

# MLSEP12A-0402 Multilayer Polymer ESD Suppressor

## 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 IEC 61000-4-2 (15KV air, 8KV contact discharge).

## Features

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

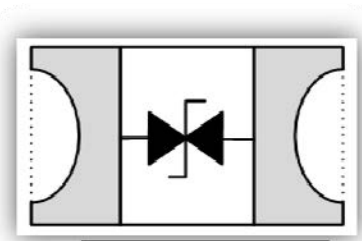


Case: 0402

## Applications

- 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

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



Schematic Diagram

## 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 <sub>OPER</sub>	-40 to +90	°C
Maximum Storage Temperature	T <sub>STG</sub>	-55 to +125	°C
Maximum Lead Temperature for Soldering During 10s	T <sub>L</sub>	260	°C

## Electrical characteristics (T<sub>A</sub> =25°C)

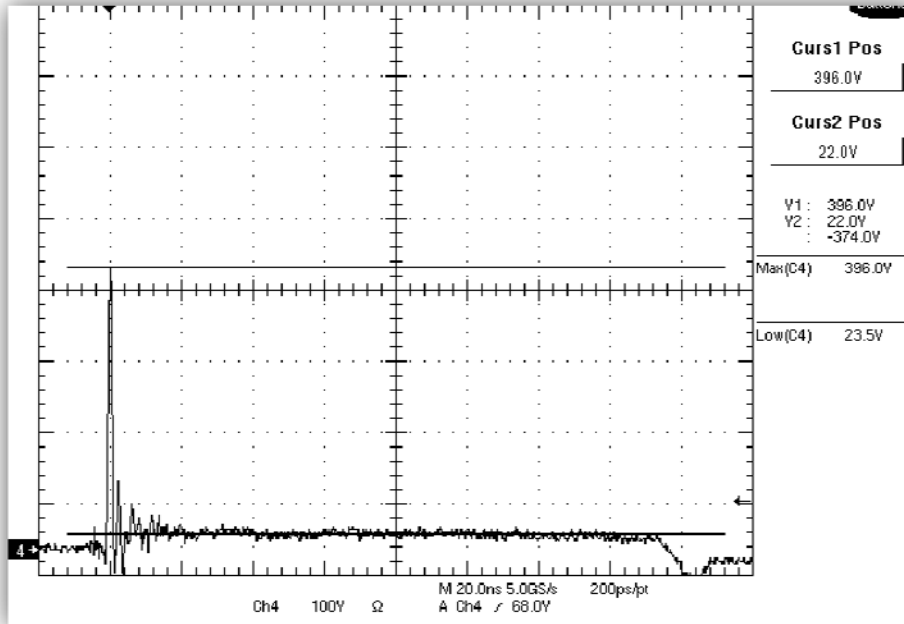
Electrical Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuous Operating Voltage	V <sub>DC</sub>	---	---	---	12	V
Trigger Voltage	V <sub>T</sub>	IEC61000-4-2 8KV contact discharge	---	300	---	V
Clamping Voltage	V <sub>C</sub>	IEC61000-4-2 8KV contact discharge	---	20	---	V
Leakage Current	I <sub>L</sub>	DC 12V shall be applied on component	---	0.10	100	nA
Capacitance	C <sub>P</sub>	V <sub>R</sub> = 0V, f = 1MHz	---	0.05	0.15	pF
ESD Pulse Withstand	Pulses	IEC61000-4-2 8KV contact discharge	100	---	---	---

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 10uA.

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Typical PESD clamping for +8KV pulse per IEC61000-4-2

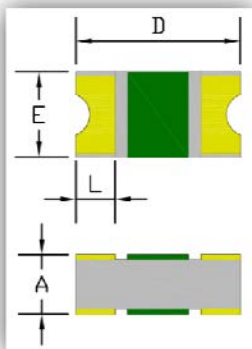


## Product & PAD Dimension

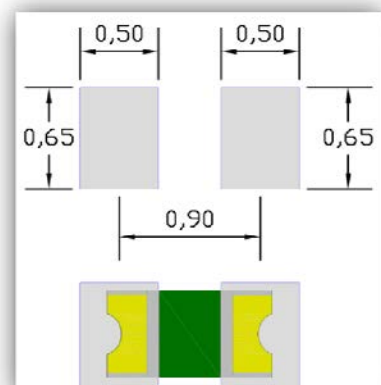
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Recommended Pad Dimension



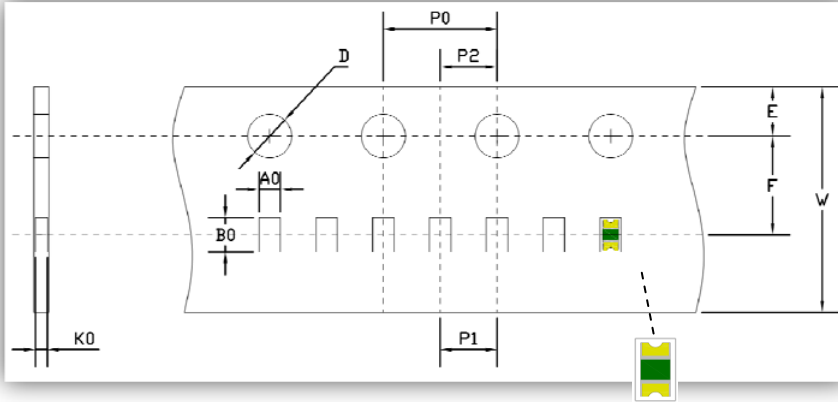
Dimension	Unit: Millimeters		
	Min	Typ	Max
D	0.90	1.05	1.20
E	0.45	0.55	0.65
L	0.15	0.25	0.35
A	0.25	0.36	0.45



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## Package Information

### Tape Dimension



Dimension	Typical	Unit
A0	0.75	mm
B0	1.22	
K0	0.43	
D	1.55	
P0	4.00	
P1	2.00	
P2	2.00	
E	1.75	
F	3.50	
W	8.00	

### Reel Dimension

