

## Description

■ This device is an ultra low capacitance PESD product designed to protect very high speed data interfaces. MLSEP30A-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).

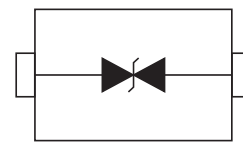
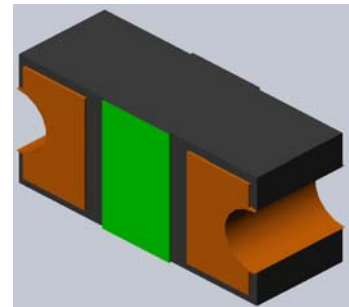
## Feature

- ESD protection for high speed data lines to IEC61000-4-2
- ESD contact 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

## MLSEP30A-0402



Schematic Diagram

### Caution:

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

## 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>	-55 to +125	°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

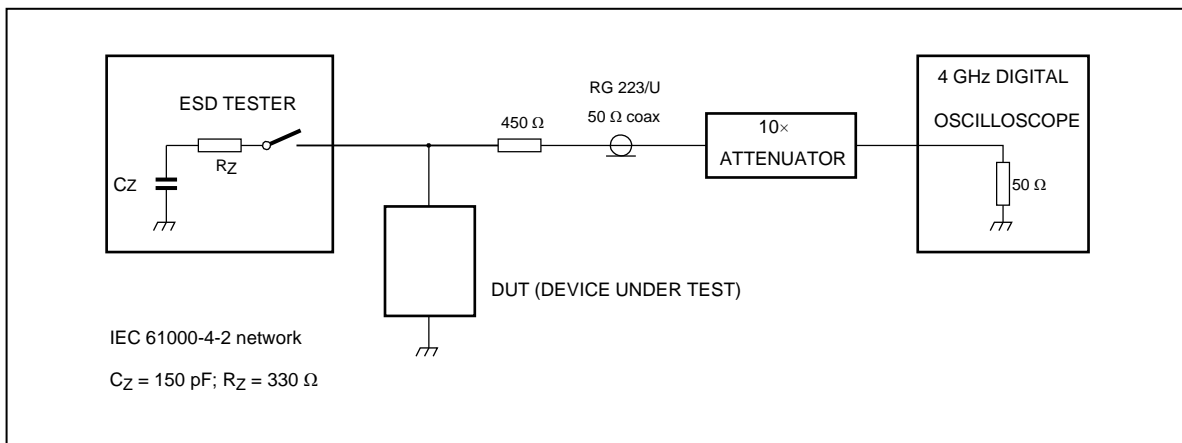
## Electrical Characteristics(T<sub>A</sub>=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Rated Voltage	V <sub>R</sub>	---	---	---	30	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	---	35	---	V
Leakage current	I <sub>L</sub>	DC 30V shall be applied on component	---	0.01	0.10	μ A
Capacitance	C <sub>P</sub>	V <sub>R</sub> = 0V, f = 1MHz	---	0.05		pF

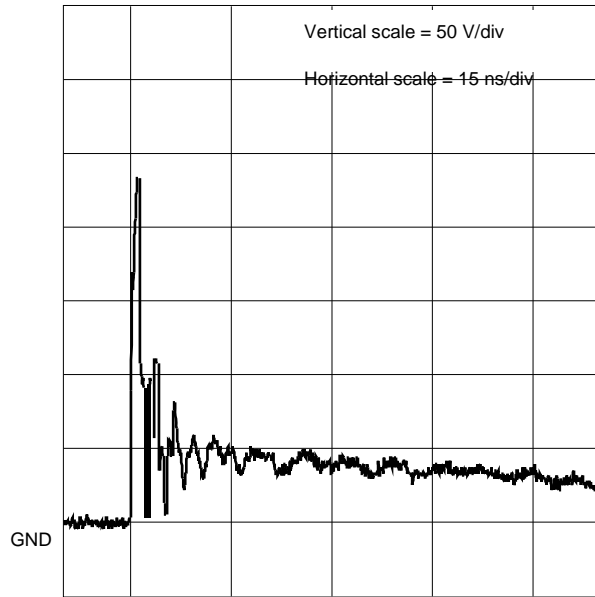
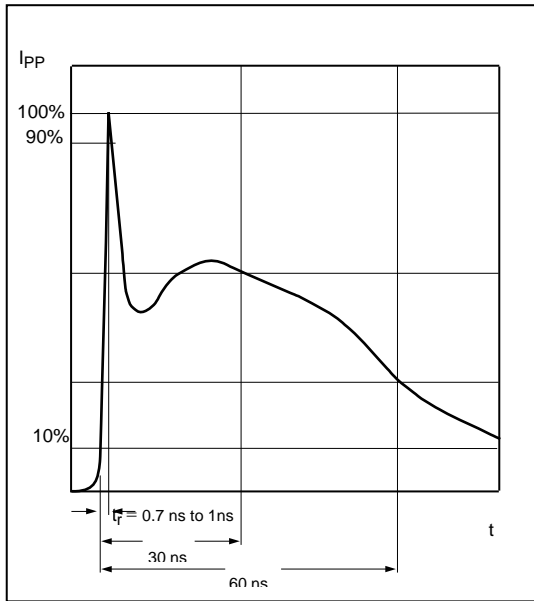
**Note:** 1 Trigger and clamping voltage are measured per IEC 61000-4-2, 8KV contact discharge method.

2 After reliability tests such as high temp storage, temp cycles, continuous ESD strike etc, the maximum leakage current is less than 10uA.

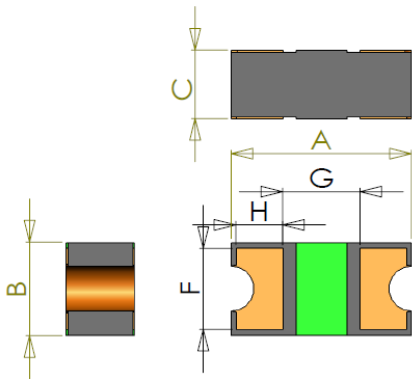
## ESD Clamping Test



## ESD Clamping Test Waveforms

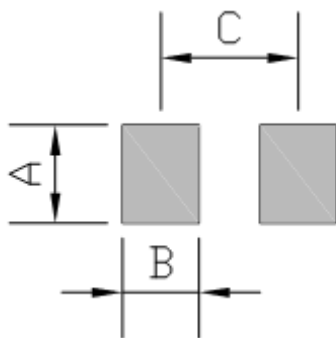


## Product Dimension



Symbol	Dimension			Unit
	Min	Typ	Max	
A	0.95	1.0	1.05	mm
B	0.44	0.52	0.60	
C	0.32	0.36	0.40	
H	0.21	0.23	0.25	
F	0.43	0.45	0.47	
G	0.42	0.44	0.46	

## PAD Dimension

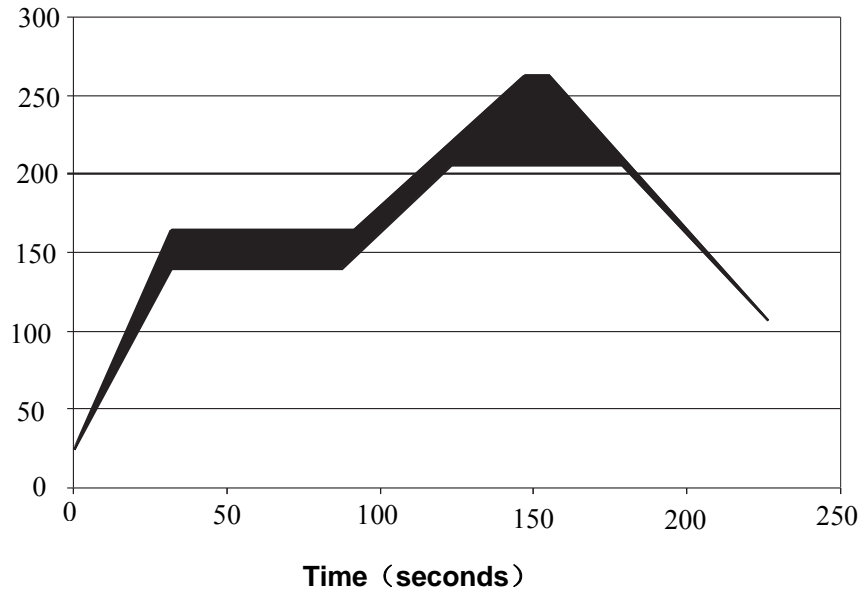


Symbol	Dimension	Unit
A	0.55	mm
B	0.48	
C	0.88	

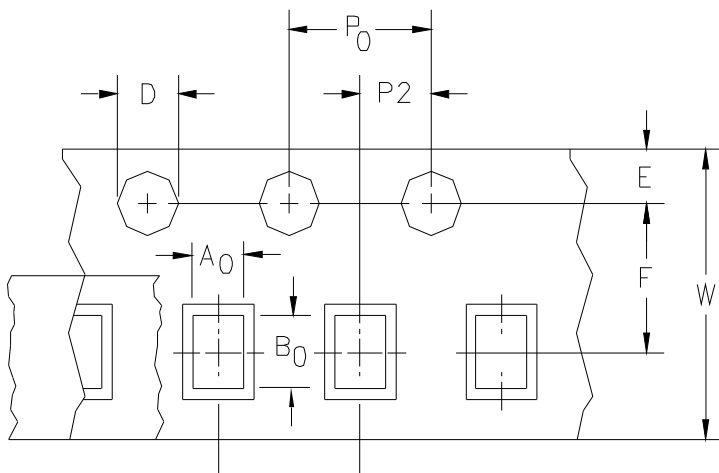
Solder thickness 0.08 to 0.12mm

## Solder Reflow Recommendations

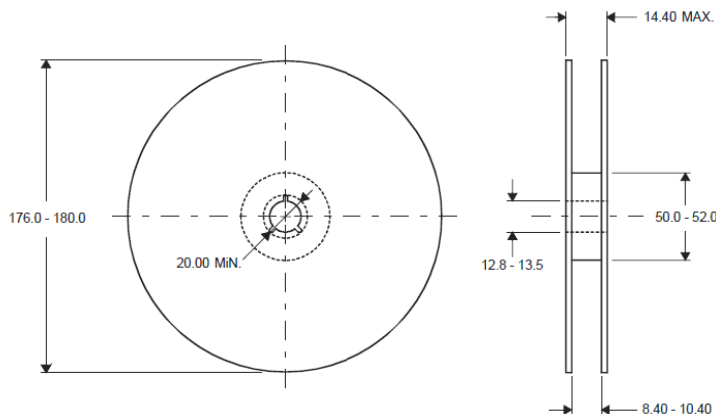
Temperatures (°C)



## Package Information

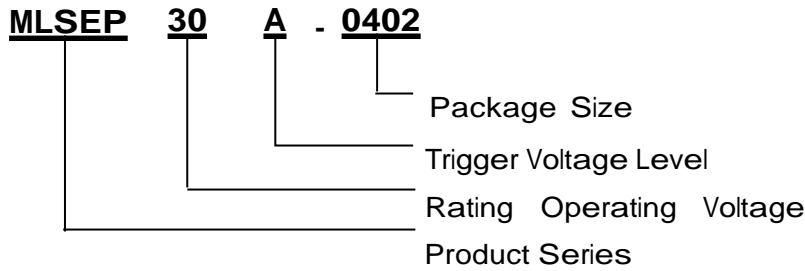


Dimension	Typical	Unit
A0	0.68	mm
B0	1.17	
D	1.55	
P0	4.00	
P1	2.00	
P2	2.00	
E	1.75	
F	3.50	
W	8.00	



DIMENSIONS ARE: MILLIMETERS

## Part Number System



## Order Information

Device	Package	Net Weight	Carrier	Quantity	HSF Status
MLSEP30A-0402	1005	0.44 mg	Tape & Reel	10,000pcs/reel	RoHS compliant

## Revision history


Date	Revision	Description of changes
4-Mar-2020	4.0	Update

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