SuperESD - SENC3Dxx1U

1. Description

The SENC3Dxx1U is a Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast Transients (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
    - ±30kV Contact Discharge
    - ±30kV Air Discharge
- IEC 61000-4-4 EFT Protection
    - 40A (5/50ns)
- 350W Peak pulse Power (8/20us)

- RoHS compliance
- Unidirectional configuration
- Low clamping voltage
- Working voltage:
  3.3V/5V/7V/12V/15V/24V/36V

3. Applications

- Interfaces
    - USB 2.0/1.1
    - GPIO
    - Ethernet 10/100/1000 Mbps
    - Audio
    - Pushbuttons

- End Equipment
    - Industrial and Serve Robots
    - Laptops and Desktops
    - TV and Monitors
    - Wearables
    - Handheld-wireless Systems

4. Ordering Information

Part Number	Package	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
SENC3Dxx1U	SOD323	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches
Marking for the SENC3Dxx1U series						
V_{RWM}	3.3V	5V	7V	12V	15V	24V	36V
Marking	|03W	|05W	|07W	|12W	|15W	|24W	|36W

Table-1   Ordering information

5. Pin Configuration and Functions
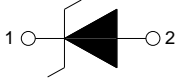
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO	Marking	1 ○—▷—○ 2
2	GND	Connect to GND		

Table-2   Pin configuration

6. Specification

6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25℃	P_{pk}	-	350	W
Peak pulse current (tp=8/20us)@25℃	I_{PP}		Refer to Table-5	A
ESD (IEC61000-4-2 air discharge) @25℃	V_{ESD}	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V_{ESD}	-	±30	kV
Junction temperature	T_J	-	125	℃
Operating temperature	T_{OP}	-40	85	℃
Storage temperature	T_{STG}	-55	150	℃
Lead temperature	T_L	-	260	℃

Table-3   Absolute Maximum rating

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6.2. Electrical Characteristics

| Symbol	Description
V_{RWM}	Rated reverse stand-off voltage
V_{BR}	Minimum breakdown voltage @I_T = 1mA
V_{CL}	Clamping voltage
I_{PP}	Maximum peak pulse current
I_R	Reverse leakage current @V_{RWM}
C_O	Typical line capacitance (V_{IO}=0V, V_{P-P} = 30mV, f = 1MHz)

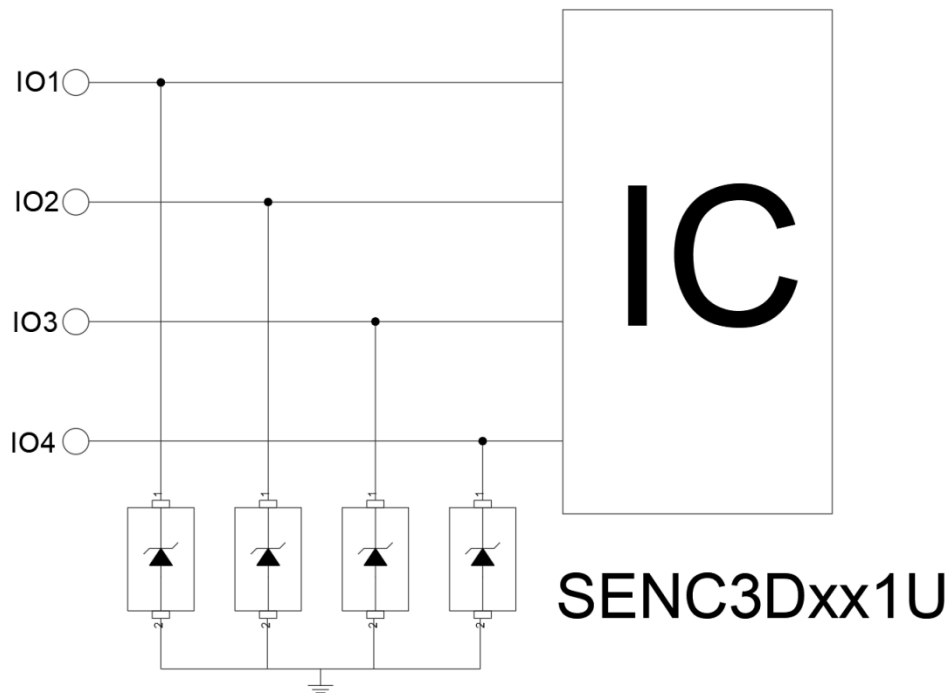Table-4   Parameters Description

At TA = 25℃ unless otherwise noted

Part Number	V_{RWM}	V_{BR}	V_{CL}@I=1A	I_{PP}	V_{CL}@I=I_{PP}	I_R	C_O
	(V)	(V)	(V)	(A)	(V)	(uA)	(pF)
SENC3D3V1U	3.3	4.5	8.0	24.0	19.0	1.0	300
SENC3D5V1U	5.0	6.5	9.0	20.0	20.0	1.0	300
SENC3D7V1U	7.0	7.5	10.0	15.0	23.0	1.0	200
SENC3D12V1U	12.0	13.3	19.0	12.0	33	1.0	150
SENC3D15V1U	15.0	16.5	24	9.0	50	1.0	120
SENC3D24V1U	24.0	26.0	38	6.0	60	1.0	80
SENC3D36V1U	36.0	38.0	55	4.0	70	1.0	50

Table-5   Electrical Characteristics for All Series

7. Typical Characteristic

Non-repetitive peak pulse power vs. pulse time

8/20us curve

T1= 1.25T = 8±20% us
T2= 20±20% us
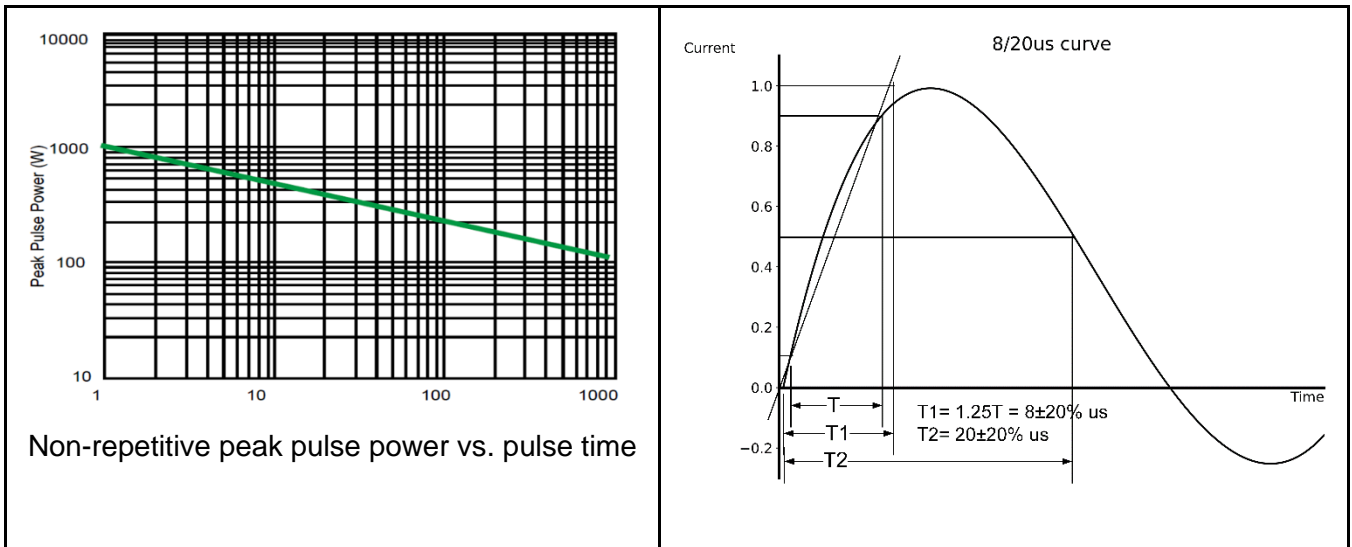
8. Typical Application

Pic-3   Typical Internet 1G Interface Application

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9. Dimension

SOD323
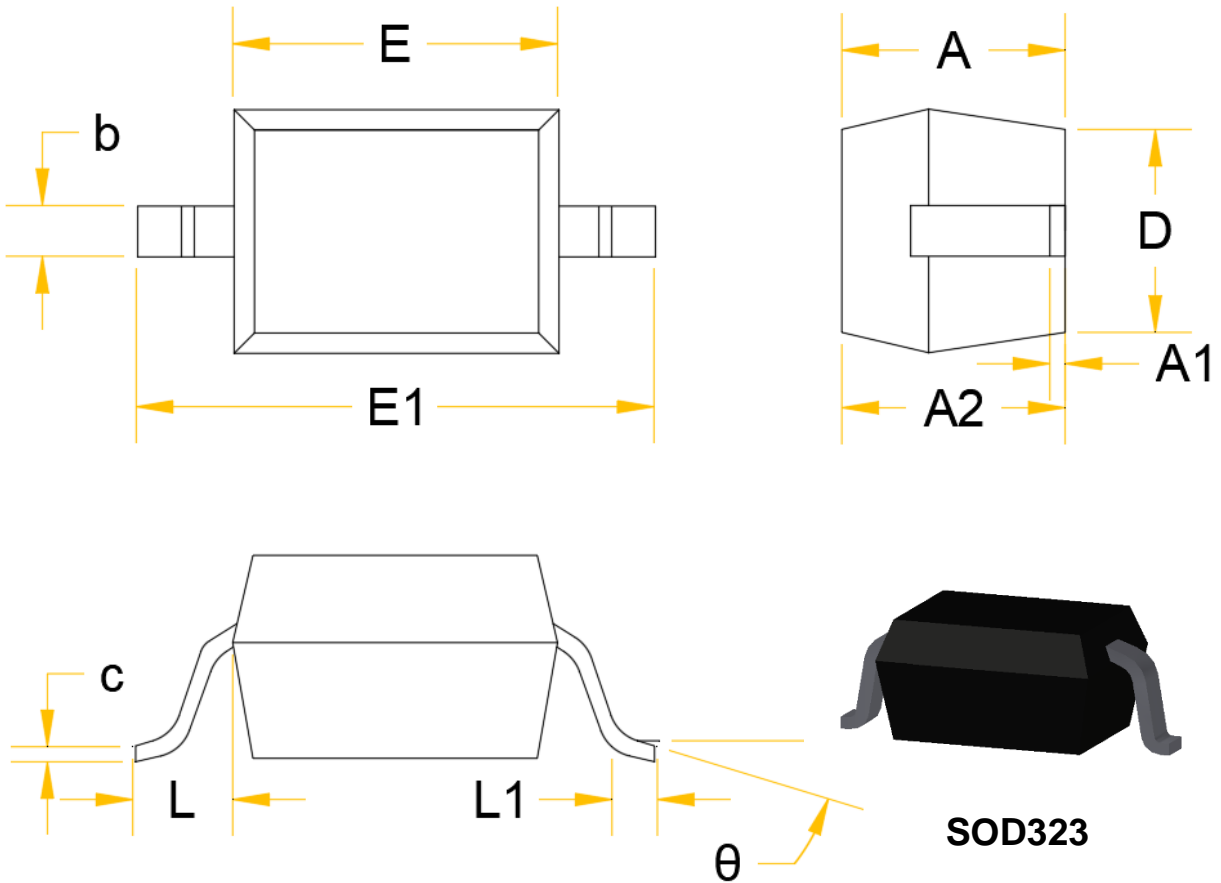
Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A		1.000		0.039
A1	0.000	0.100	0.000	0.004
A2	0.800	0.900	0.031	0.035
b	0.250	0.350	0.010	0.014
C	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.550	2.750	0.100	0.108
L	0.475REF		0.019REF	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

Table-6   product dimensions

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10. Recommended Land Pattern
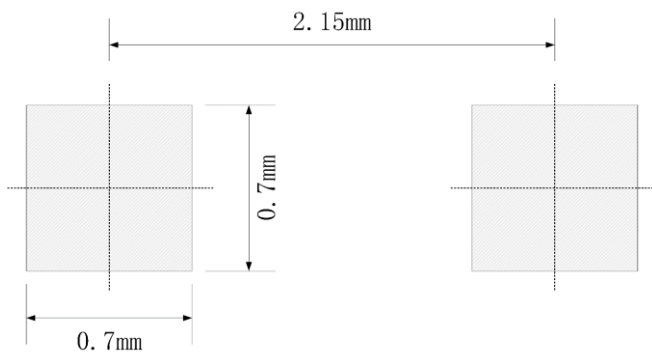
Note:
1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm

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