308 Constitution Drive
Menlo Park, CA USA
www.circuitprotection.com

Single Channel
Silicon ESD Protector
Overvoltage Protection Device

PRODUCT: SESD0201X1BN-0015-096

DOCUMENT: SCD28655
REV LETTER: B
REV DATE: MARCH 17, 2014

Specification Status: RELEASED

BENEFITS
- Low capacitance; provides low insertion loss for high speed data signals
- Small size ESD protection diodes for high speed data signals (0201 size devices)
- Helps protect electronic circuits against damage from Electrostatic Discharge (ESD), surge and cable discharge events
- Assists equipment to pass IEC61000-4-2, level 4 testing

FEATURES
- Low capacitance: 0.15 pF (typ)
- Low leakage current: 25nA @ 5V (typ)
- Low clamping voltage: +14.0(typ)
  @ (tp=8x20µs, Ipp= 2.5A)
- ESD maximum rating per IEC61000-4-2 standard:
  - ±22kV contact discharge
  - ±22kV air discharge
- Surge: 2.5A (max) @ (tp=8x20µs) per IEC61000-4-5
- Small size and low profile: XDFN packages
- Bi-directional operation

PART NUMBERING

SESD 0201 X1BN - 0015 - 096

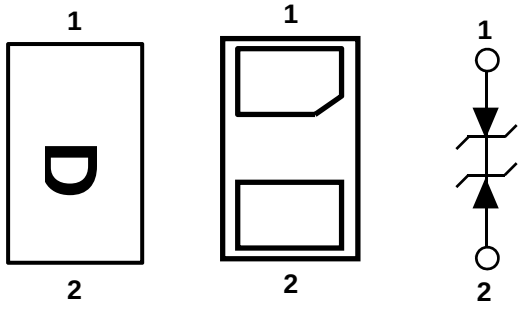
- Series / EIA Size
- Package Type: X - XDFN
- 1 - one channel
- N - No Common Pin
- B - Bi-directional
- Input Capacitance: 0.15 pF (typ)
- Breakdown Voltage: 9.6V (typ)

APPLICATIONS
- Consumer, mobile and portable electronics
- Tablet PC and external storage with high speed interfaces
- Ultra-high speed data lines
- USB 3.0/2.0, HDMI 1.3/1.4, DisplayPort, V-by-One HS, and LVDS interfaces
- Applications requiring high ESD performance in small packages

PART MARKING

D
- No Marking Indicator - Bidirectional
- Factory Code Marking - Factory: Single alphanumeric character

PIN CONFIGURATION AND SCHEMATIC



*Drawing not to scale

MATERIALS INFORMATION

RoHS Compliant — Directive 2000/53/EC Compliant
ELV Compliant — Directive 2002/95/EC Compliant
Halogen Free * — HF
Lead Free — Pb

* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm
SESD devices meet MSL-1 Requirements
DFN case epoxy meets UL 94 V-0

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DEVICE MAXIMUM RATING

ESD Withstand[1] (IEC 61000-4-2, level 4)		Temperature		Peak Current (tp=8x20µs)
Contact (kV)	Air (kV)	Operating (°C)	Storage (°C)	Ipp (A)
± 22	± 22	-55 to +125	-55 to +150	2.5

[1] 22kV @ 10 pulses; 20kV @ 100 pulses; 8kV @ 1,000 pulses (under IEC6100-4-2)

- Device maximum rating @ T = 25ºC, unless otherwise specified.
- Caution: Stress exceeding Device Maximum Ratings may damage the device. Prolonged exposure to stresses above the recommended operating conditions may affect device reliability.

DEVICE ELECTRICAL CHARACTERISTICS

Input Capacitance @ V_R = 0V, f = 3GHz (pF)	Breakdown Voltage (V) V_{BR} @ I_T=1mA (V)	Reverse Working Voltage (V)	Reverse Leakage Current (A) I_L @ V_{RWM}=5.0V (nA)	Clamping Voltage V_{CL} @ Ipp=2.5A (V)
Typ	Typ	Typ	Typ	Typ
0.15	+9.60 / -9.60	7.00	25.0	+14.0

- All device electrical characteristics @ T = 25ºC, unless otherwise specified.

FIGURE 1. INSERTION LOSS DIAGRAM

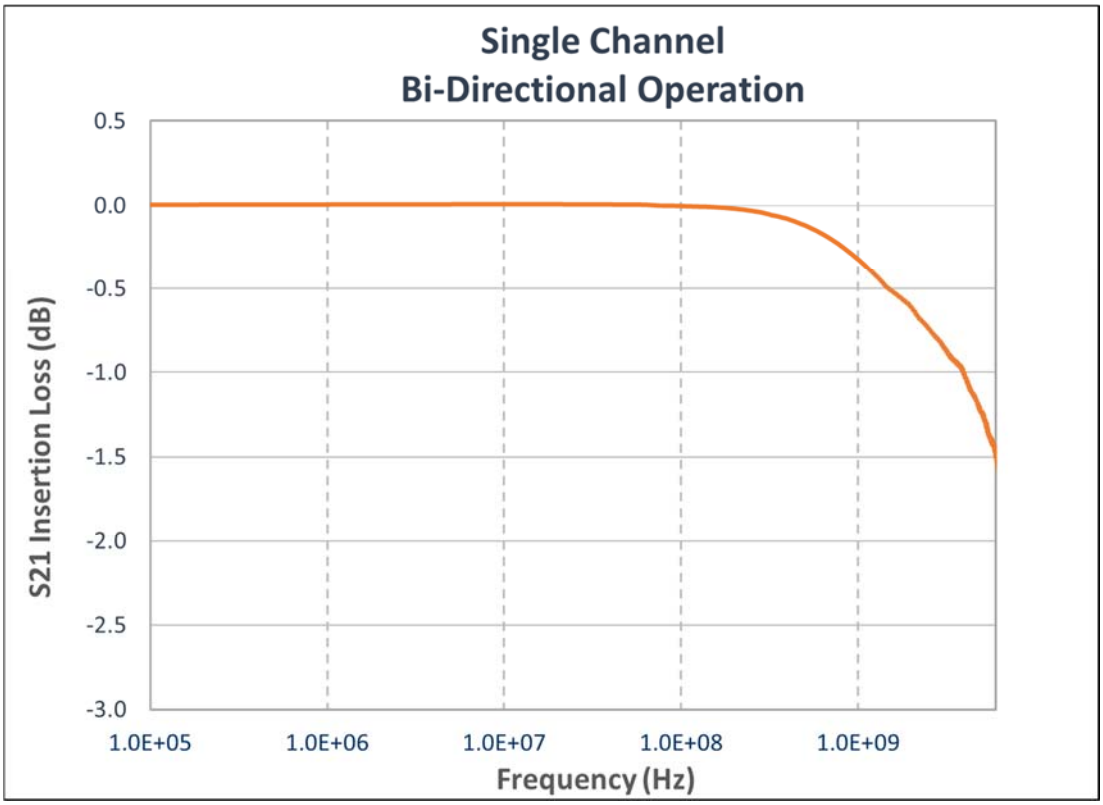

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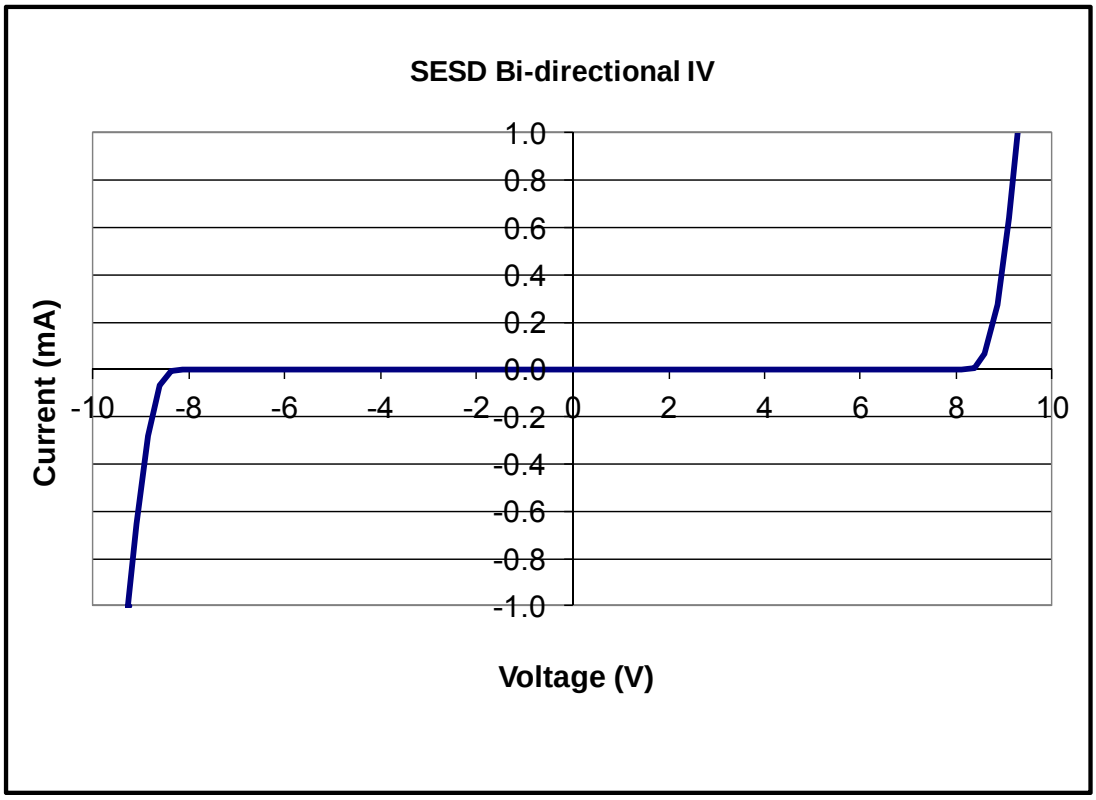
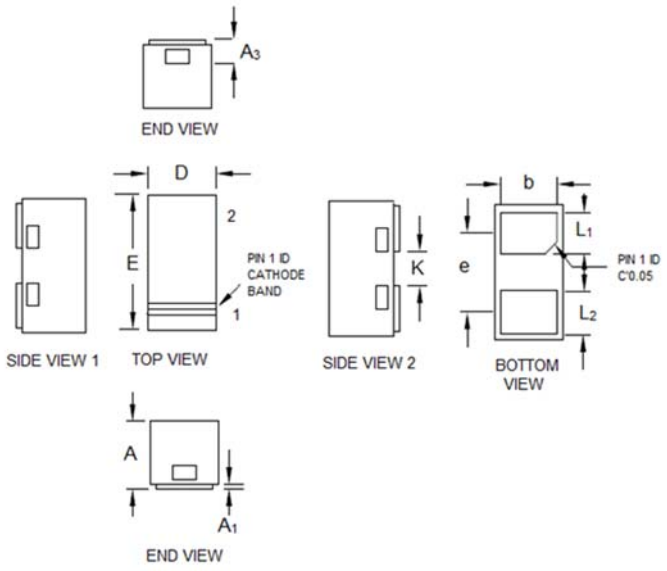
FIGURE 2. DEVICE IV CURVE



DEVICE DIMENSIONS



	SESD0201					
	Millimeters (mm)			Inches (in)		
Dim	Min	Nom	Max	Min	Nom	Max
A	0.28	0.30	0.32	0.011	0.012	0.013
A_1	0	-	0.05	0	-	0.002
A_3	0.102 ref.			0.004 ref.		
D	0.25	0.30	0.35	0.010	0.012	0.014
E	0.55	0.60	0.65	0.022	0.024	0.026
K	0.11	0.17	0.22	0.004	0.007	0.009
b	0.20	0.25	0.30	0.008	0.010	0.012
L_1	0.13	0.18	0.23	0.005	0.008	0.009
L_2	0.14	0.19	0.24	0.006	0.007	0.009
e	0.356 BSC			0.014 BSC		

BSC – Basic Spacing between Centers

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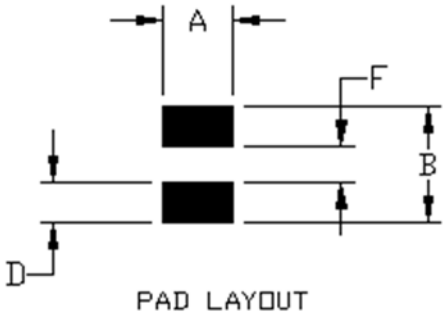
RECOMMENDED LANDING PATTERN:

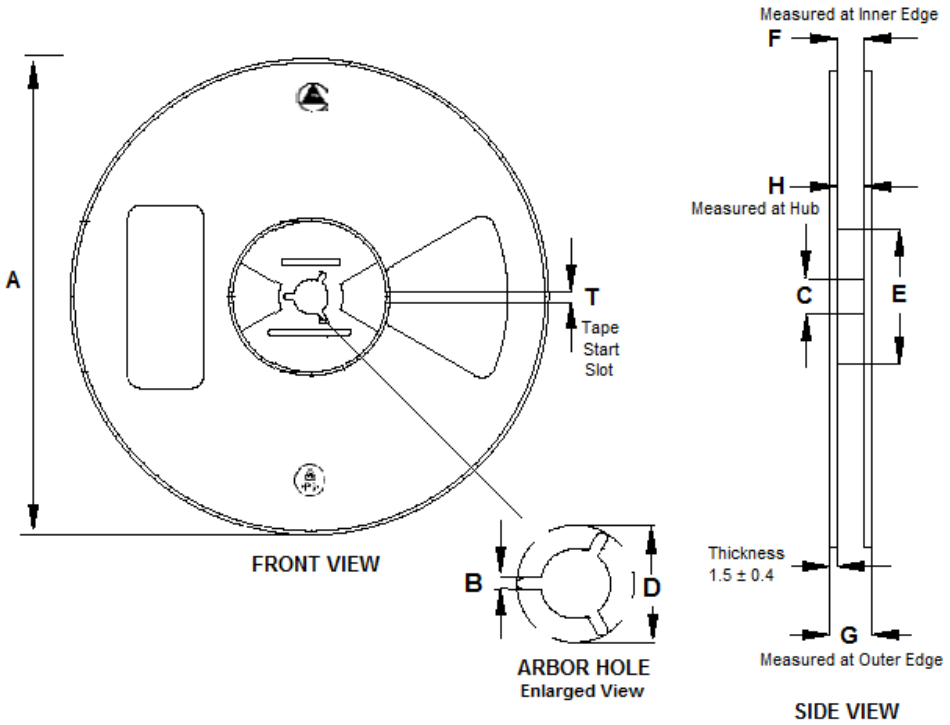


SESD Landing Pad Layout 0201 Package		
Symbol	**Milimeters (mm)**	**Inches (in)**
A	0.32	0.013
B	0.62	0.024
D	0.24	0.009
F	0.14	0.006

PACKAGING

Packaging	Tape & Reel	Standard Box
SESD0201X1BN-0015-096	15,000	75,000

REEL DIMENSIONS



Dimensions	A	B	C	D	E	F	G	H
(mm)	180 ± 2.00	1.50 (min)	13.10 ± 0.20	20.20 (min)	60 ± 1.00	8.75 ± 1.00	11.6 ± 1.00	9.4 (max)

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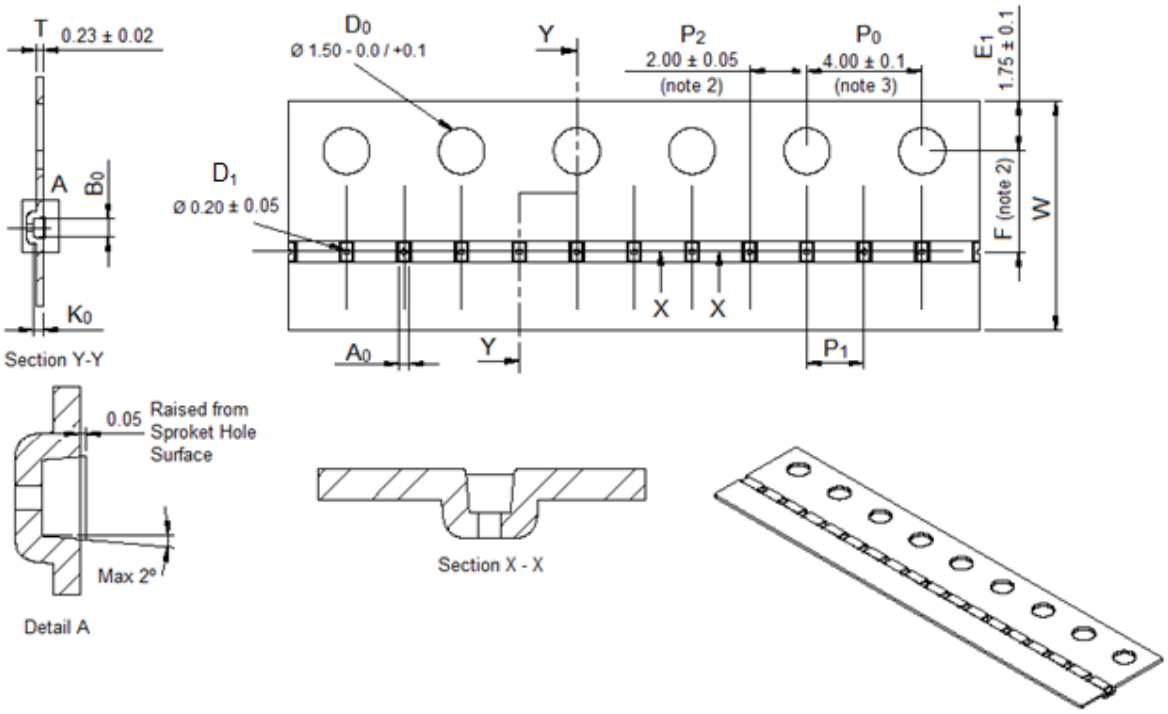
CARRIER TAPE DIMENSIONS



A_0	0.36 ± 0.03
B_0	0.66 ± 0.03
K_0	0.33 ± 0.03
F	3.50 ± 0.05
P_1	2.00 ± 0.10
W	8.00 ± 0.10

Note 1. All dimensions in mm
Note 2. Measured from centerline of pocket to centerline of sprocket hole
Note 3. Cumulative tolerance of 10 sprocket holes is ± 0.20
Note 4. Tolerances unless noted ± 0.20

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SOLDER REFLOW RECOMMENDATION

A	Temperature ramp up 1	From ambient to Preheating temperature	30s to 60s
B	Preheating	140°C - 160°C	60s to 120s
C	Temperature ramp up 2	From Preheating to Main heating temperature	20s to 40s
D	Main heating	at 200°C at 220°C at 240°C at 260°C	60s ~ 70s 50s ~ 60s 30s ~ 40s 5s ~ 10s
E	Cooling	From main heating temperature to 100°C	4°C/s (max)

FIGURE 3. REFLOW PROFILE