Description

■ This device is an ultra low capacitance PESD product designed to protect very high speed data interfaces. MLSEP12A-0402 has a typical capacitance of only 0.05pf (I/O to GND), and it can be used to meet the ESD immunity requirements of IEC61000-4-2 (15KV air, 8KV contact discharge).





Schematic Diagram

Feature

- ESD protection for high speed data lines to IEC61000-4-2
- ESDcontact discharge typical 8KV, max 15KV
- ESD air discharge typical 15KV, max 25KV
- Multilayer structure
- Surface mount
- Extremely low capacitance
- Very low leakage current
- Fast response time
- Bi-directional ESD protection
- Lead free solder termination
- The best ESD protection for high frequency, low voltage applications

Application

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port Interface (DP)
- Unified Display Interface (UDI)
- Mobile Display Digital Interface (MDDI)
- Gigabit Ethernet
- USB2.0 and USB3.0
- IEEE1394 interface

Multilayer Polymer ESD Suppressor

Caution:
This component is designed for signal line protection only,
Not intended to be used under bias, not for application with a power line.

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Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Maximum Contact discharge voltage Per IEC61000-4-2	---	15KV	V
Maximum Air discharge voltage Per IEC61000-4-2	---	25KV	V
Maximum Operating temperature	T_{OPER}	-40 to +90	℃
Maximum Storage temperature	T_{STG}	-55 to +125	℃
Maximum lead temperature for soldering during 10s	T_L	260	℃

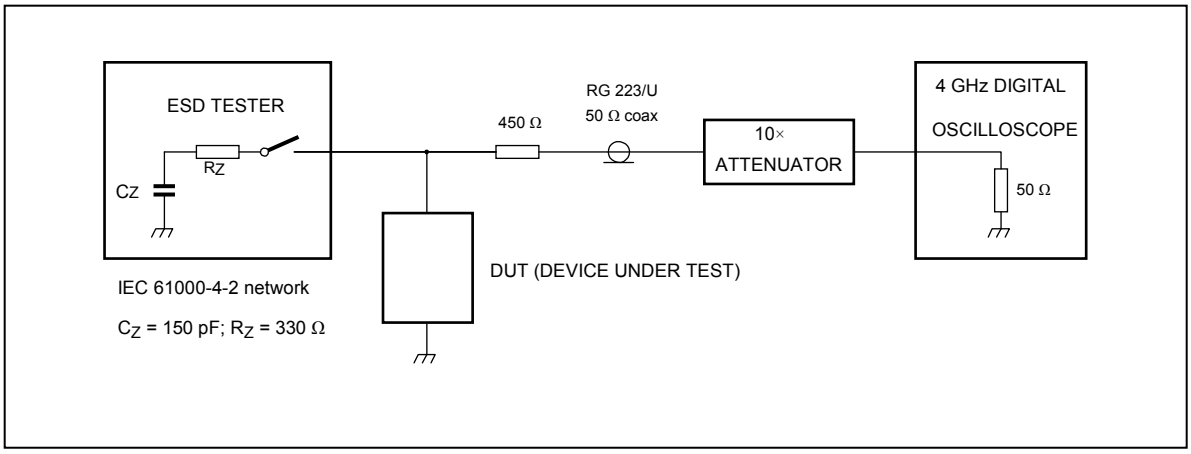
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Rated Voltage	V_R	---	---	---	12	V
Trigger voltage	V_T	IEC61000-4-2 8KV contact discharge	---	300	---	V
Clamping voltage	V_C	IEC61000-4-2 8KV contact discharge	---	20	---	V
Leakage current	I_L	DC 12V shall be applied on component	---	0.10	100	nA
Capacitance	C_P	V_R = 0V, f = 1MHz	---	0.05	0.15	pF
ESD pulse withstand	Pulses	IEC61000-4-2 8KV contact discharge	1000	---	---	---

Note: 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 10uA.

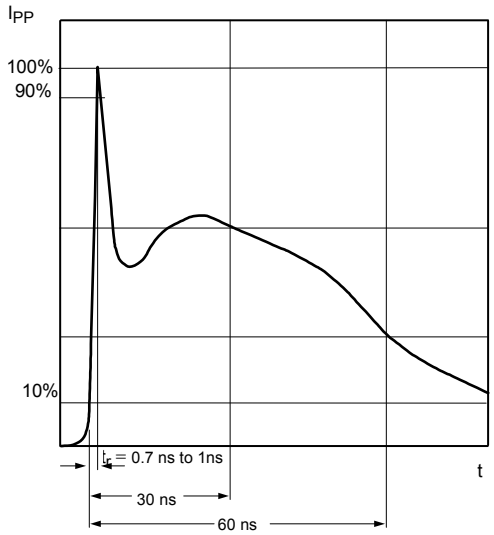
ESD Clamping Test



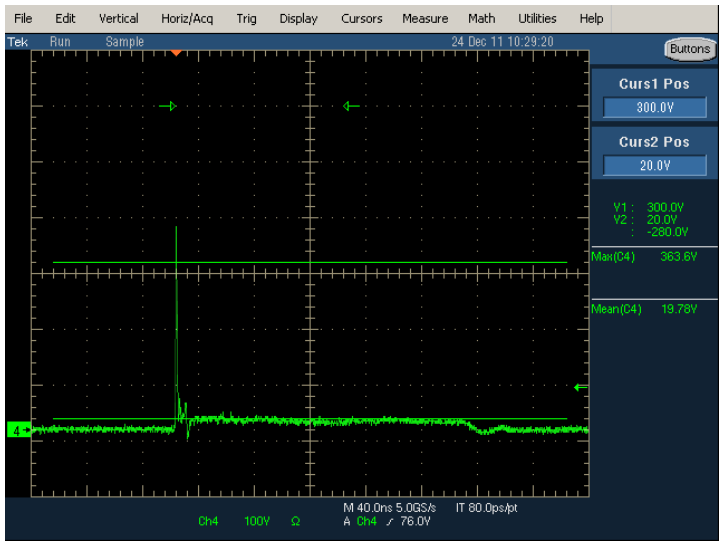
Multilayer Polymer ESD Suppressor

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ESD Clamping Test Waveforms

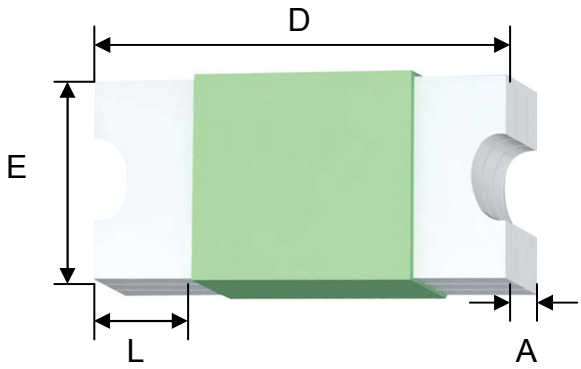


unclamped +8 kV ESD pulse waveform



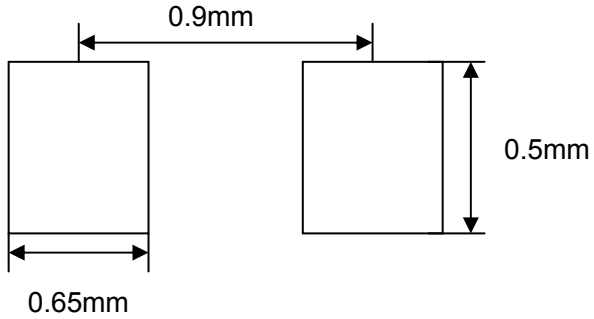
clamped +8 kV ESD pulse waveform

Product Dimension



Dimension	Unit: Millimeters		
	Min	Typ	Max
D	0.90	1.05	1.20
E	0.45	0.55	0.65
L	0.15	0.25	0.35
A	0.25	0.36	0.45

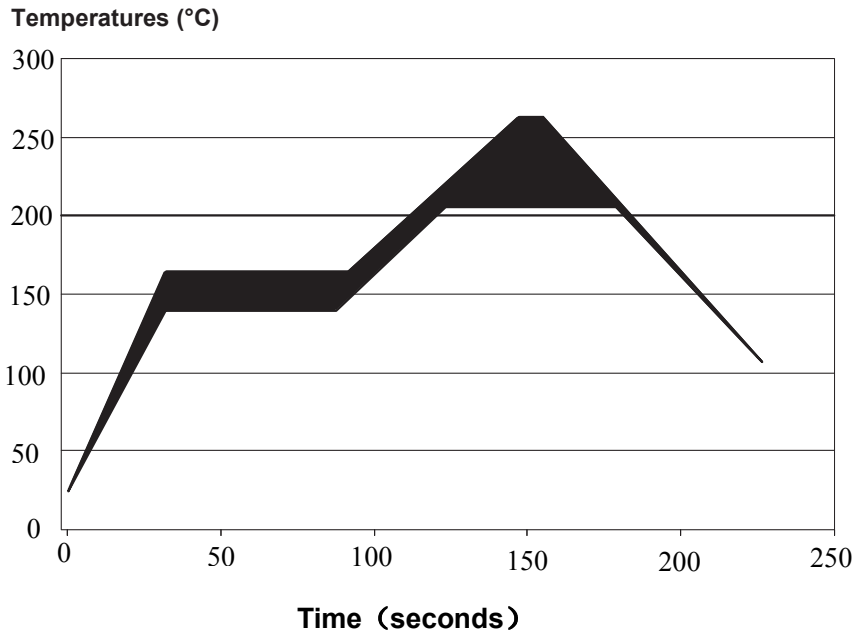
PAD Dimension



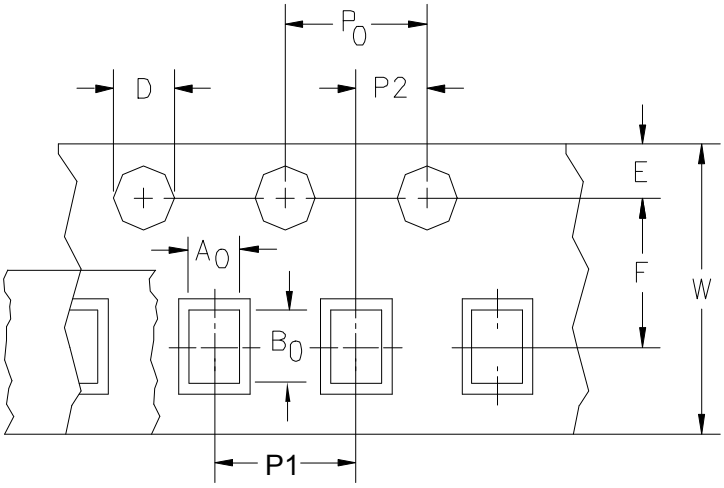
Solder thickness 0.15 to 0.2mm

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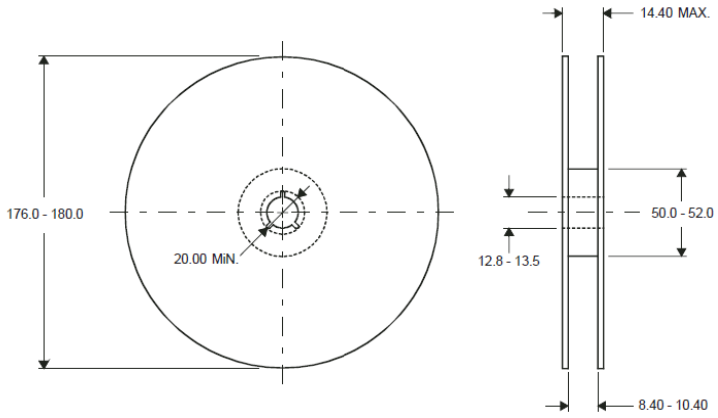
Solder Reflow Recommendations



Package Information



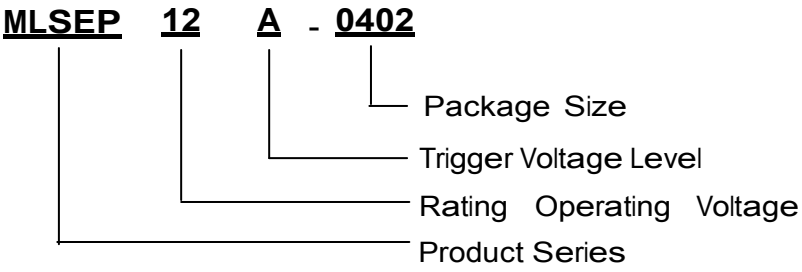
Dimension	Typical	Unit
A0	0.75	mm
B0	1.22	
D	1.55	
P0	4.00	
P1	2.00	
P2	2.00	
E	1.75	
F	3.50	
W	8.00	



DIMENSIONS ARE: MILLIMETERS

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Part Number System



Order Information

Device	Package	Net Weight	Carrier	Quantity	HSF Status
MLSEP12A-0402	1005	0.44 mg	Tape & Reel	10,000pcs/reel	RoHS compliant

Revision history

Date	Revision	Description of changes
29-Nov-2011	A	First issue

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