CHIPSESD DEVICES



Littelfuse's ChipSESD family of Silicon ESD devices, available in EIA-0201 and EIA-0402 sized rectangular SMT passive component packages, can help protect electronic circuits against damage from electrostatic discharge (ESD) events.

The SESD0201P1BN-0400-090, 0201-sized ChipSESD device's miniature footprint (0.6mm x 0.3mm x 0.3mm) is approximately 70% smaller than prior-generation devices. This offers designers flexibility in space constrained applications.

The ChipSESD devices are high-capacitance, bidirectional devices that can be used for low-speed generic interfaces such as keypads, power buttons, speakers and microphone ports in a portable electronics. The bidirectional operation eliminates orientation constraints and the need for polarity inspections. The surface mount



technology (SMT) passive component package allows the devices to be easily installed onto the printed circuit board using the standard PCB assembly process. Once soldered onto the boards, the ChipSESD's solder fillets at the end terminals can easily be visually inspected.

The ChipSESD devices offer 10kV contact and 16kV air discharge protection per the IEC61000-4-2, level 4 standard with a surge rating of 2A under 8x20Qs pulse.

BENEFITS

FEATURES

- Silicon ESD devices in an EIA-0201 and EIA-0402 sized rectangular SMT passive component package
- Bi-directional operation eliminates orientation constraints
- ESD protection in space-constrained portable electronics and mobile handsets
- Helps protect electronic circuits against damage
- Assists equipment to pass IEC61000-4-2, level 4 testing

• Standard PCB assembly and rework process

- Input capacitance -4.0pF (typ) & 4.5pF (typ)
- Low leakage current 1.0μA (max)
- Low working reverse voltage 6.0V (max)
- Capable of withstanding numerous ESD strikes
- RoHS compliant
- · Halogen free (refers to: Br≥900ppm, Cl≥900ppm, Br+Cl≥1500ppm)

APPLICATIONS

- Mobile phones and portable electronics
- · Digital cameras and camcorders
- Notebooks, set top boxes, motherboards
- USB 2.0 and computer I/O ports
- Applications requiring high ESD performance in a small package

Table CE1 — Maximum Ratings

	IEC61000-4-2, level 4 (ESD Withstand)		Temperature	
	Contact	Air	Operating	Storage
Part Number	(kV)	(kV)	(°C)	(°C)
SESD0201P1BN-0400-090	±10*	±16	-40 to +125	-40 to +125
SESD0402P1BN-0450-090	±10*	±16	-40 to +125	-40 to +125

Table CE2 — Electrical Characteristics @T=25°C

	Input Capa	acitance*				Clamping Voltage (typ)
	Тур	Max	Leakage Current (max)	Breakdown Voltage (min)	Working Reverse Voltage	V _{CL} @ Ipp=2A,
Part Number	(pF)	(pF)	$I_L @ V_{RWM} = 6.0V (\mu A)$	$V_{br} @ I_{T}^{\dagger} = 1mA (V)$	V _{RWM} @ peak (V)	tp=(8/20µs) (V)*
SESD0201P1BN-0400-090	4.0	5.0	1.0	9.0	6.0	+10.0
SESD0402P1BN-0450-090	4.5	5.5	1.0	9.0	6.0	+10.0

^{* @} Vr=0V, f=1MHz

Figure CE1 — ESD Clamping Voltage - 8kV Contact

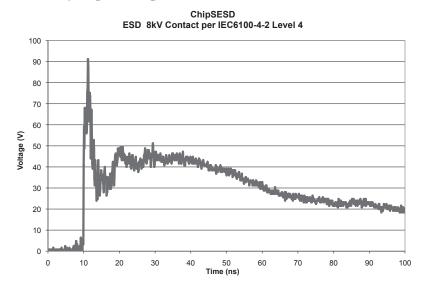
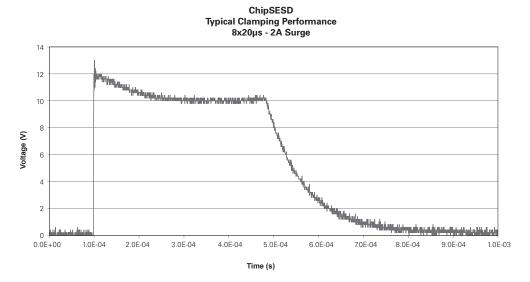


Figure CE2 - ESD Clamping Voltage - $8x20\mu s$, 2A Surge



[†] V_{br} is measured at test current I_T

Table CE3 - Dimensions in Millimeters and (Mils)*

Part Number	А	В	С	D	Figure
SESD0201P	0.60 ± 0.05	0.30 ± 0.05	0.30 ± 0.05	0.21 ± 0.07	CE3
	(23.62 ± 2.00)	(11.81 ± 2.00)	(11.81 ± 2.00)	(8.27 ± 2.80)	
SESD0402P	1.10 ± 0.10	0.50 ± 0.10	0.50 ± 0.10	0.25 ± 0.15	CE3
	(43.31 ± 0.40)	(19.69 ± 4.00)	(19.69 ± 4.00)	(9.84 ± 6.00)	

^{*} Round off approximation

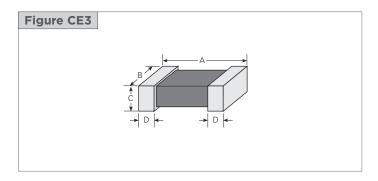


Table CE4 - PCB Pad Layout in Millimeters and (Mils)*

Part Number	L	S	W	Figure
SESD0201P	0.28 ± 0.01	0.19 ± 0.01	0.30 ± 0.01	CE4
	(11.00 ± 0.40)	(7.50 ± 0.40)	(11.80 ± 0.40)	
SESD0402P	0.61 ± 0.05	0.52 ± 0.05	0.50 ± 0.05	CE4
	(24.00 ± 2.00)	(21.00 ± 2.00)	(20.00 ± 2.00)	

^{*} Round off approximation

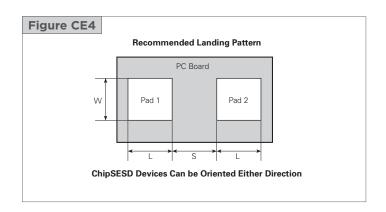


Table CE5 - Tape Specifications

Tape Dimension	SESD0201P1BN-0400-090	SESD0402P1BN-0450-090 Dimension (mm)	
EIA Mark	Dimension (mm)		
Д	0.35 ± 0.02	0.58 ± 0.03	
3	0.67 ± 0.02	1.20 ± 0.03	
	1.55 ± 0.05	1.55 ± 0.05	
	1.75 ± 0.05	1.75 ± 0.05	
=	3.50 ± 0.05	3.50 ± 0.05	
V	8.00 ± 0.10	8.00 ± 0.10	
0	4.00 ± 0.10	4.00 ± 0.10	
2	2.00 ± 0.05	2.00 ± 0.05	
2	2.00 ± 0.05	2.00 ± 0.05	
	0.42 ± 0.03	0.60 ± 0.03	

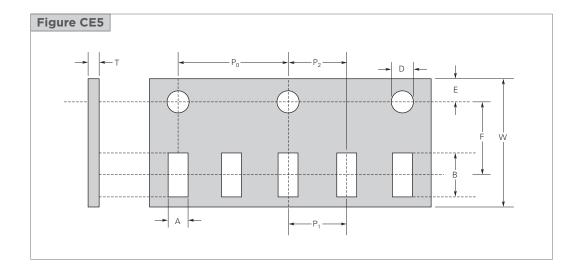
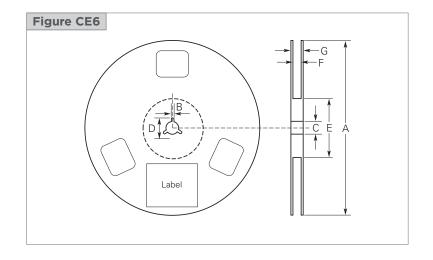


Table CE6 - Reel Specifications

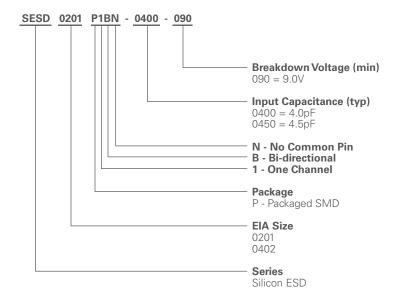
Reel Dimension	
EIA Mark	Dimension (mm)
А	178.0 ± 2.0
В	2.0 ± 0.5
С	13.0 ± 0.5
D	21.0 ± 0.8
E	62.0 ± 1.5
F	9.0 ± 0.5
G	13.0 ± 1.0



Definition of Terms

IL	Reverse Leakage Current @ V _{RWM}		
V _{RWM}	Working Peak Reverse Voltage		
V _{br}	Breakdown Voltage @ I _T		
I _T	Test Current		
V _{CL}	Clamping Voltage		

Part Numbering System



Notice:

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