COOPER Bussmann

MLP1 ESD Suppressor
PolySurg™ 0402ESDA-MLP1

HALOGEN HF FREE

RoHS 2002/95/EC

Pb



Surface Mount Device

Description

The Cooper Bussmann PolySurg™ 0402ESDA-MLP1 ESD Suppressors protect valuable high-speed data circuits from ESD damage without distorting data signals as a result of its ultra-low (0.05pF typical) capacitance.

Features

- Halogen free
- RoHS compliant for global applications
- Lead free
- Ultra-low capacitance (0.05pF typ.) ideal for high speed data applications
- Provides ESD protection with fast response time (<1ns) allowing equipment to pass IEC 61000-4-2 level 4 test
- Single-line, bi-directional device for placement flexibility
- Low profile 0402/1005 design for board space savings
- Low leakage current (<0.1nA typ.) reduces power consumption
- (Sn) Tin-plated version available

Specifications

Characteristic	Value
Rated Voltage	30Vdc maximum
Clamping Voltage[1]	35V typical
Trigger Voltage[2]	300V typical
Capacitance (@1MHz)	0.05pF typical, 0.15pF maximum
Attenuation Change (0-6GHz)	-0.2dB typical
Leakage Current (@12Vdc)	<0.1nA typical
ESD Capability	
• IEC61000-4-2 Direct Discharge	8kV typical
• IEC61000-4-2 Air Discharge	15kV typical
ESD Pulse Withstand[3]	>1000 typical

1 Per IEC61000-4-2, Level 4 waveform (8kV direct, 30A) measured 30ns after initiation of pulse.
2 Trigger measurement made using Transmission Line Pulse (TLP) method.
3 Minor shifting in characteristics may be observed over multiple ESD pulses at very rapid rate

Applications

- Computers and peripherals
- HDTV Equipment
- DVD Players
- A/V Equipment
- Satellite radio
- Cell phones
- PDAs
- Digital still cameras
- Digital camcorders
- MP3/Multimedia players
- Set top boxes
- External storage
- DSL Modems
- High speed data ports
- USB 2.0/3.0
- IEEE 1394b
- HDMI 1.3
- DVI
- High speed ethernet
- Infiniband®

Part Numbering System: 0402 ESDA MLP 1

- 0402 — Package Size
- ESDA — Product Family
- MLP — Form Designation
- 1 — Designation for Dip Termination

Packaging

- 10,000 suppressors on paper tape in seven inch (178mm) plastic reel per EIA Standard 481-1.

Ordering Information

Catalog Number	Description
0402ESDA-MLP1	10,000 pieces on paper tape on 7" (178mm) reel - tin plating

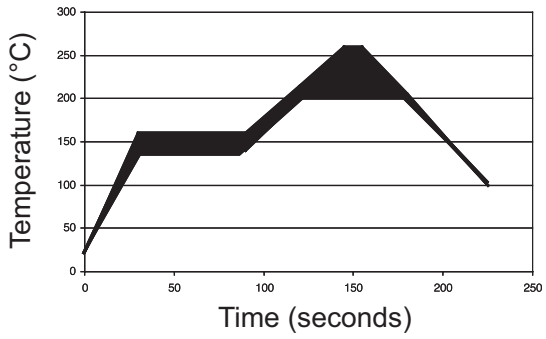
Design Considerations

The location in the circuit for the MLP series has to be carefully determined. For better performance, the device should be placed as close to the signal input as possible and ahead of any other component. Due to the high current associated with an ESD event, it is recommended to use a “0-stub” pad design (pad directly on the signal/data line and second pad directly on common ground).

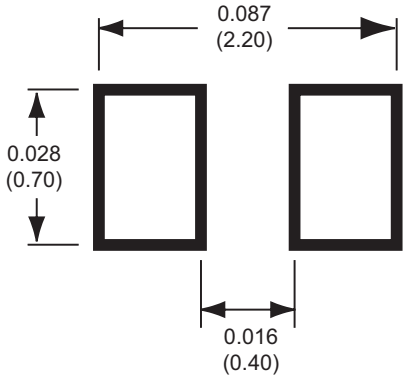
Environmental Specifications	
Characteristic	**Value**
Load Humidity	12Vdc per EIA/IS-772 Para. 4.4.2, +85°C, 85% RH for 1000 hours
Thermal Shock	EIA/IS-722 Para 4.6, Air-to-Air -55°C to +125°C, 5 cycles
Moisture Resistance Test	MIL-STD-202G Method 106G, 10 cycles
Mechanical Shock	EIA/IS-722 Para. 4.9
Vibration	EIA/IS-722 Para. 4.10
Resistance to Solvent	EIA/IS-722 Para. 4.11
Operating Temperature Range	-55°C to +125°C
Storage Temperature Range	-55°C to +125°C

Soldering Recommendations

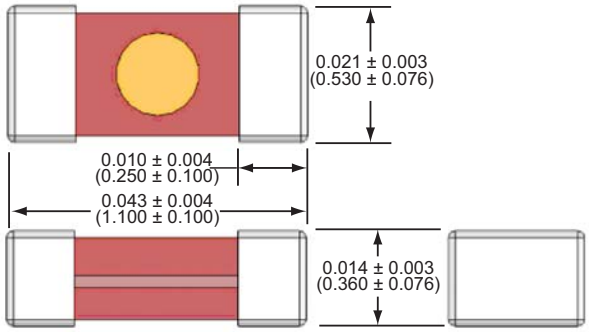
- Compatible with lead and lead-free solder reflow processes
- Peak reflow temperatures and durations:
  - IR Reflow = 260°C max for 10 sec. max.
  - Wave Solder = 260°C max. for 10 sec. max.
- Recommended IR Reflow Profile:

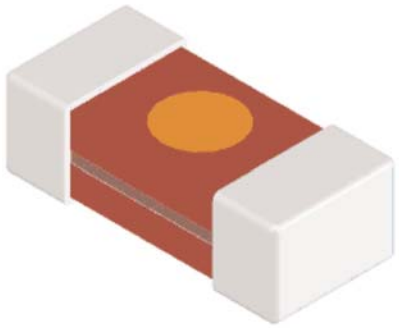


Recommended Pad Layout - in (mm)

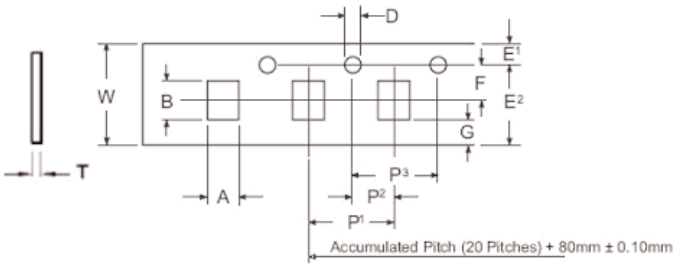


Dimensions - in (mm)





Tape and Reel Specifications - mm



Carrier Dimensions											
A	**B**	**D**	**E¹**	**E²**	**F**	**G**	**P¹**	**P²**	**P³**	**T**	**W**
0.75 ±0.05	1.25 ±0.05	1.50 ±0.10	1.75 ±0.10	6.25 ±0.30	3.50 ±0.05	0.75 min.	4.00 ±0.10	2.00 ±0.05	4.00 ±0.05	0.43 ±0.05	8.00 ±0.20

10,000 pieces in paper tape on 7 inch (178mm) plastic reel per EIA Standard 481-1

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