ESD5611N

1-Line, Bi-directional, Transient Voltage Suppressors

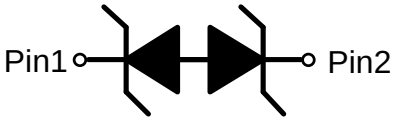
Descriptions

The ESD5611N is a TVS (Transient Voltage Suppressor) designed to protect sensitive electronic components which are connected to data and power lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and lightning.

The ESD5611N may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 28A (8/20μs) according to IEC61000-4-5.

The ESD5611N is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

DFN1006-2L



Circuit diagram

N = Device code

* = Month code (A~Z)

Marking (Top View)

Features

- Stand-off voltage: ±5V max.
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact discharge)
  IEC61000-4-5 (surge): 28A (8/20μs)
- Capacitance: C_J = 60pF typ.
- Low clamping voltage
- Low leakage current
- Solid-state silicon technology

Applications

- Computers and peripherals
- Cellular handsets
- Portable Electronics
- Notebooks
- Camera

Order information

Device	Package	Shipping
ESD5611N-2/TR	DFN1006-2L	10000/Tape&Reel

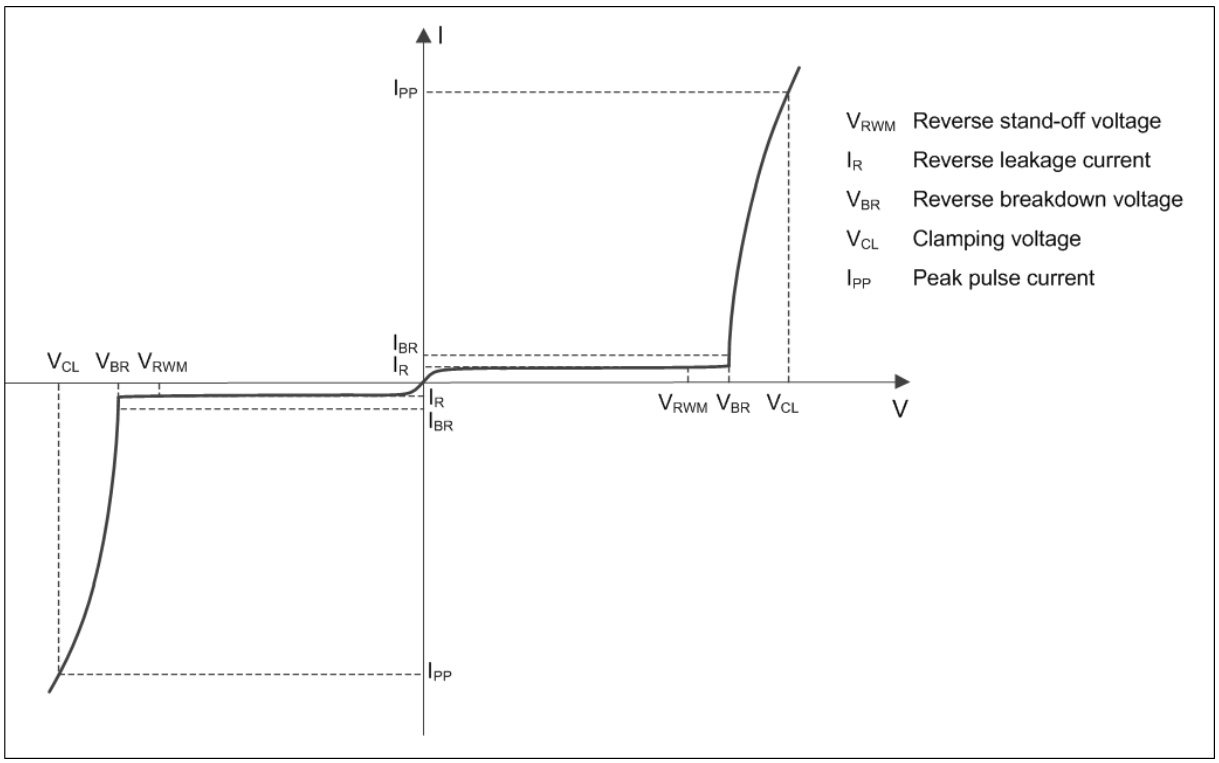
Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	392	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	28	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	
Operation junction temperature	T_J	125	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

Electrical characteristics (T_A = 25°C, unless otherwise noted)3

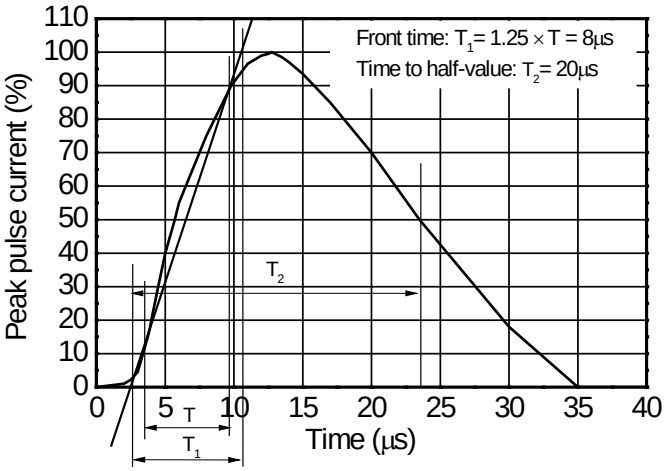
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				±5	V
Reverse leakage current	I_R	V_{RWM} = 5V			1	μA
Reverse breakdown voltage	V_{BR}	I_{BR} = 1mA	5.1			V
Clamping voltage 1)	V_{CL}	I_{PP} = 1A, t_p = 8/20μs			8.5	V
		I_{PP} = 28A, t_p = 8/20μs			14	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		60	75	pF

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

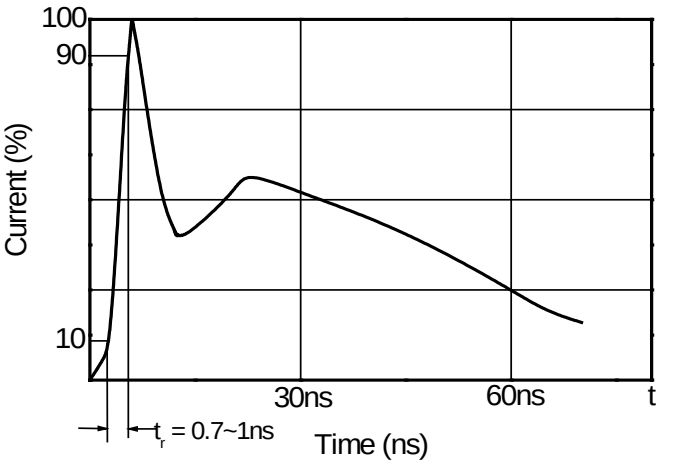


Definitions of electrical characteristics

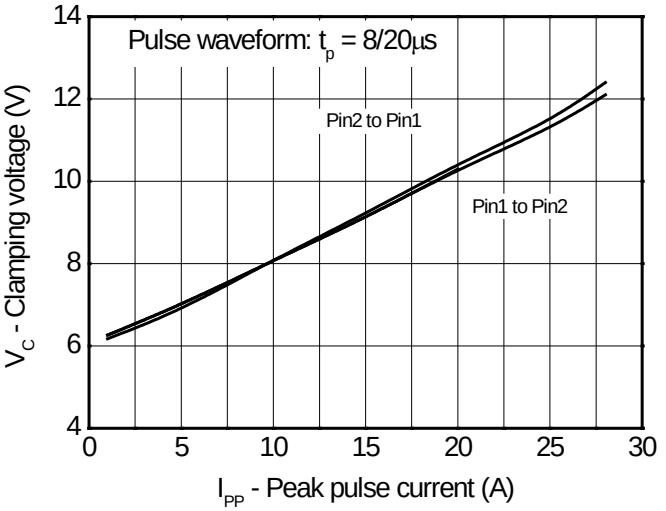
Typical characteristics (T_A = 25°C, unless otherwise noted)



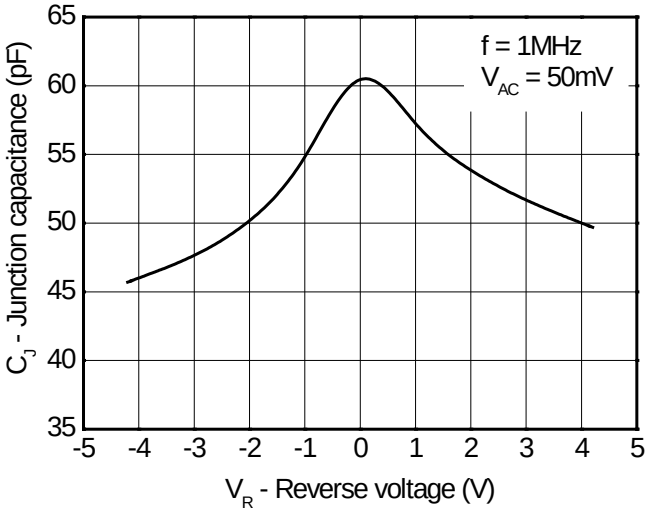
8/20μs waveform per IEC61000-4-5



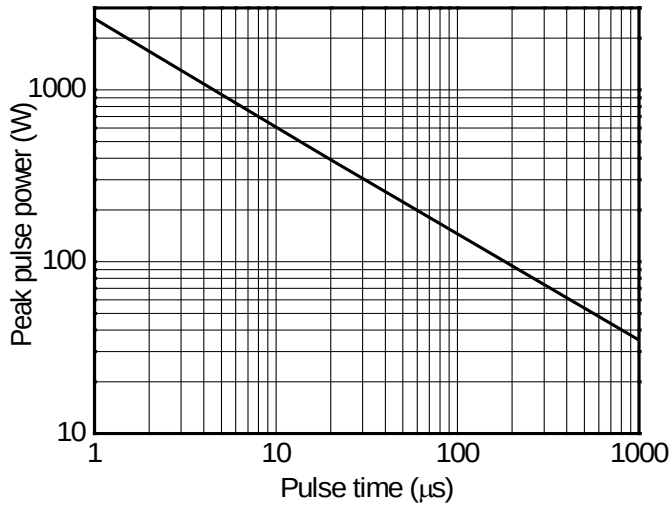
Contact discharge current waveform per IEC61000-4-2



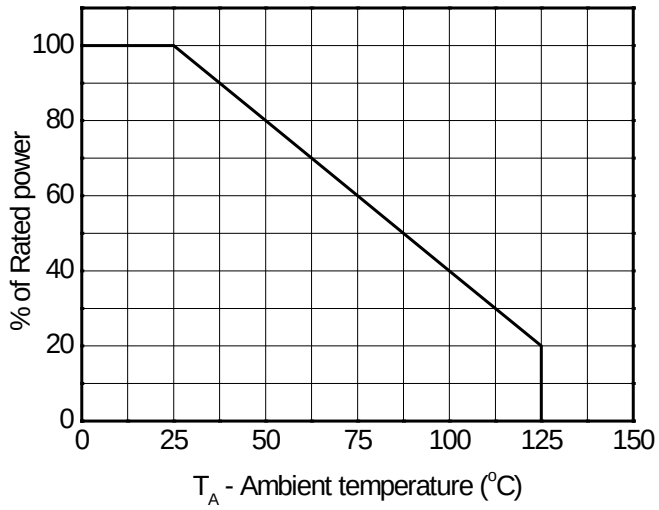
Clamping voltage vs. Peak pulse current



Capacitance vs. Reveres voltage

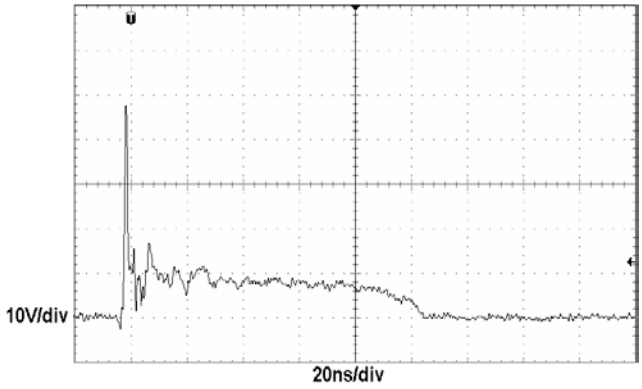


Non-repetitive peak pulse power vs. Pulse time

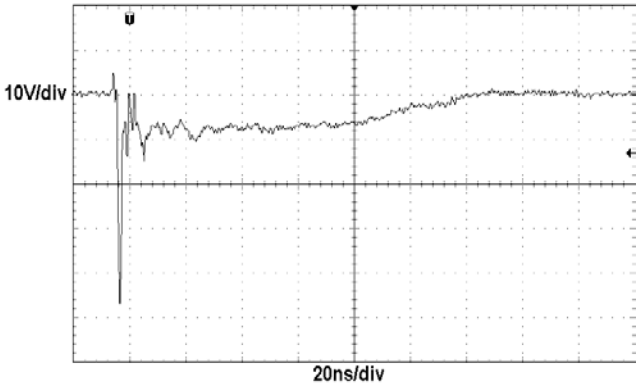


Power derating vs. Ambient temperature

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



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



ESD clamping
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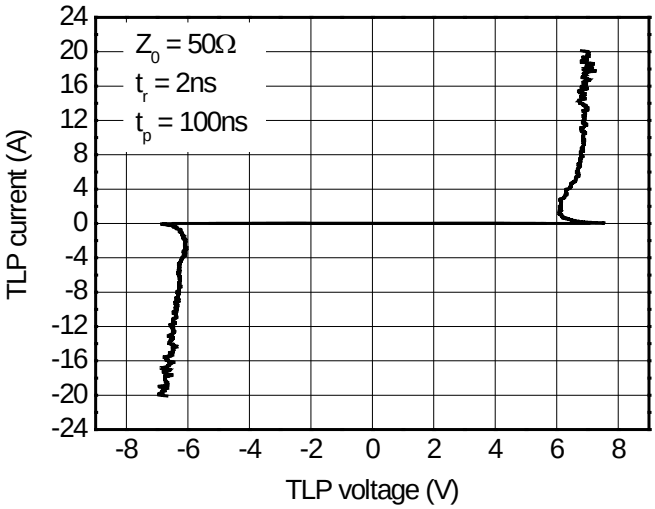
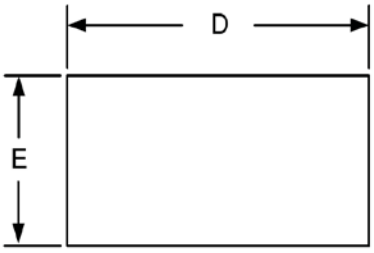


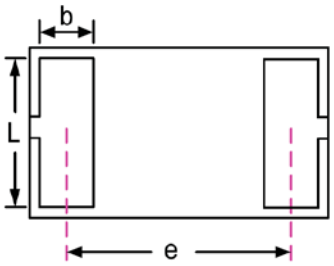
TLP Measurement

Package outline dimensions

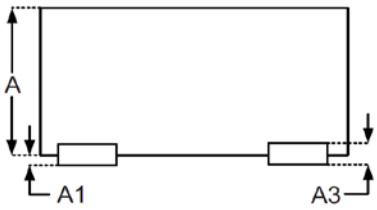
DFN1006-2L



Top View



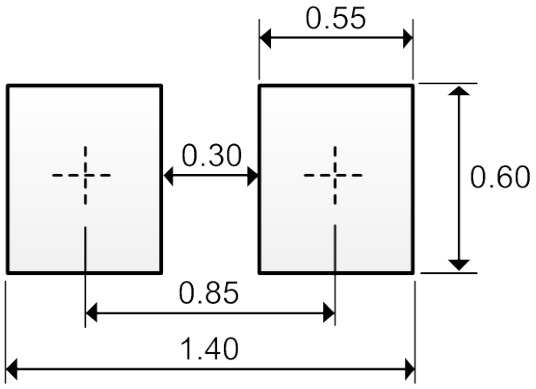
Bottom View



Side View

Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.40	-	0.50
A1	0.00	-	0.05
A3	0.125 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 Typ.		

Recommend land pattern (Unit: mm)



Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.