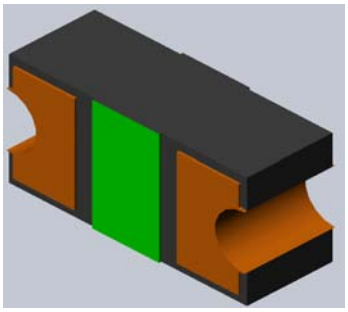
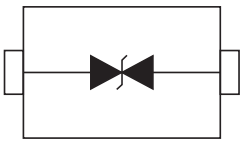
MLSEP05A-0402

Description

■ This device is an ultra low capacitance PESD product designed to protect very high speed data interfaces. MLSEP05A-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
■ 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

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.

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}	-55 to +125	℃
Maximum Storage temperature	T_{STG}	-55 to +125	℃
Maximum lead temperature for soldering during 10s	T_L	260	℃

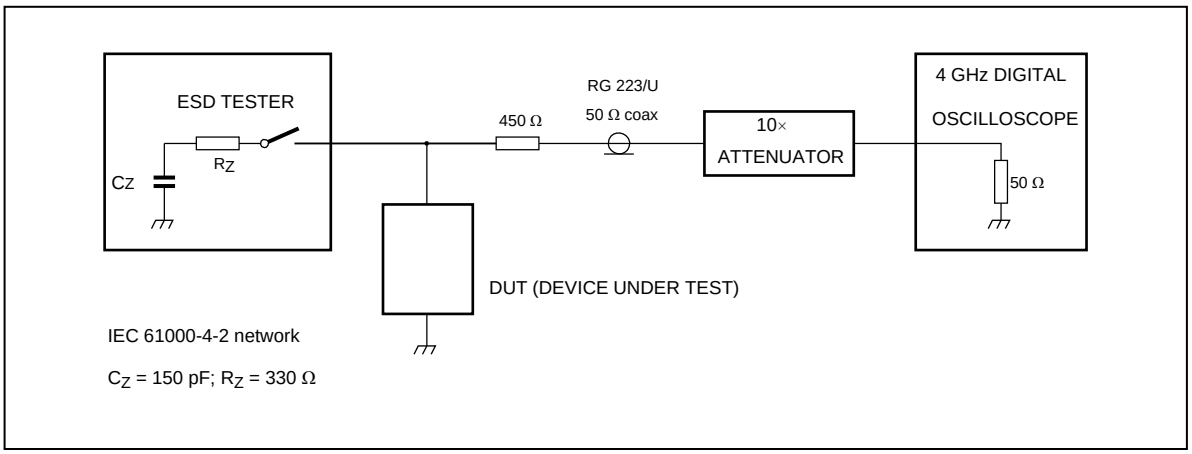
Electrical Characteristics(T_A=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Rated Voltage	V_R	---	---	---	5	V
Trigger voltage	V_T	IEC61000-4-2 8KV contact discharge	---	300	---	V
Clamping voltage	V_C	IEC61000-4-2 8KV contact discharge	---	35	---	V
Leakage current	I_L	DC 5V shall be applied on component	---	0.01	0.10	μA
Capacitance	C_P	V_R = 0V, f = 1MHz	---	0.05		pF

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

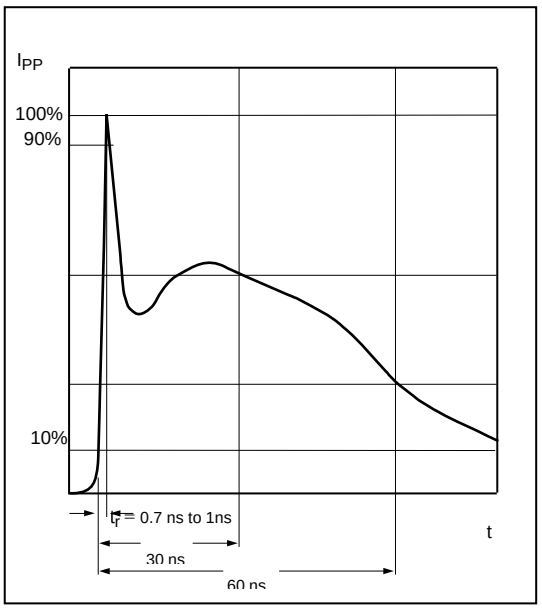
2 After reliability tests such as high temp storage, temp cycles, continuous ESD strike etc, the maximum leakage current is less than 1uA.

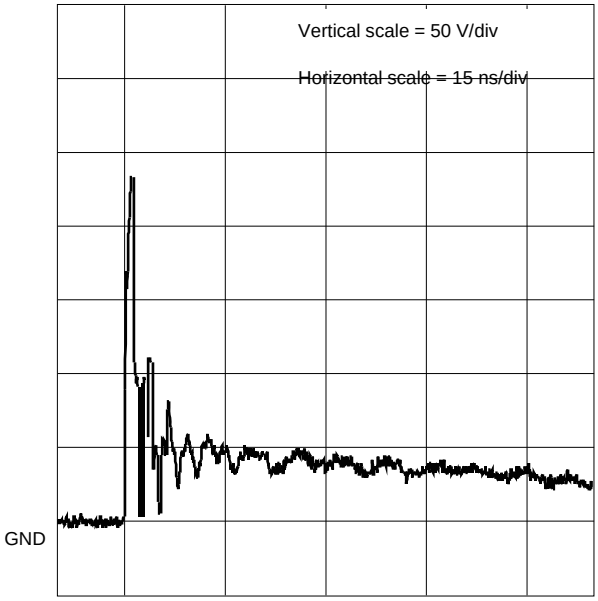
ESD Clamping Test



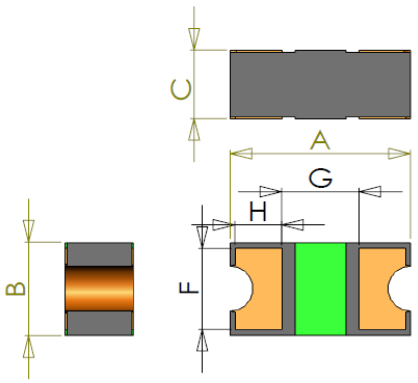
Multilayer Polymer ESD Suppressor

ESD Clamping Test Waveforms



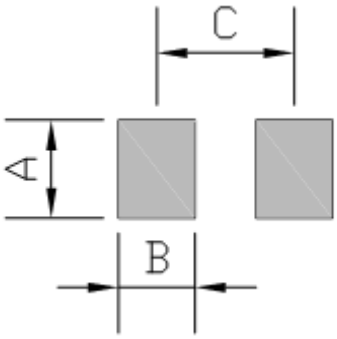


Product Dimension



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	

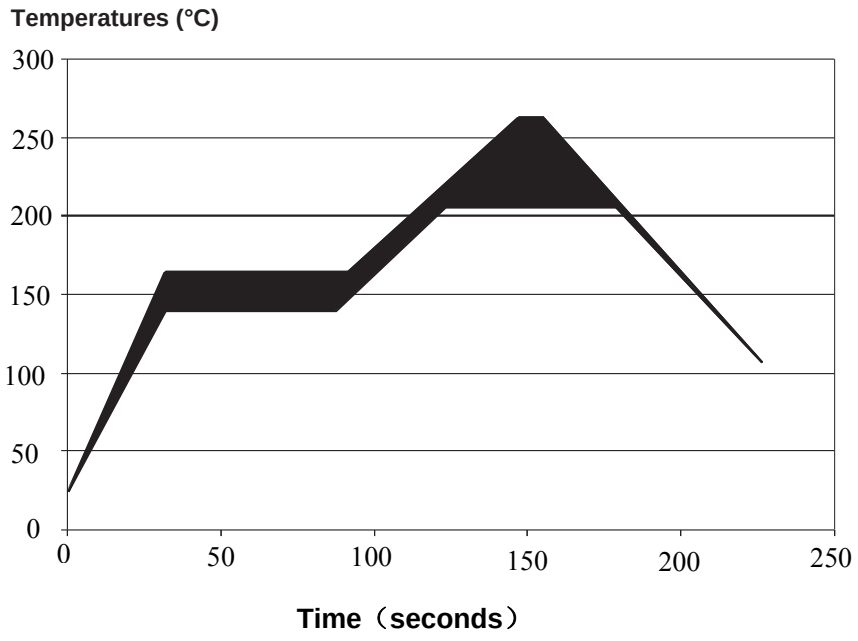
PAD Dimension



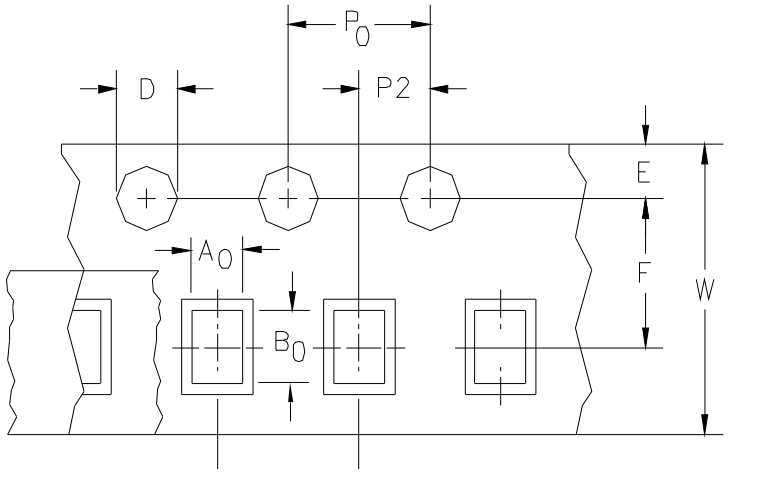
Symbol	Dimension	Unit
A	0.55	mm
B	0.48	
C	0.88	

Solder thickness 0.08 to 0.12mm

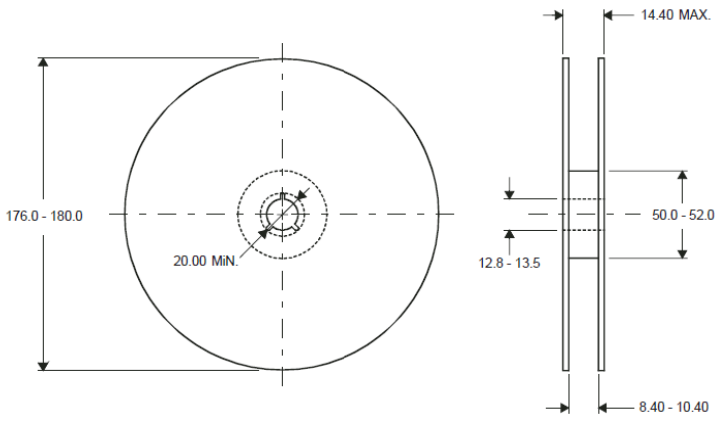
Solder Reflow Recommendations



Package Information

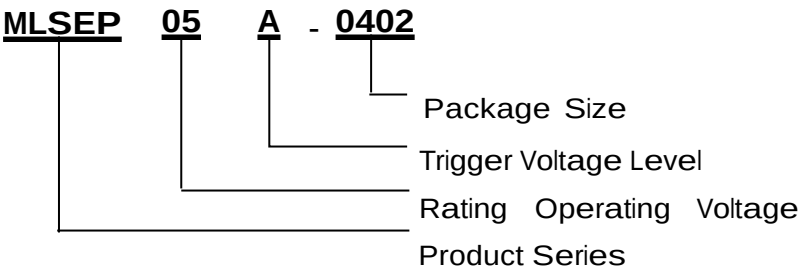


Dimension	Typical	Unit
A0	0.68	mm
B0	1.17	
D	1.55	
P0	4.00	
P1	2.00	
P2	2.00	
E	1.75	
F	3.50	
W	8.00	



DIMENSIONS ARE: MILLIMETERS

Part Number System



Order Information

Device	Package	Net Weight	Carrier	Quantity	HSF Status
MLSEP05A-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

CAUTION / WARNING

• Information in this document is believed to be accurate and reliable. However, SEMITEL does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

• Users should independently evaluate the suitability of and test each product selected for their own applications, and SEMITEL assumes no liability whatsoever relating to the choice, selection or use of the SEMITEL products and services described herein.

• SEMITEL reserves the right to change or update, without notice, any information contained in this publication; to change, without notice, the design, construction, processing, or specification of any product; and to discontinue or limit production or distribution of any product.

• Information in this document supersedes and replaces all information previously supplied.

• Products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an SEMITEL product can reasonably be expected to result in personal injury, death or severe property or environmental damage. SEMITEL accepts no liability for inclusion and/or use of SEMITEL products in such equipment or applications and therefore such inclusion and/or use are at the customer's own risk.

• This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

• Resale of SEMITEL products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by SEMITEL for the SEMITEL product or service described herein and shall not create or extend in any manner whatsoever, any liability of SEMITEL.

• SEMITEL expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. SEMITEL only obligations are those in the SEMITEL Standard Terms and Conditions of Sale and in no case will SEMITEL be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products.

Specifications are subject to change without notice

© Copyright 2005, Semitel Electronics

Semitel . ® is a registered trademark of Semitel Electronics

All rights reserved

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

Semitel:

ESDPSD2510V30 MLSEP30B-0603 SESUC3V3D0603-2B SESUC5VD1006SN-2B SESUC5VD882SY-2B ESDPSA0402V30 ESDPSD2510V12 ESDPSD2510V15 SES6V3D1006-2U SESUC3V3E0201SN-2B SES12VD523-2B SES5VD923-2U SESUC3V3D882-2B SESUC5VD2510-10U SESUC5VD2510SN-10U MLSEP15B-0603 ESDPSA0201V24 ESDPSA0402V15 ESDPSA0603V15 SES5VD882-2B SESLC3V3D323S-2B SESLC5VD882S-2B SES3V3D1006-2B SES5VD323-2B ESDPSA0402V12 SESUC5VD0603PSN-2B SES8VD1006-2B SESUC3V3D2510-10U ESDPSD2510V24 ESDPSA0603V09