

SuperESD - ESD8551-ES

1. Description

The ESD8551-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 15kV ESD pulses using the IEC61000-4-2 air discharge method.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 15\text{kV}$ Contact Discharge
 - $\pm 15\text{kV}$ Air Discharge
- 50W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 3.3V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Ultra Low Junction capacitance: 0.25pF Typ.

3. Applications

- Control & monitoring systems
- Portable electronics
- Servers, notebooks, and desktop PCs
- Set-top box
- Communication systems
- PoE

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESD8551-ES	DFN1006-2L	3B	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

ESD8551-ES

Rev-1.3

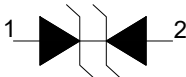
Pin	Name	Description	Outline	Circuit Diagram
1	IO1	Connect to IO		
2	IO2	Connect to IO		

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}	-	50	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		8	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	± 15	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	± 15	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

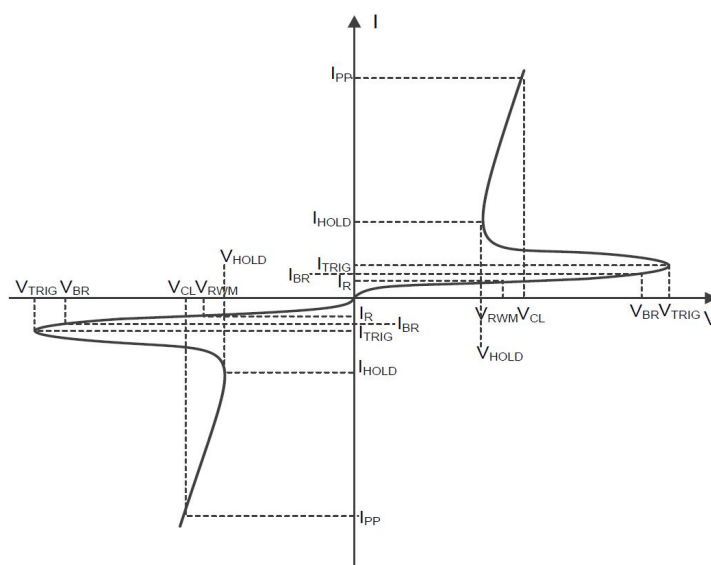
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

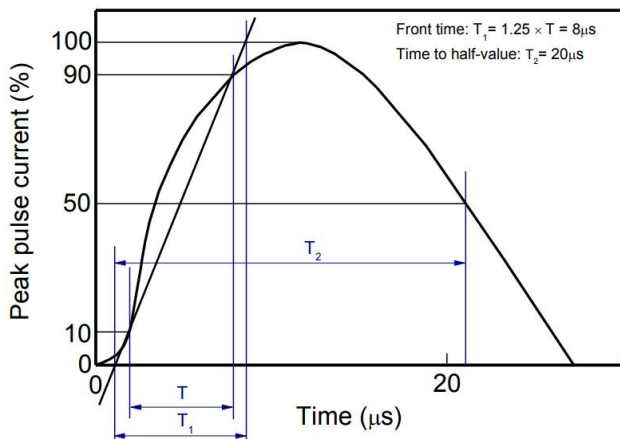
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	5.5	8.0		V
Reverse Leakage Current	I_R	$V_{RWM}=3.3V$			100	nA
Clamping Voltage	V_{CL}	$I_{PP}=1A$; $t_p=8/20\mu s$		2.5	3.0	V
Clamping Voltage	V_{CL}	$I_{PP}=8A$; $t_p=8/20\mu s$		4.6	6.0	V
Junction Capacitance	C_J	$V_R=0V$; $f=1MHz$		0.25		pF

Table-4 Electrical Characteristics

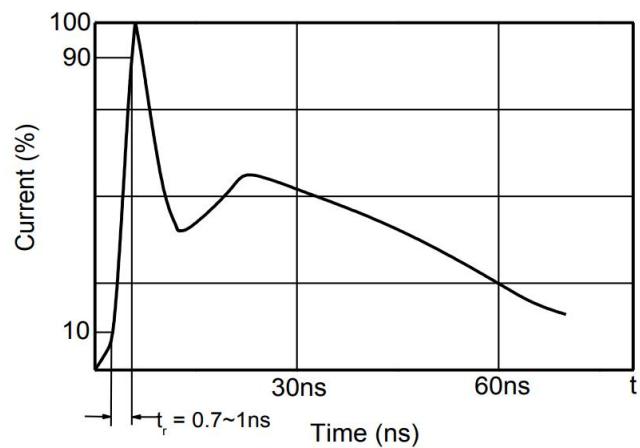
Symbol	Parameters
V_{RWM}	Reverse stand-off voltage
I_R	Reverse leakage current
V_{BR}	Reverse breakdown voltage
I_{BR}	Reverse breakdown current
V_{CL}	Clamping voltage
V_{TRIG}	Reverse trigger voltage
I_{TRIG}	Reverse trigger current
V_{HOLD}	Reverse holding voltage
I_{HOLD}	Reverse holding current
I_{PP}	Peak pulse current



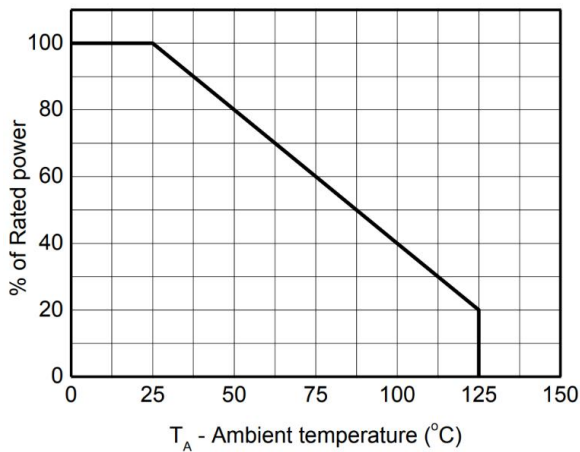
7. Typical Characteristic



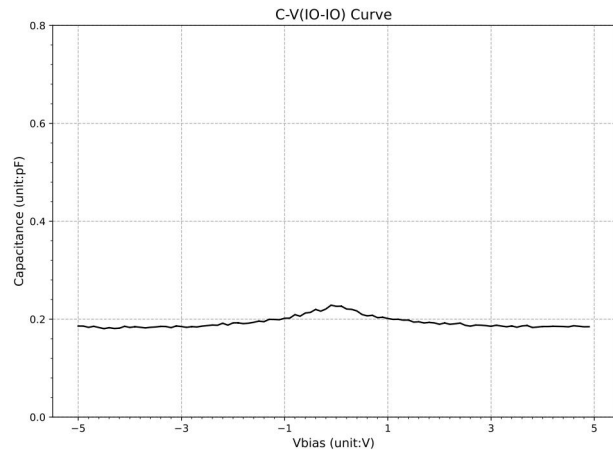
8/20μs waveform per IEC61000-4-5



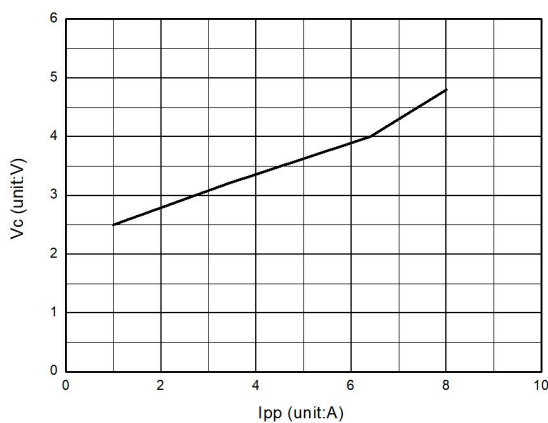
Contact discharge current waveform per IEC61000-4-2



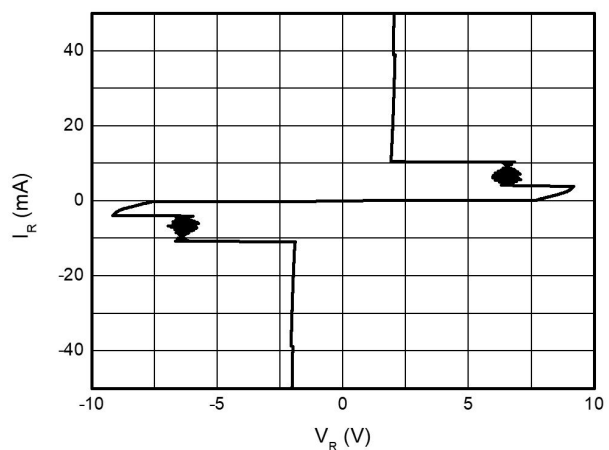
Power derating vs. Ambient temperature



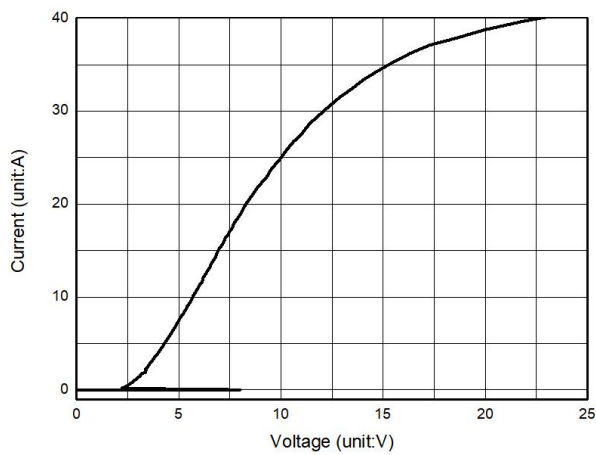
Capacitance vs. Reverse voltage



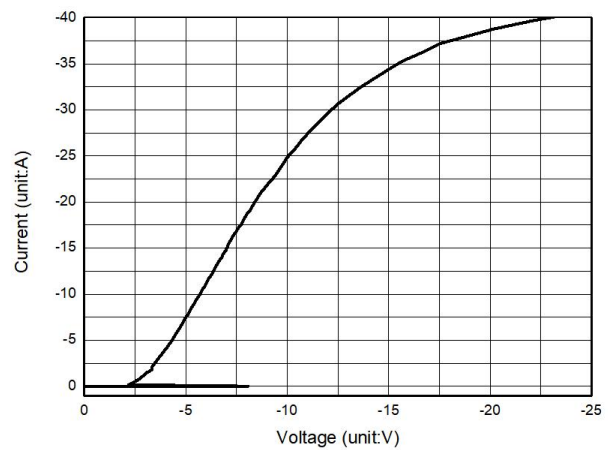
Clamping voltage vs. Peak pulse current



IV curve

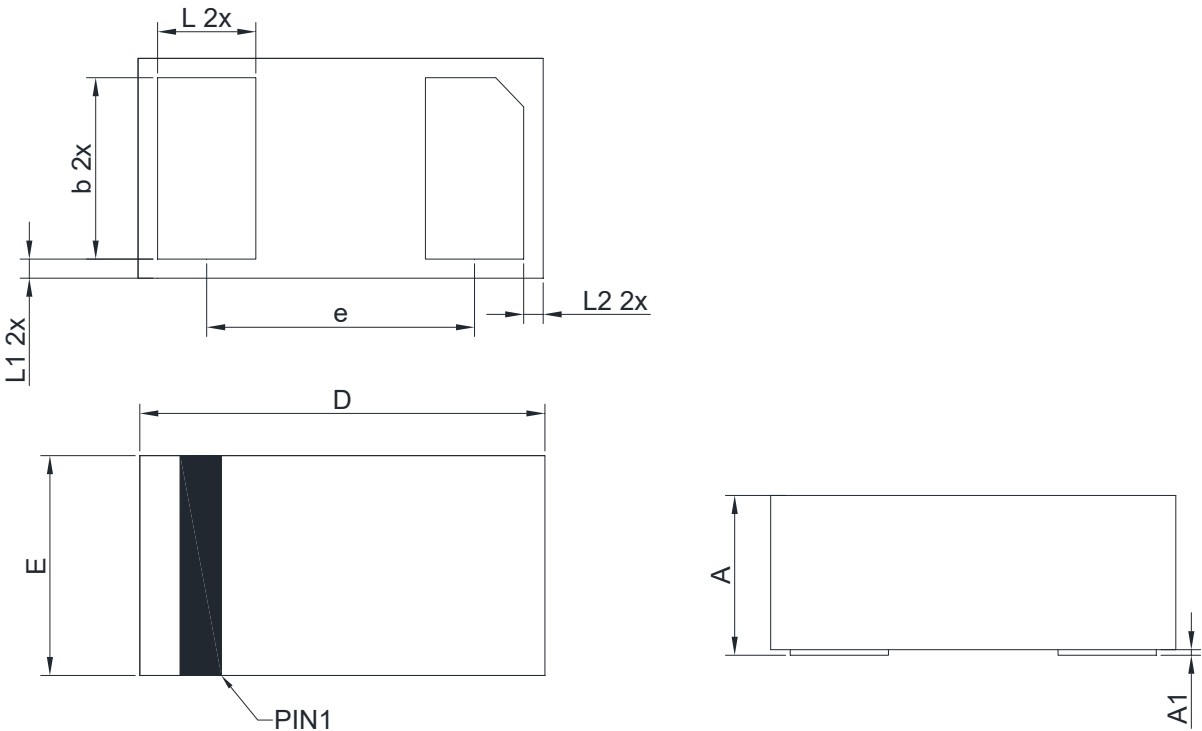


TLP Curve: IO-IO(V+)



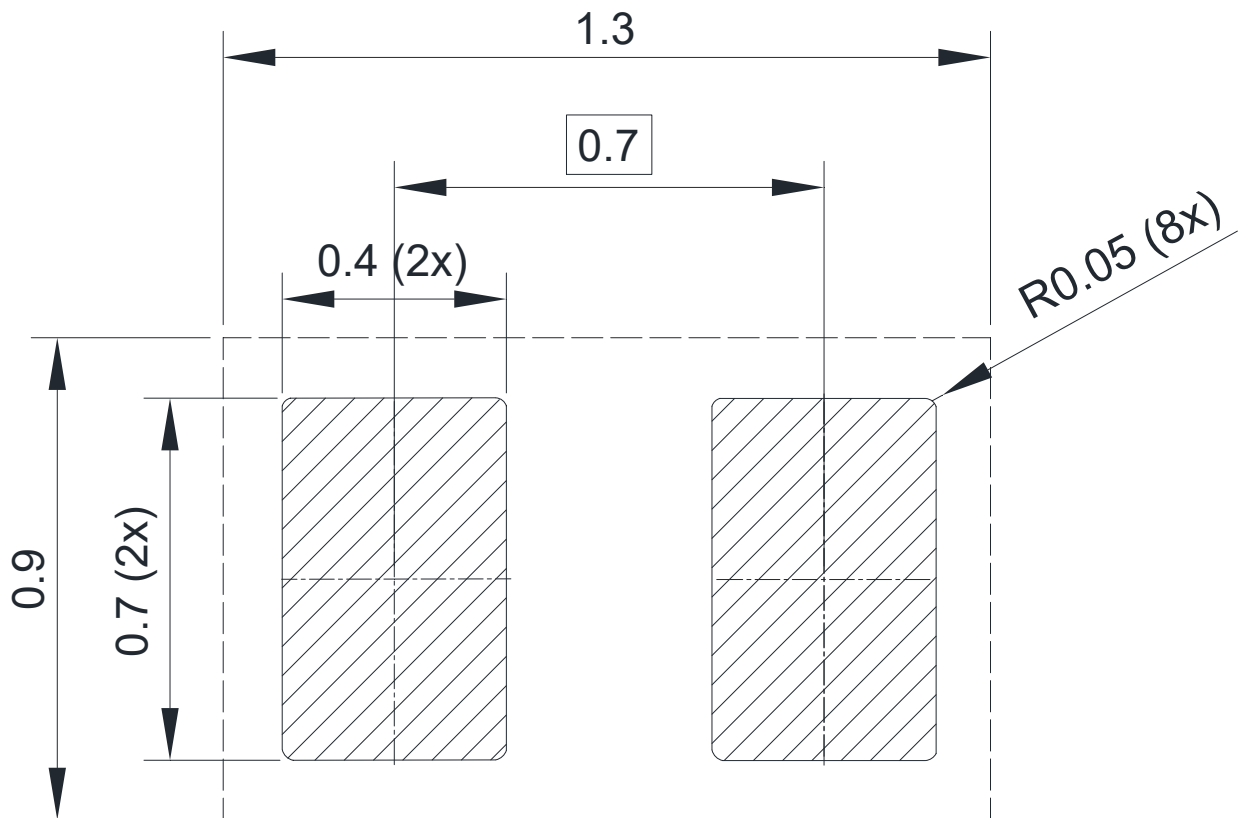
TLP Curve: IO-IO(V-)

8. Dimension (DFN1006-2L)



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Normal	MIN	MAX	Normal	MIN	MAX
A		0.400	0.500		0.016	0.020
A1			0.050			0.002
D	1.020	0.990	1.050	0.040	0.039	0.041
E	0.620	0.590	0.650	0.024	0.023	0.026
b	0.500	0.450	0.550	0.020	0.018	0.022
L	0.250	0.200	0.300	0.010	0.008	0.012
L1	0.060	0.020	0.100	0.002	0.001	0.004
L2	0.060	0.020	0.100	0.002	0.001	0.004
e	0.650 BSC			0.026 BSC		

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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