

1-Line, Bi-directional, Ultra-low Capacitance

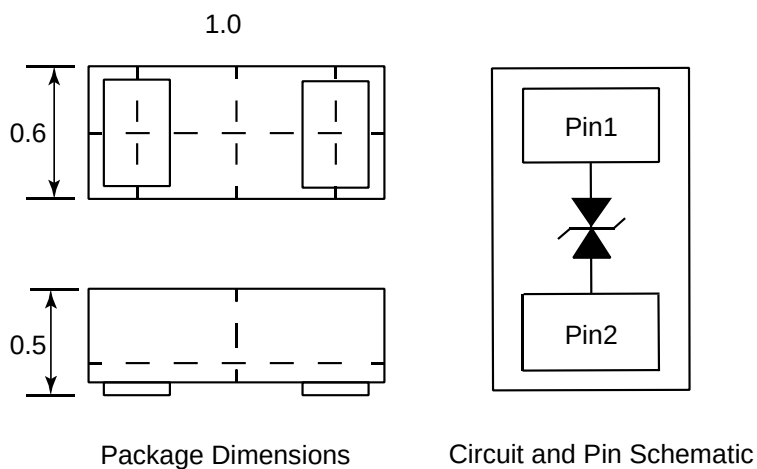
Description

SESDU3V3DNG2 is an ultra-low capacitance TVS (Transient Voltage Suppressor) designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge). SESDU3V3DNG2 may be used to provide ESD protection up to $\pm 30\text{KV}$ air and $\pm 30\text{KV}$ contact discharge according to IEC61000-4-2, and withstand peak pulse current up to 10A (8/20 μs) according to IEC61000-4-5.

Features

- Ultra small package: 1.0x0.6x0.5mm
- Ultra low capacitance: 0.6pF
- Protects one data or power line
- Low operating voltage: 3.3V
- 2-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 10A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Mechanical Characteristics

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- USB 2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and e SATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks

Ordering Information

Part Number	Shipping	Reel Size
SESDU3V3DNG2	10000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	50	W
Peak Pulse Current (8/20μs)	I _{PP}	10	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Lead temperature	T _L	260	°C
Junction Temperature	T _J	125	°C
Operating Temperature Range	T _{OP}	-40 ~ +125	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Punch-Through Voltage	V _{PT}	3.5			V	I _T = 2μA
Snap-Back Voltage	V _{SB}	0.8			V	I _T = 50mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 3.3V
Clamping voltage ¹⁾	V _{CL}		7		V	I _{PP} =16A, t _p =100ns
Dynamic resistance ¹⁾	R _{DYN}		0.27		Ω	
Clamping Voltage ²⁾	V _C		7		V	V _{ESD} = 8kV
Clamping Voltage ³⁾	V _C		4		V	I _{PP} = 1A (8/20μs pulse)
Clamping Voltage ³⁾	V _C		5		V	I _{PP} = 10A (8/20μs pulse)
Junction Capacitance	C _J		0.6		pF	V _R = 0V, f = 1MHz

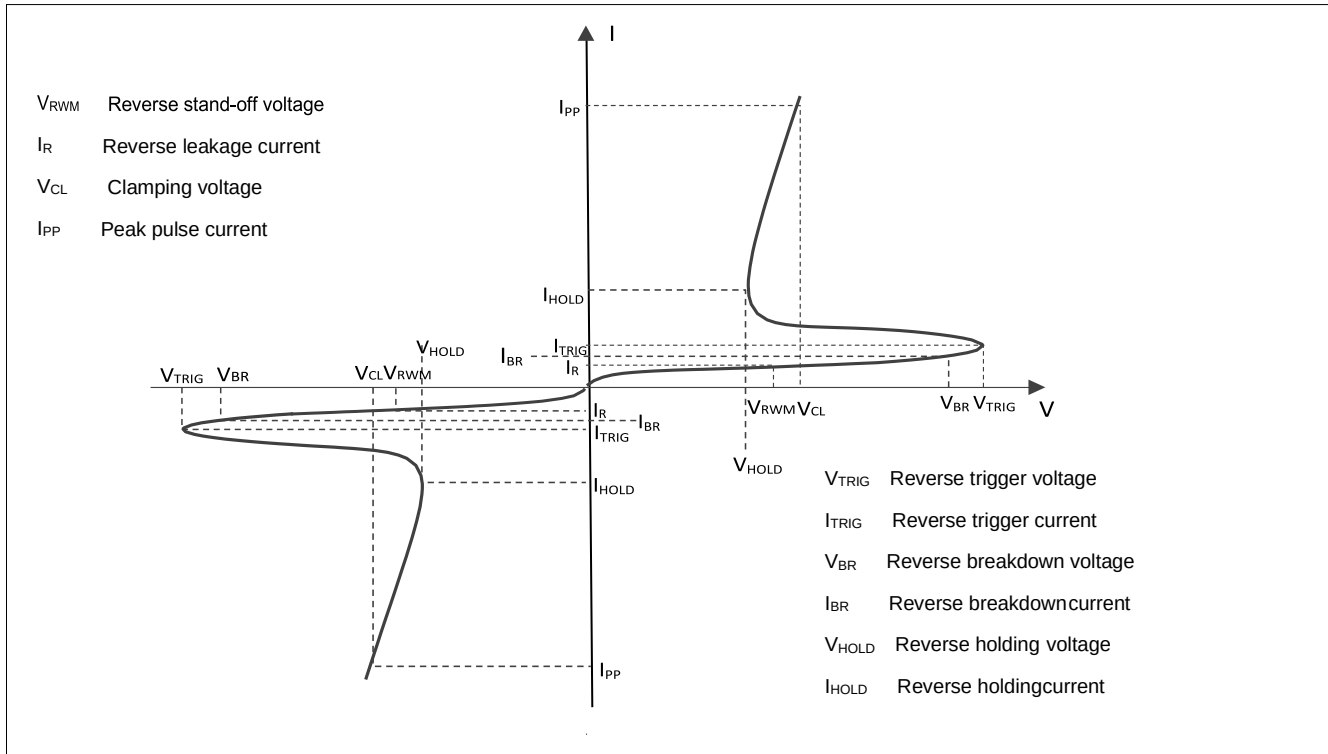
Notes:

1) TLP parameter: Z₀ = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

2) Contact discharge mode, according to IEC61000-4-2.

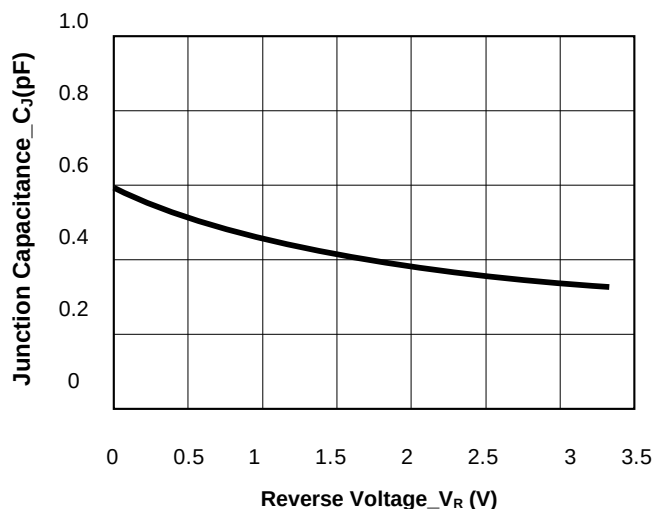
3) Non-repetitive current pulse, according to IEC61000-4-5.

Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)

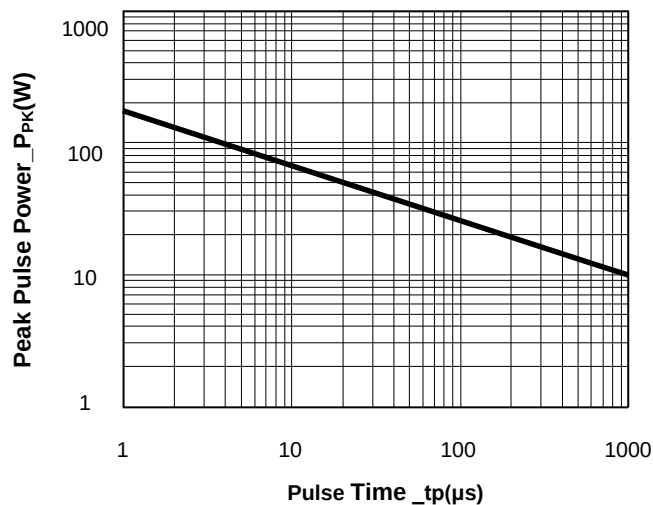


Definitions of electrical characteristics

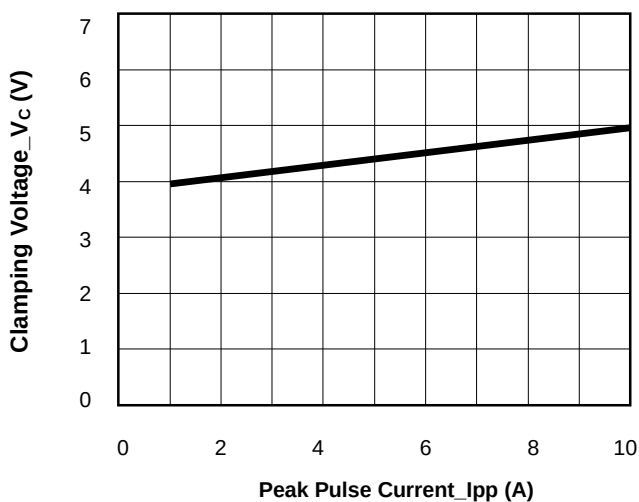
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



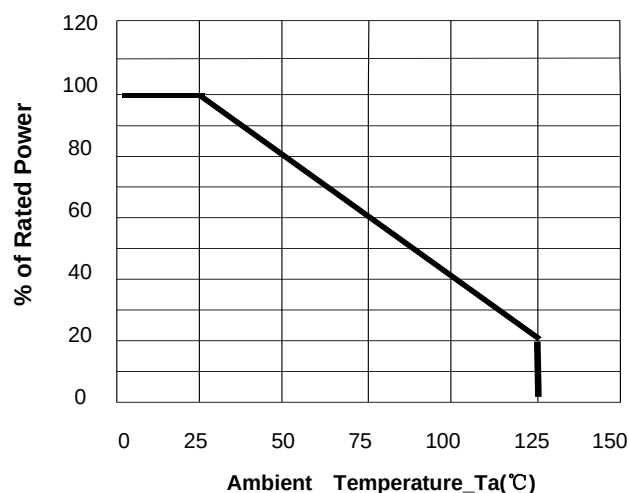
Junction Capacitance vs. Reverse Voltage



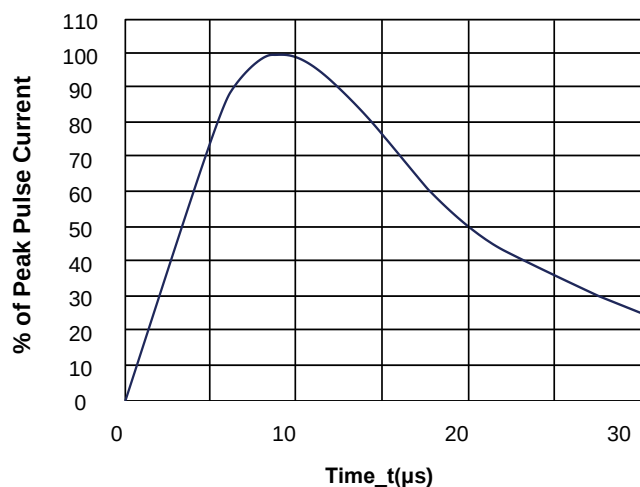
Peak Pulse Power vs. Pulse Time



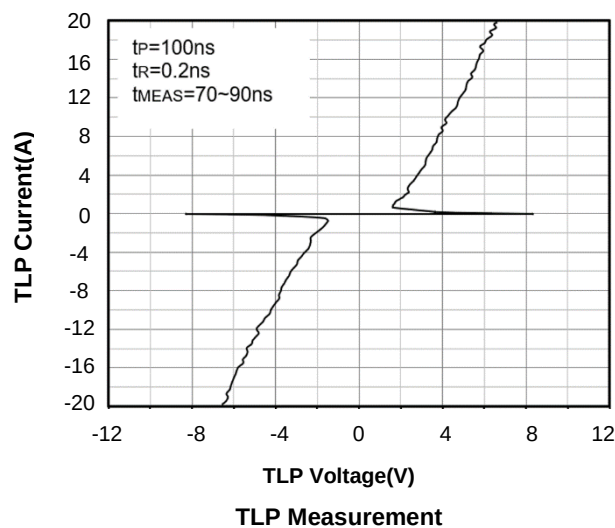
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



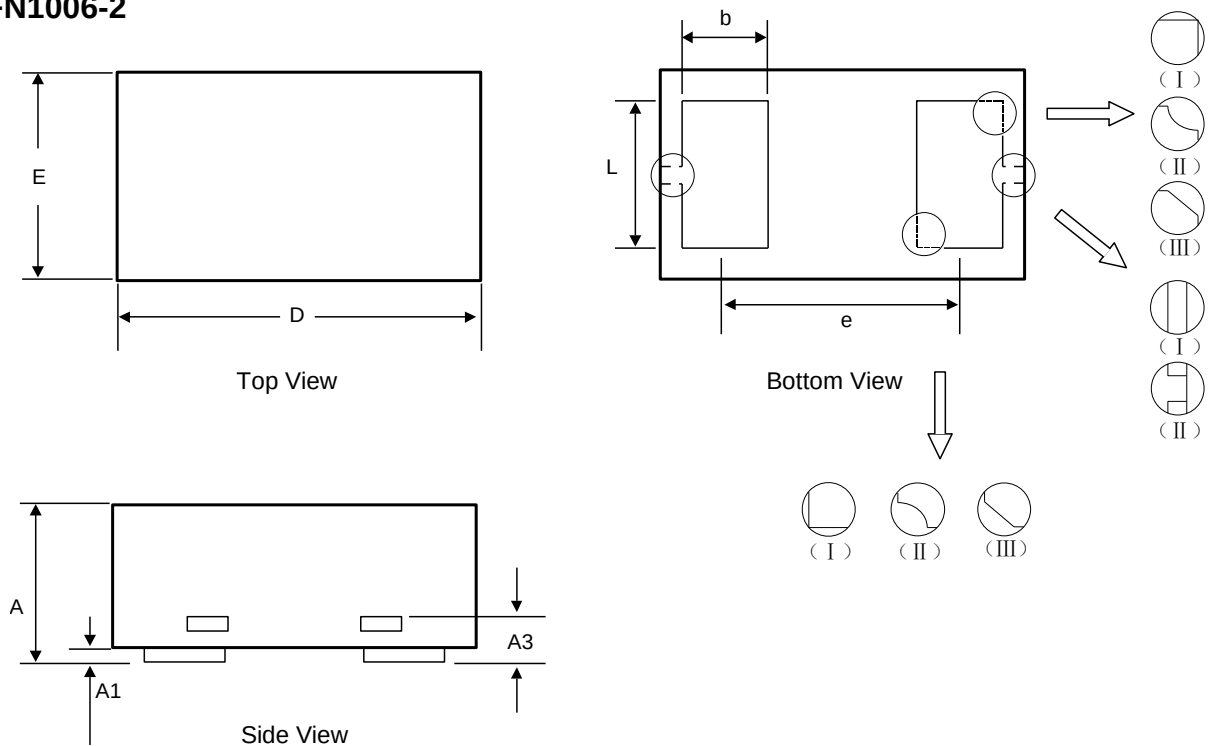
8/20μs Pulse Waveform



TLP Measurement

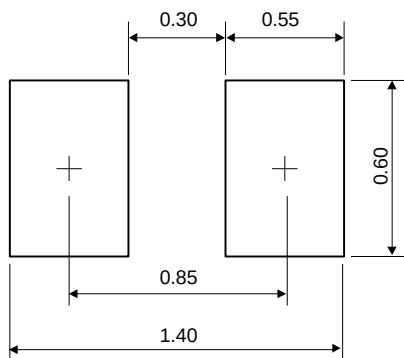
Package Outline

DFN1006-2



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.550
A1	0.000	0.020	0.050
A3	0.125 Ref.		
D	0.950	1.000	1.075
E	0.490	0.600	0.675
b	0.200	0.250	0.300
L	0.450	0.500	0.550
e	0.650 BSC		

Recommended PCB Layout (Unit: mm)

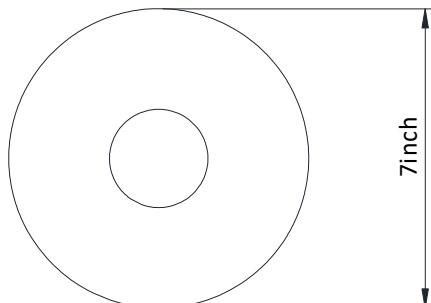


Notes:

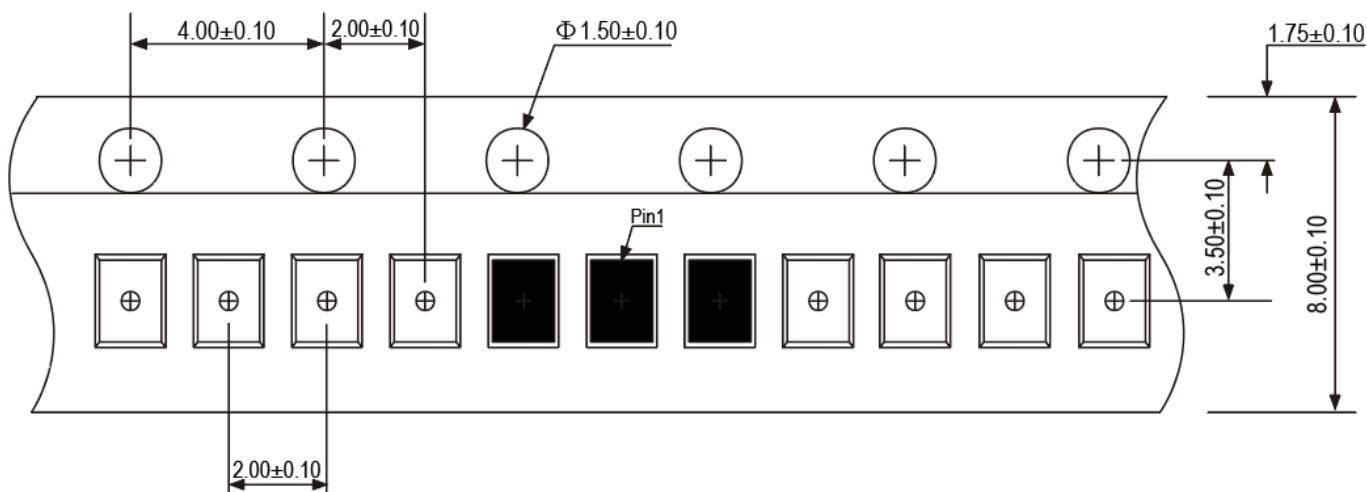
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

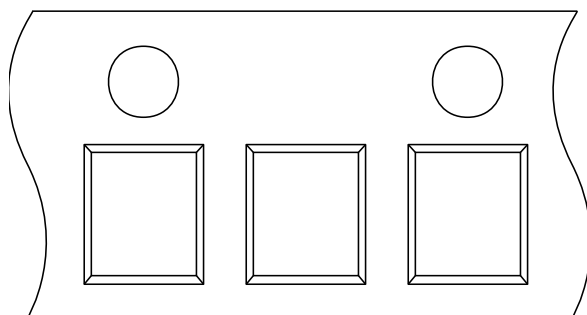
Reel Dimensions



Tape Dimensions



Unit:mm



User Direction of Feed

V 1.0