

1. Description

The SP2555NUTG(ES) is Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast transient (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
 - $\pm 30\text{kV}$ Contact Discharge
 - $\pm 30\text{kV}$ Air Discharge
- 1250W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 3.3V
- Low leakage current
- RoHS compliant
- Protecting 4 unidirectional lines
- Ultra Low Junction capacitance: 3.0 pF TYP. (IO-GND)

3. Applications

- USB & HDMI Interfaces
- Portable electronics
- Servers, notebooks, and desktop PCs
- Display Port 1.3, eSATA
- Digital Visual Interface (DVI)
- PoE

4. Ordering Information

Part Number	Package	Marking	Material	Packaging	Quantity per reel	Flammability Rating	Reel Size
SP2555NUTG(ES)	DFN2030-10L	.30F3V4UA/LOT	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

Pin	Name	Description	Outline	Circuit Diagram
1,2,4,5, 6,7,9,10	IO	Connect to IO		
3,8	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°C	P _{pk}	-	1250	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}	-	50	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±30	kV
Junction temperature	T _J	-	150	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

6.2. Electrical Characteristics

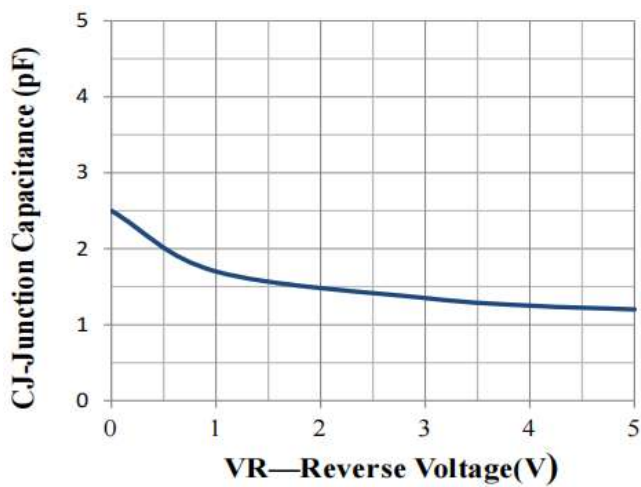
At TA = 25°C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$, IO-GND	3.5			V
Reverse Leakage Current	I_R	$V_{RWM}=3.3V$			0.2	μA
Clamping Voltage	V_{CL}	$I_{PP}=1A$, $t_p=8/20\mu s$, Any I/O to Ground			10	V
Clamping Voltage	V_{CL}	$I_{PP}=30A$, $t_p=8/20\mu s$, Any I/O to Ground			18	V
Clamping Voltage	V_{CL}	$I_{PP}=50A$, $t_p=8/20\mu s$, Line-to-Line, two I/O pins connected together on each line (Note 1)			25	V
Junction Capacitance	C_J	$V_R=0V$, $f=1MHz$, Any I/O to Ground		3.0	5.0	pF
		$V_R=0V$, $f=1MHz$, Between I/O pins		1.8	3.0	

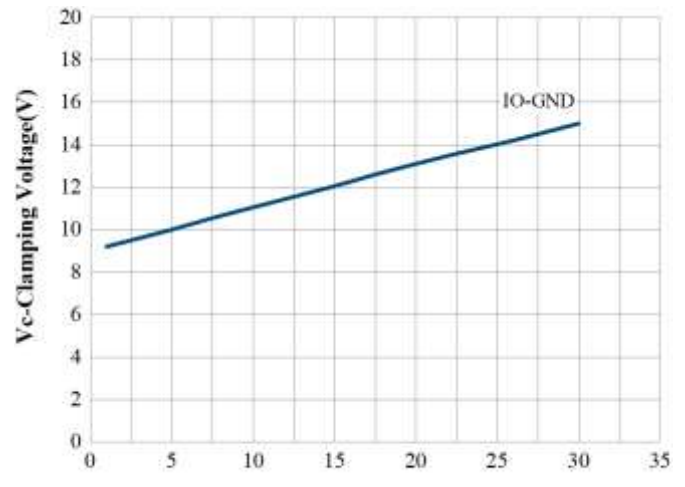
Table-4 Electrical Characteristics

Note 1: Ratings with 2 pins connected together per the recommended configuration (ie pin 1 connected to pin 10, pin 2 connected to pin 9, pin 4 connected to pin 7, and pin 5 connected to pin 6).

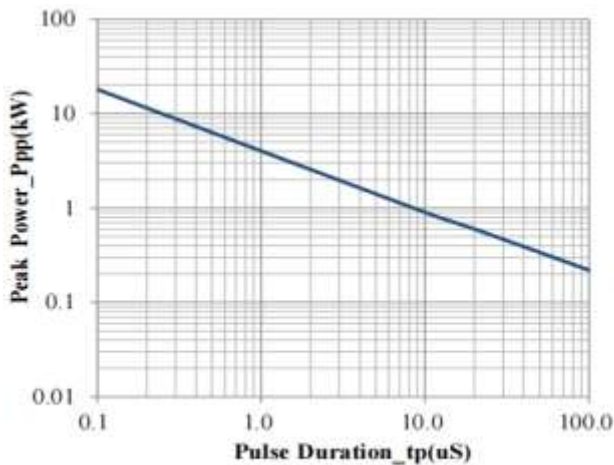
7. Typical Characteristic



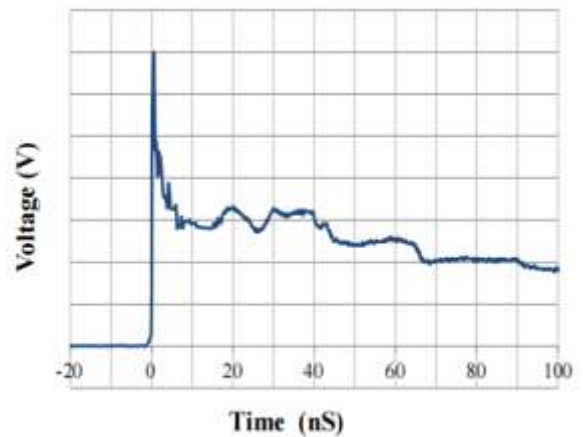
Junction Capacitance vs. Reverse Voltage



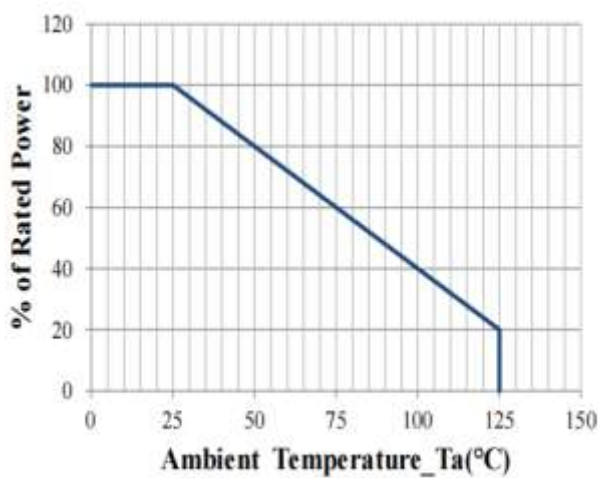
Clamping Voltage vs. Peak Pulse Current



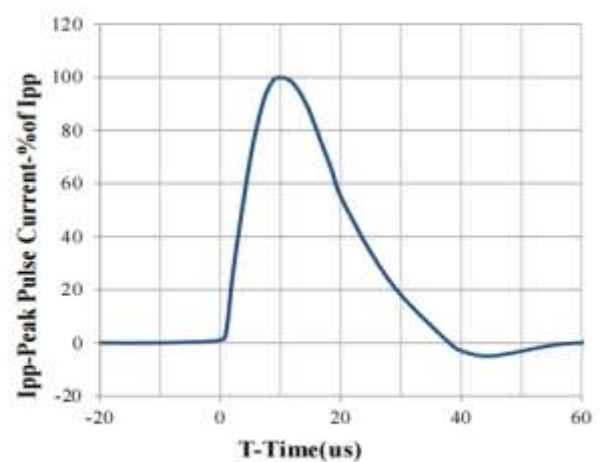
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



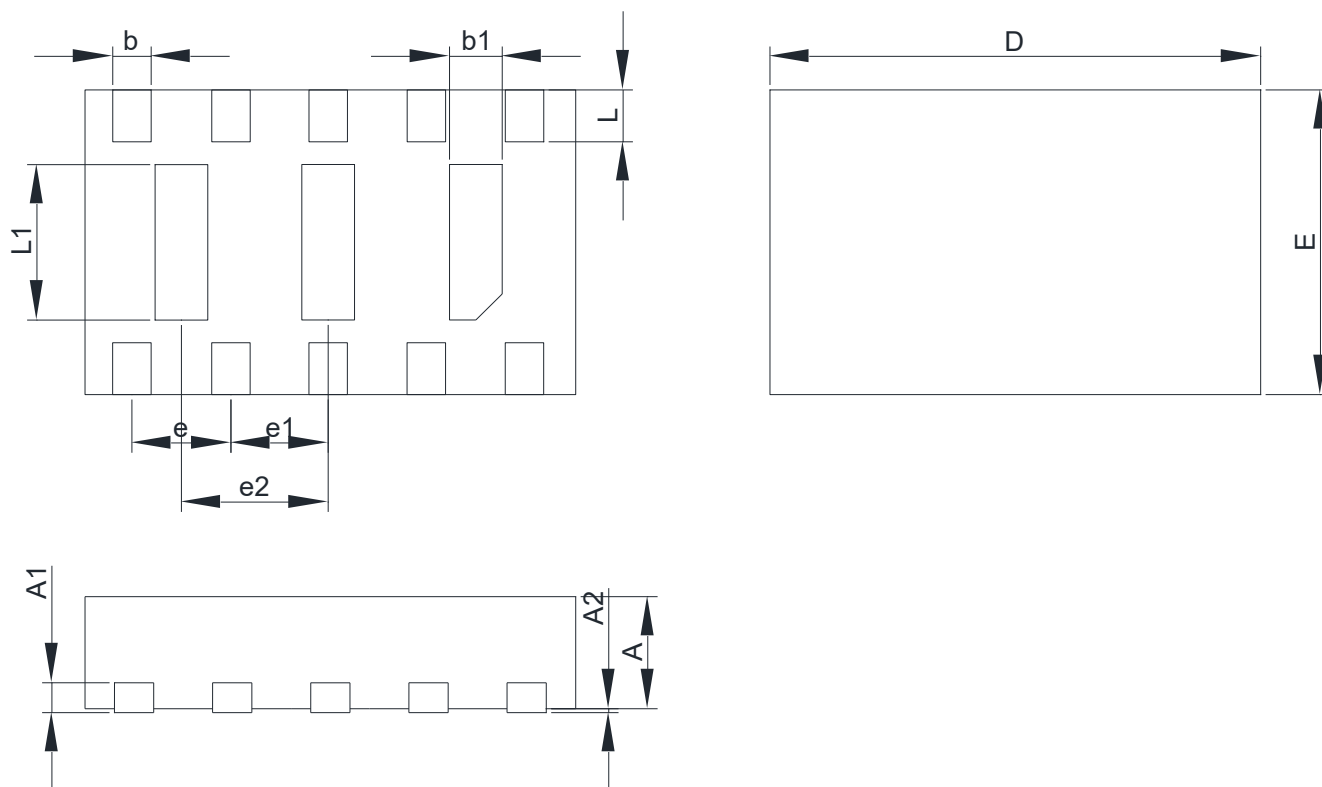
Power Derating Curve



8 X 20us Pulse Waveform

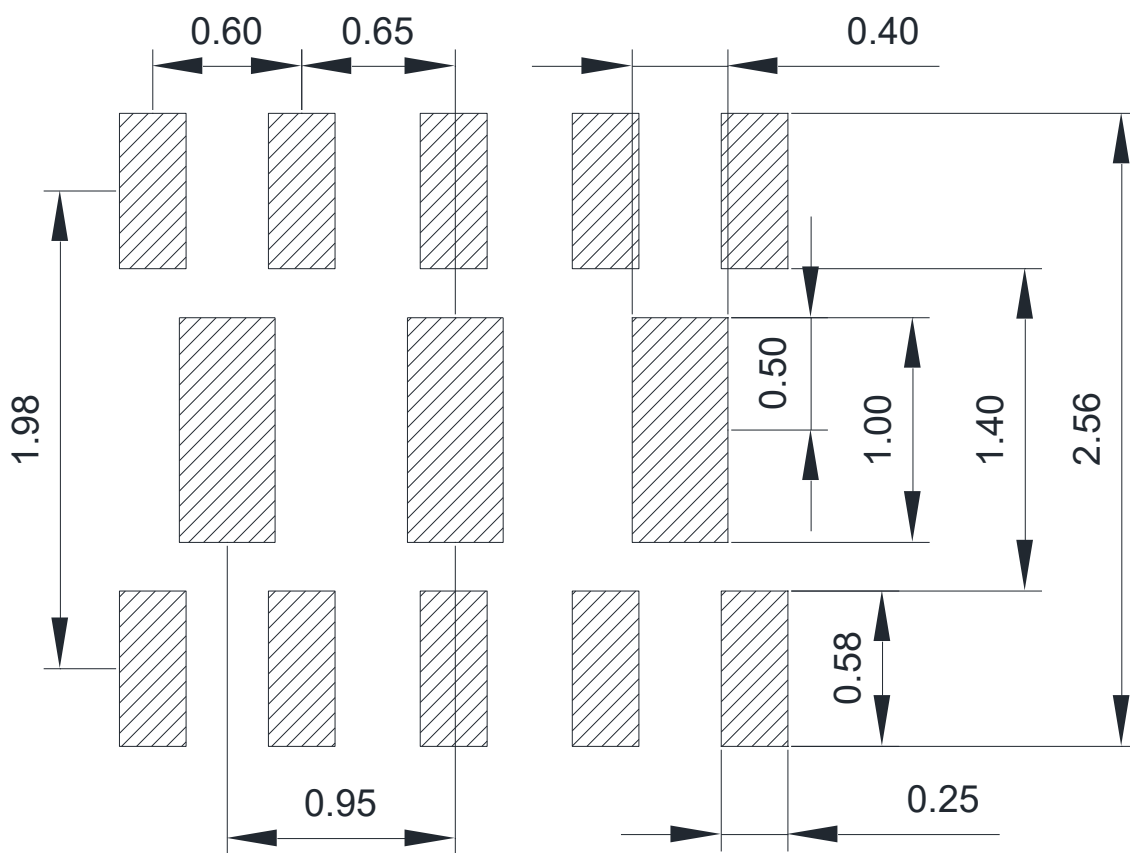
8. Dimension (DFN2030-10L)

POD (T)



Dimensions in Millimeter							
Symbol	Min.	Nom.	Max.	Symbol	Min.	Nom.	Max.
D	2.95	3.00	3.05	e	0.60BSC		
E	1.95	2.00	2.05	e1	0.65BSC		
b	0.15	0.20	0.25	e2	0.95BSC		
L	0.25	0.30	0.35	A	0.45	0.50	0.55
b1	0.30	0.35	0.40	A1	0.15REF		
L1	0.95	1.00	1.05	A2	0.00	-	0.05

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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