ESD56371N

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1-Line, Bi-directional, Transient Voltage Suppressors

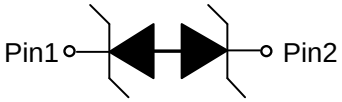
Descriptions

The ESD56371N is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

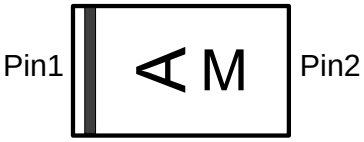
The ESD56371N may be used to provide ESD protection up to ±30kV (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 22A (8/20μs) according to IEC61000-4-5.

The ESD56371N is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

DFN1006-2L (Bottom View)



Circuit diagram



A = Device code
M = Month code (A~Z)

Marking (Top View)

Features

- Reverse stand-off voltage: ±15V Max.
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact and air discharge)
  IEC61000-4-5 (surge): 22A (8/20μs)
- Capacitance: C_j = 31pF Typ.
- Low leakage current
- Low clamping voltage: V_{CL} = 16V Typ. I_{PP} = 16A (TLP)
- Solid-state silicon technology

Applications

- Power lines
- Cellular handsets
- Tablets
- Microprocessors
- Portable Electronics

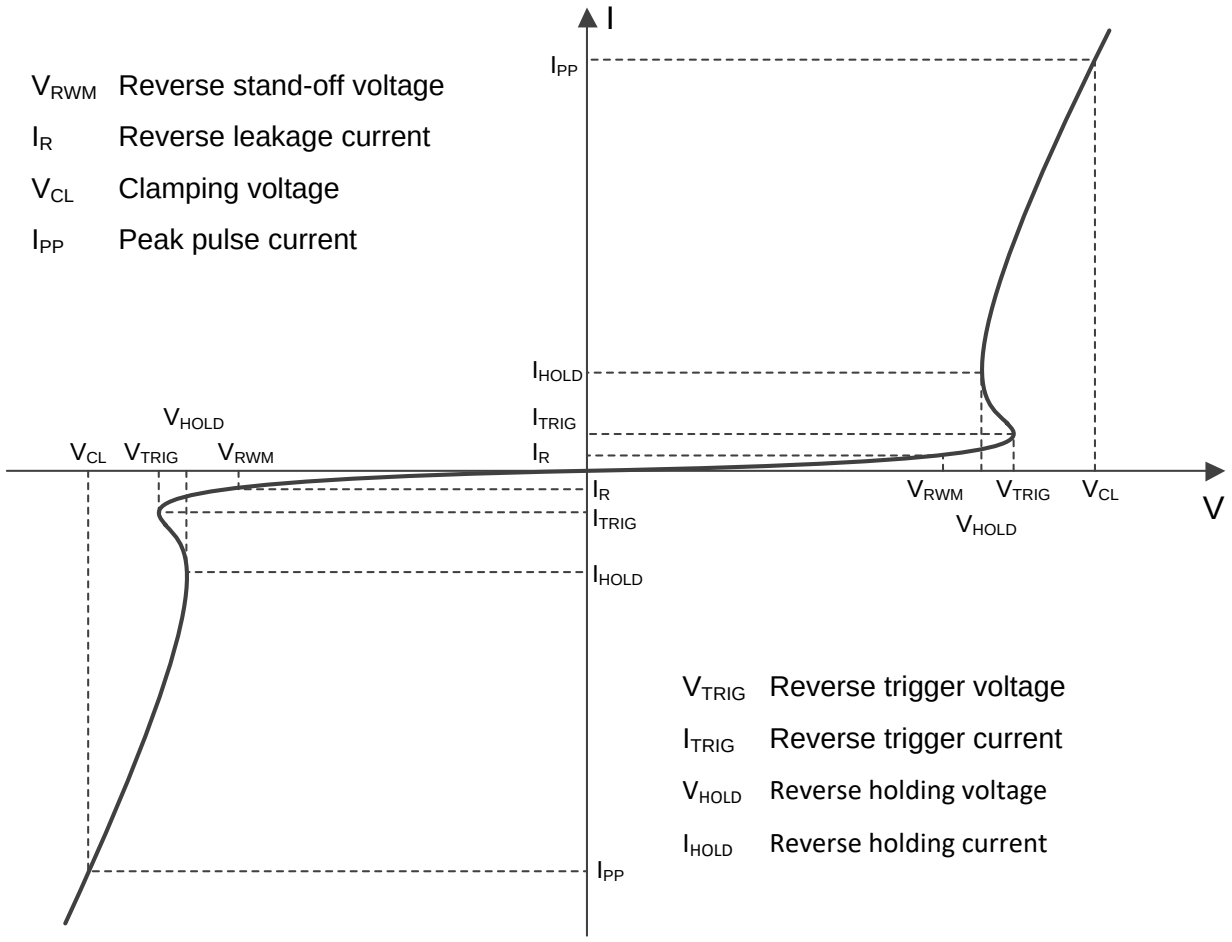
Order information

Device	Package	Shipping
ESD56371N-2/TR	DFN1006-2L	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	470	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	22	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	
Junction temperature	T_J	125	°C
Operating temperature	T_{OP}	-40~85	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

Electrical characteristics (T_A=25 °C, unless otherwise noted)



Definitions of electrical characteristics

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				±15	V
Reverse leakage current	I_R	V_{RWM} = 15V		1	50	nA
Reverse breakdown voltage	V_{BR}	I_T = 1mA	16			V
Clamping voltage *1)*	V_{CL}	I_{PP} = 16A, t_p = 100ns		16		V
Clamping voltage *3)*	V_{CL}	I_{PP} = 1A, t_p = 8/20μs		16	18	V
		I_{PP} = 22A, t_p = 8/20μs		19.5	21.5	V
Dynamic resistance *1)*	R_{DYN}			0.03		Ω
Junction capacitance	C_J	V_R = 0V, f = 1MHz		31	40	pF

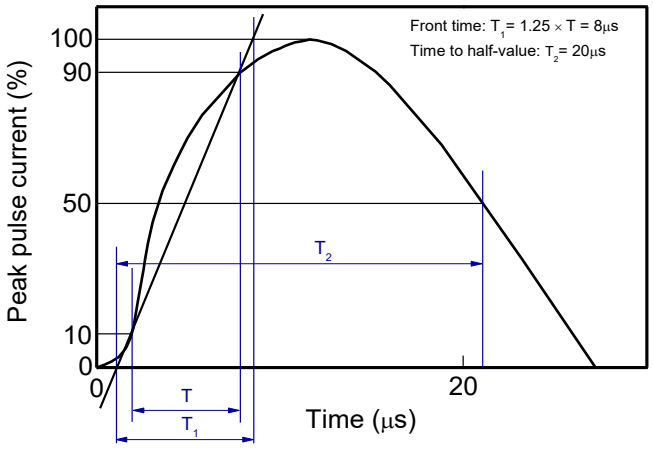
Notes:

1) TLP parameter: Z_0 = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

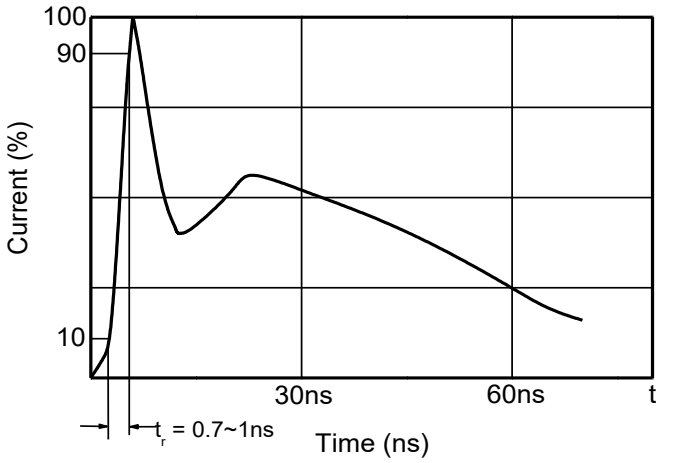
2) Contact discharge mode, according to IEC61000-4-2.

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

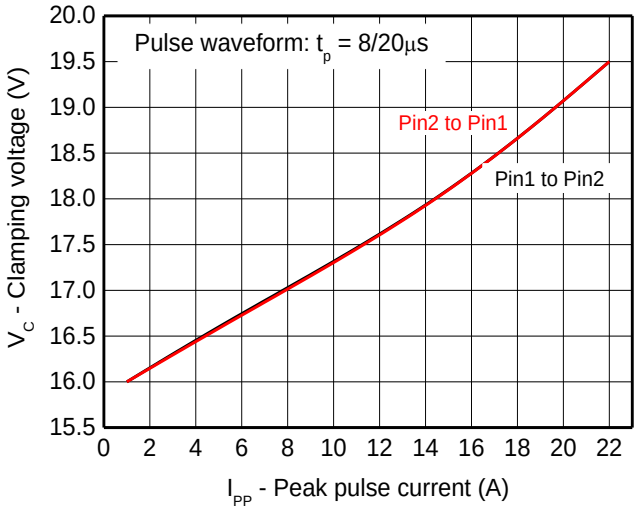
Typical characteristics (T_A=25°C, unless otherwise noted)



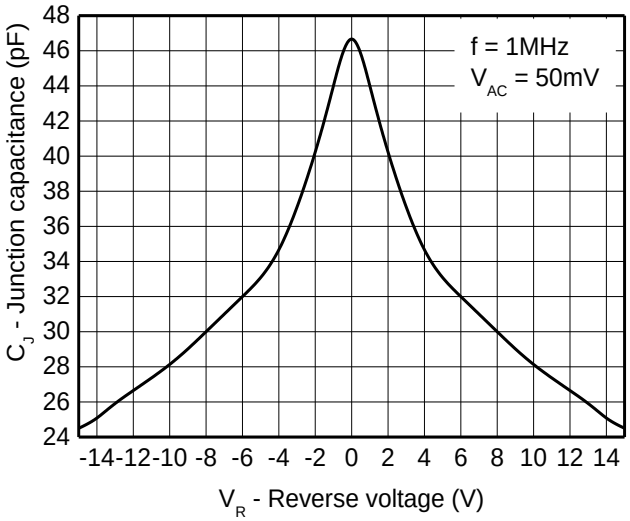
8/20μs waveform per IEC61000-4-5



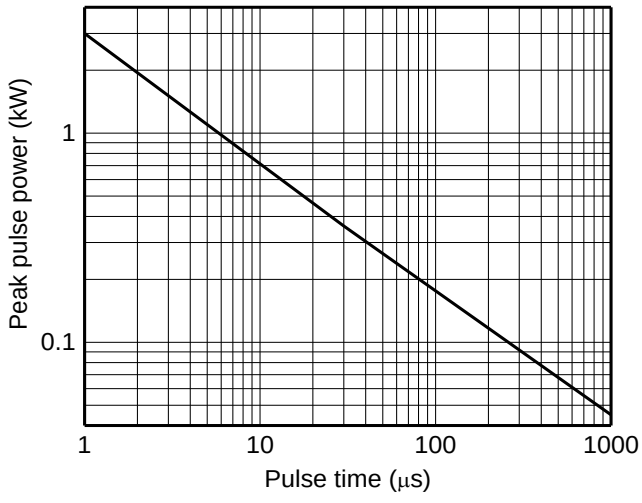
Contact discharge current waveform per IEC61000-4-2



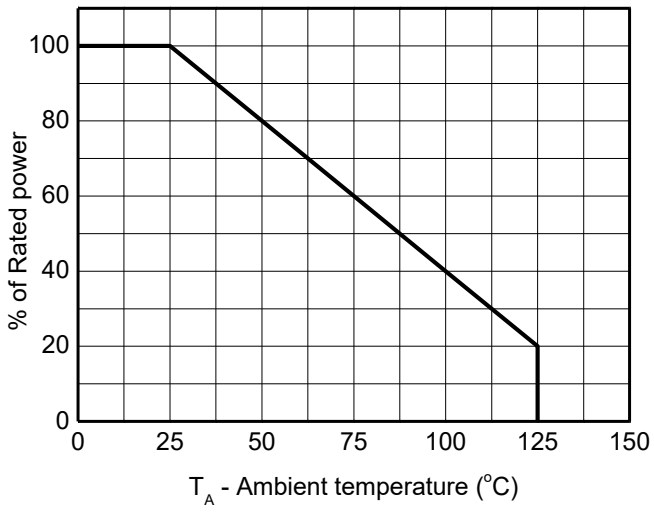
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

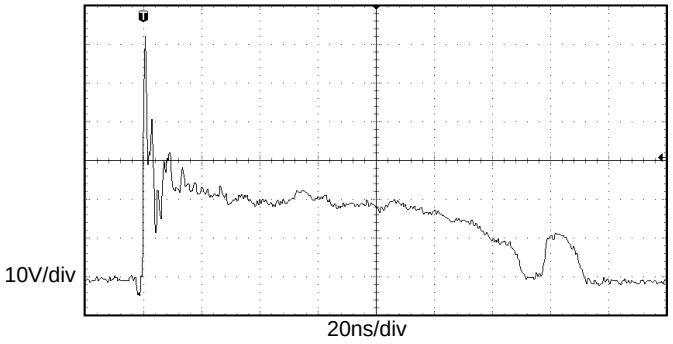


Non-repetitive peak pulse power vs. Pulse time

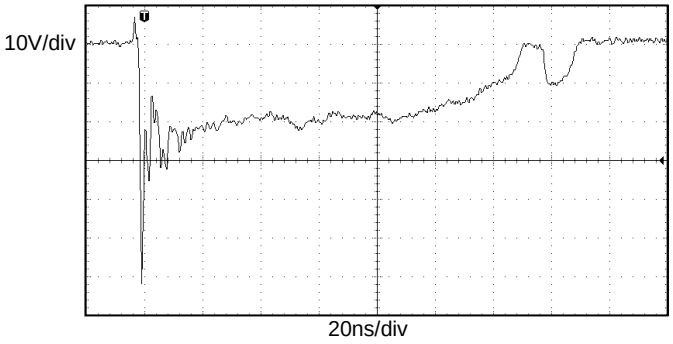


Power derating vs. Ambient temperature

Typical characteristics (T_A=25°C, unless otherwise noted)



ESD clamping
(+8kV contact discharge per IEC61000-4-2)



ESD clamping
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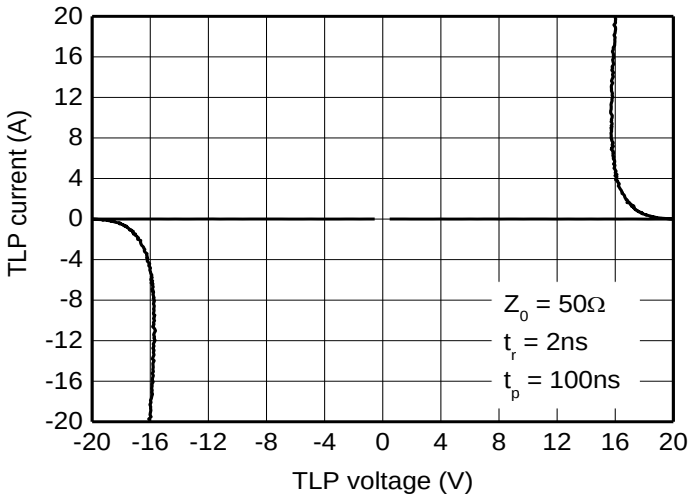
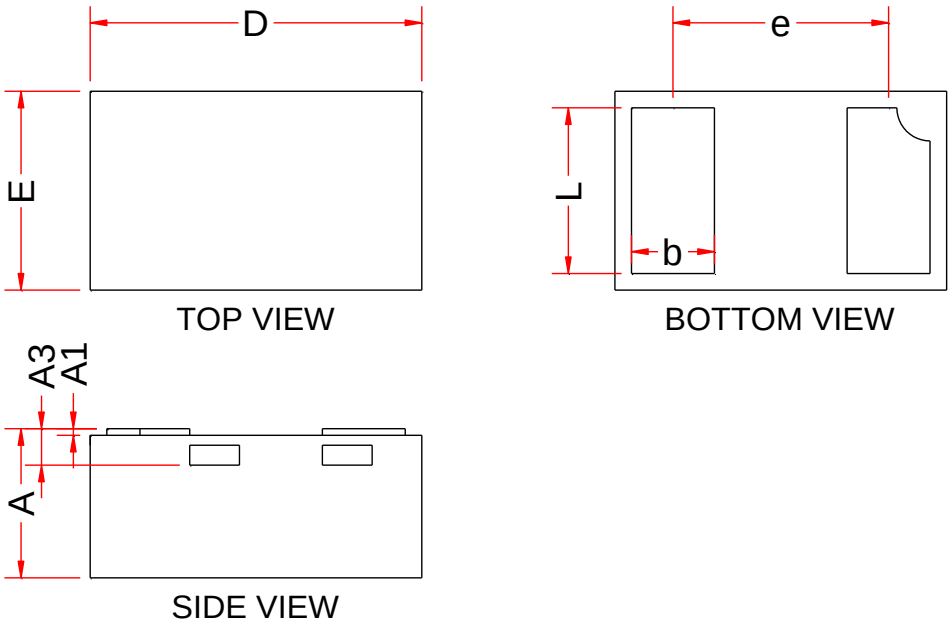


TLP Measurement

PACKAGE OUTLINE DIMENSIONS

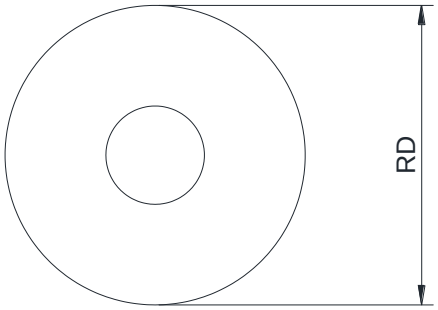
DFN1006-2L



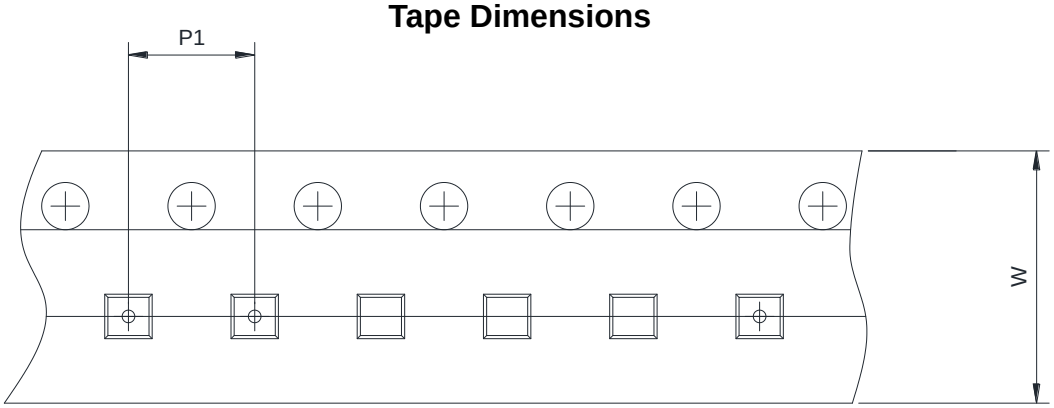
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.41	0.45	0.50
A1	0.00	0.02	0.05
A3	0.127 Ref.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e	0.65 BSC		

TAPE AND REEL INFORMATION

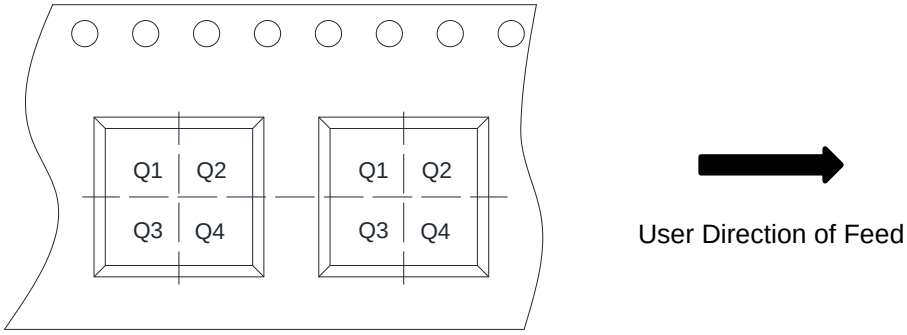
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	☑ 7inch	☐ 13inch		
W	Overall width of the carrier tape	☑ 8mm	☐ 12mm	☐ 16mm	
P1	Pitch between successive cavity centers	☑ 2mm	☐ 4mm	☐ 8mm	
Pin1	Pin1 Quadrant	☑ Q1	☑ Q2	☐ Q3	☐ Q4

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