ESD56011N

1-Line, Bi-directional, Transient Voltage Suppressors

http//:www.omnivision-group.com

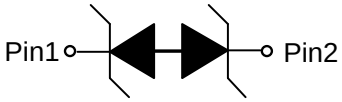
Descriptions

The ESD56011N 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.

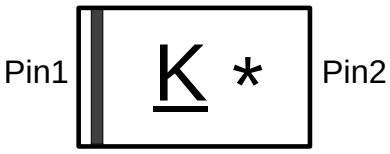
The ESD56011N may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 20A (8/20μs) according to IEC61000-4-5.

The ESD56011N is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

DFN1006-2L (Bottom View)



Circuit diagram



K= Device code

* = Month code (A~Z)

Marking (Top View)

Features

- Stand-off voltage: ±3.3V Max.
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact discharge)
  IEC61000-4-5 (surge): 20A (8/20μs)
- Capacitance: C_J = 32pF typ.
- Low clamping voltage
- Low leakage current
- Solid-state silicon technology

Applications

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

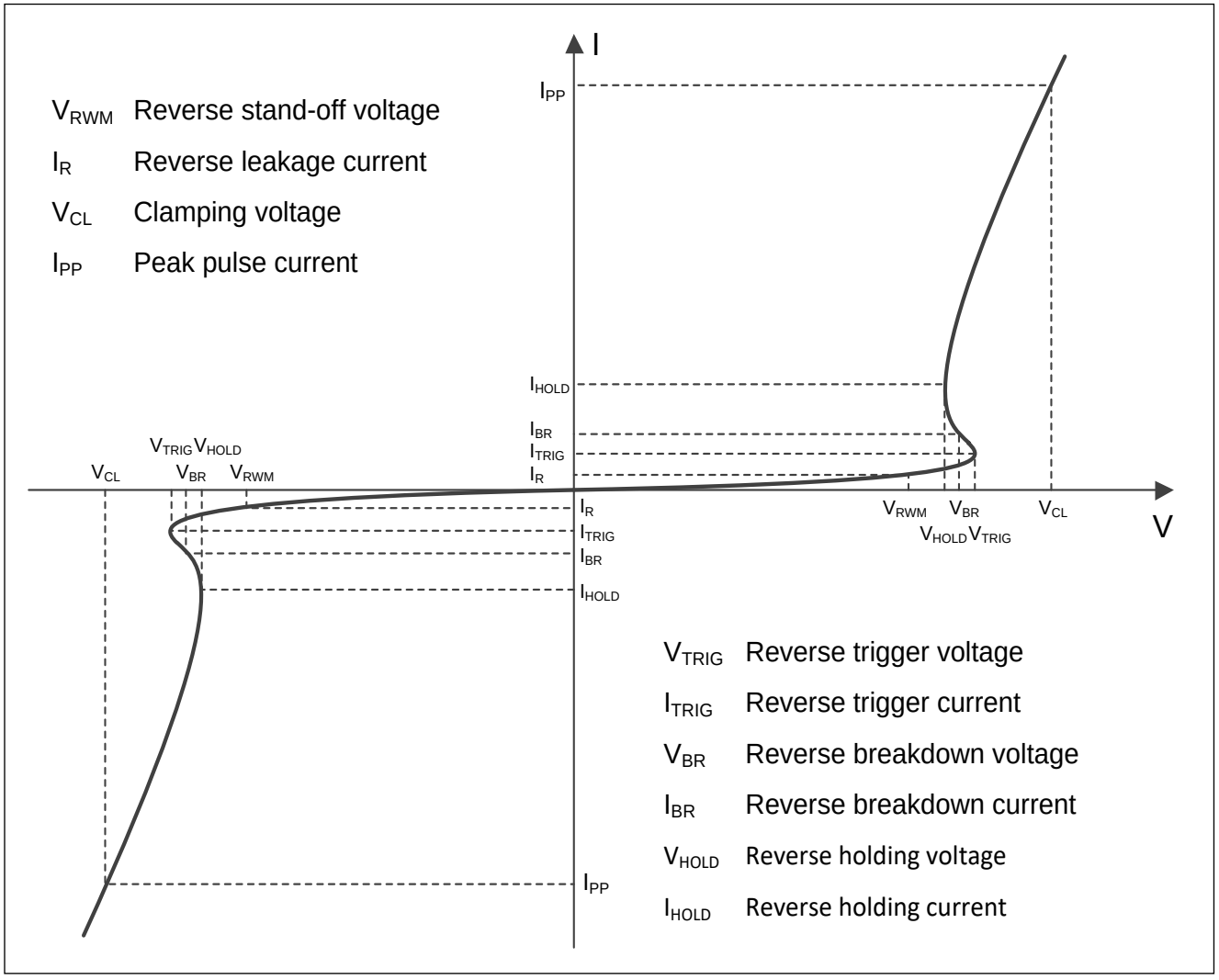
Order information

Device	Package	Shipping
ESD56011N-2/TR	DFN1006-2L	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	160	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	20	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)

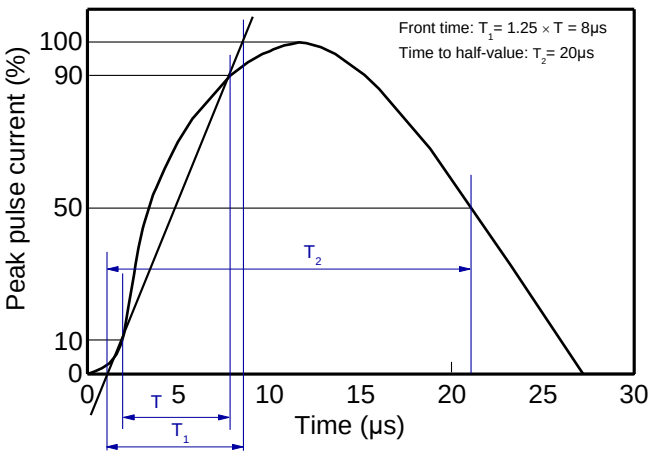


Electrical characteristics (T_A=25 °C, unless otherwise noted)

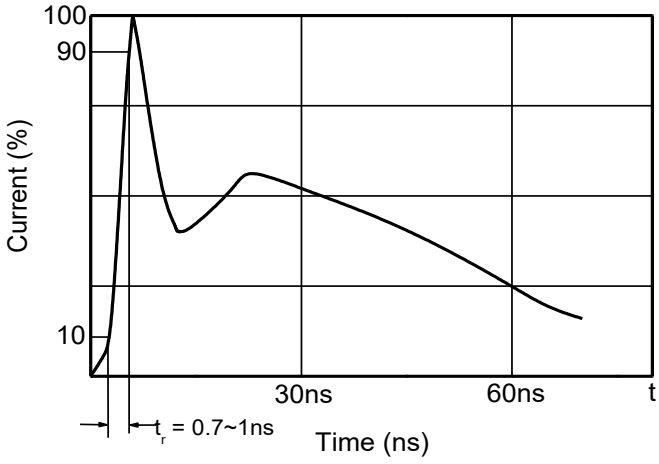
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Stand-off voltage	V_{RWM}				±3.3	V
Reverse leakage current	I_R	V_{RWM} = 3.3V		<1	50	nA
Reverse breakdown voltage	V_{BR}	I_T = 1mA	3.5			V
Clamping voltage *1)*	V_{CL}	I_{PP} = 16A, t_p = 100ns		7		V
Clamping voltage *2)*	V_{CL}	V_{ESD} = 8kV		7.5		V
Dynamic resistance *1)*	R_{DYN}			0.15		Ω
Clamping voltage *2)*	V_{CL}	I_{PP} = 1A, t_p = 8/20μs		4.5		V
		I_{PP} = 20A, t_p = 8/20μs		7.5		V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		32		pF

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

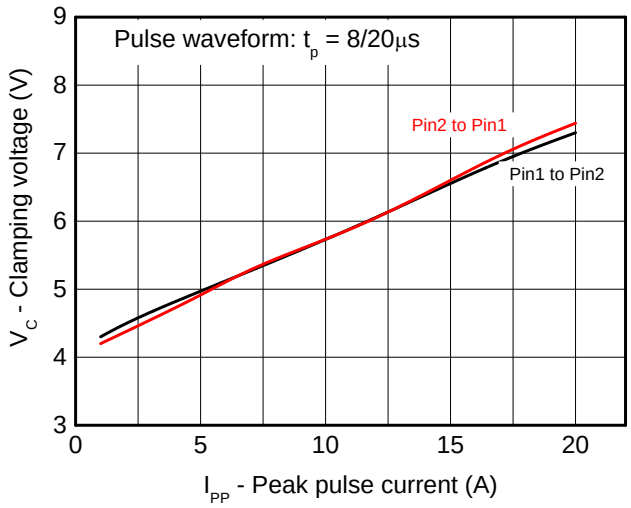


8/20μs waveform per IEC61000-4-5

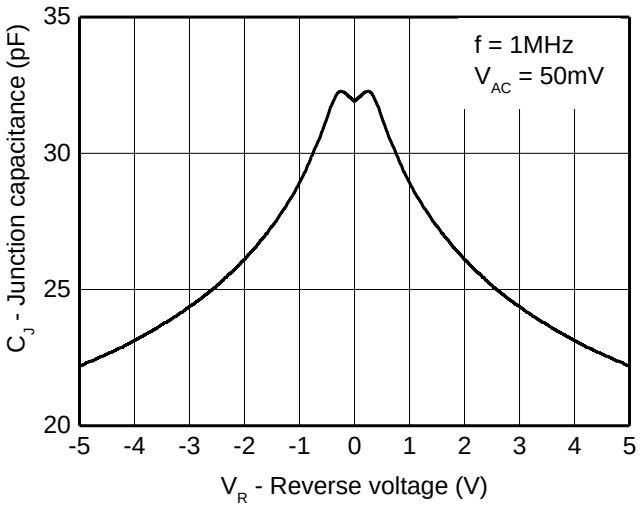


Contact discharge current waveform per IEC61000-4-2

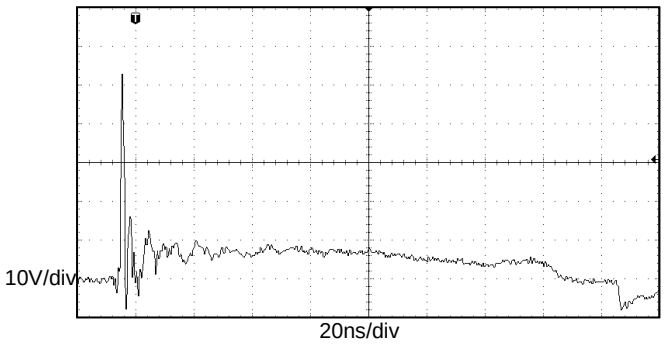
Typical characteristics (T_A=25°C, unless otherwise noted)



Clamping voltage vs. Peak pulse current

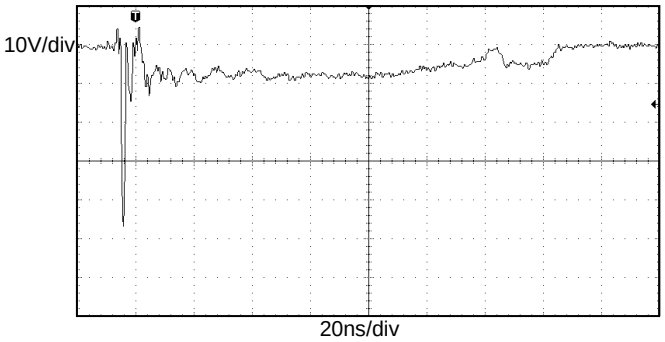


Capacitance vs. Reverse voltage



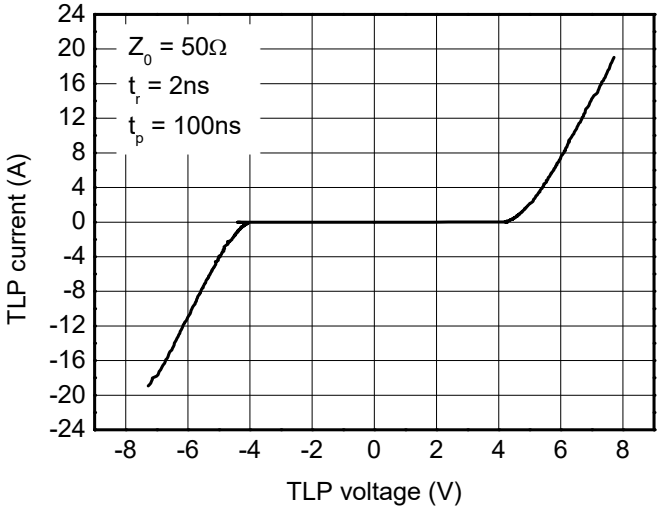
ESD clamping

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



ESD clamping

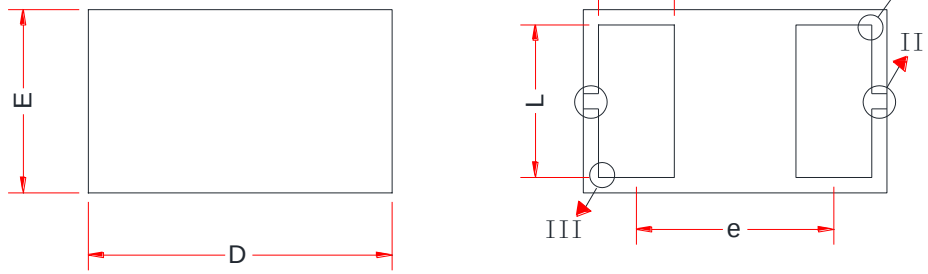
(-8kV contact discharge per IEC61000-4-2)



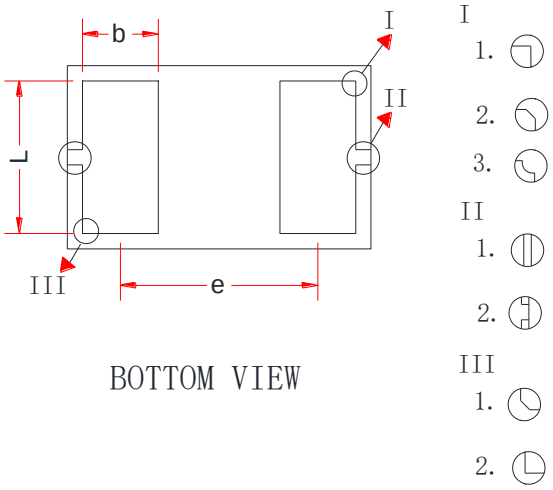
TLP Measurement

PACKAGE OUTLINE DIMENSIONS

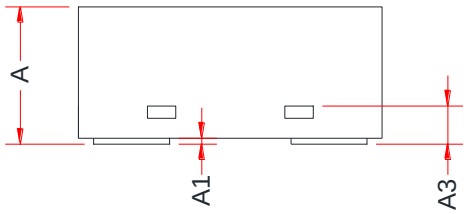
DFN1006-2L



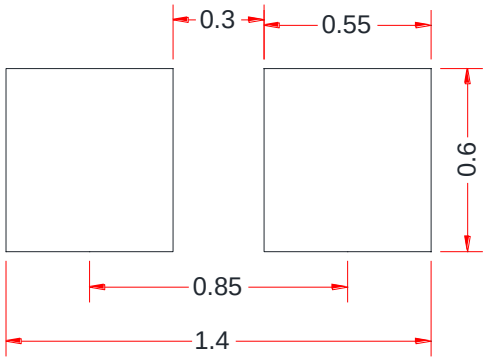
TOP VIEW



BOTTOM VIEW



SIDE VIEW

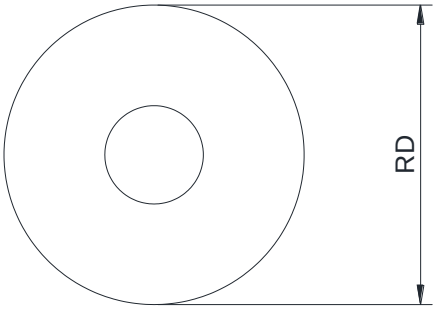


RECOMMENDED LAND PATTERN(Unit:mm)

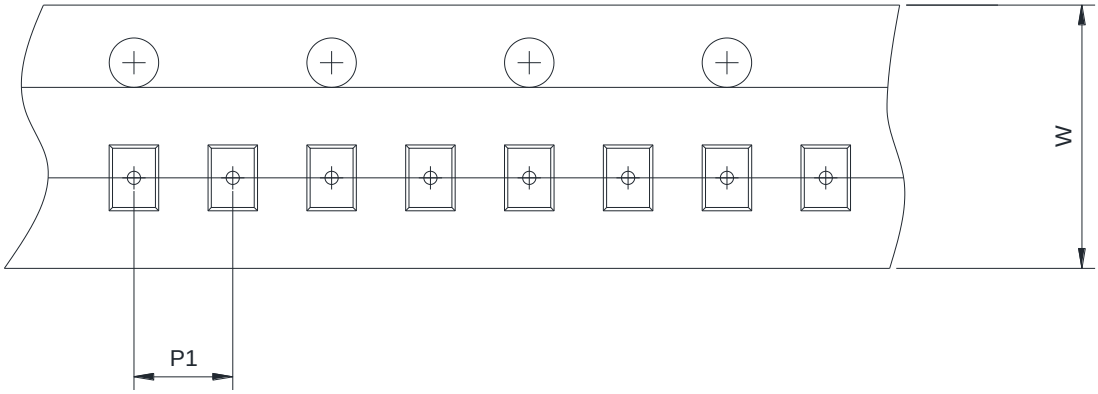
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.36	0.45	0.50
A1	0.00	0.02	0.05
A3	0.125 Ref.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e	0.65 BSC		

TAPE AND REEL INFORMATION

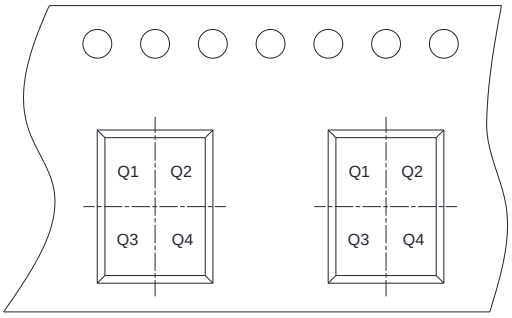
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



User Direction of Feed

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