

ESD9N5B

1-Line, Bi-directional, Normal-Capacitance,
Transient Voltage Suppressor

<http://www.omnivision-group.com>

Descriptions

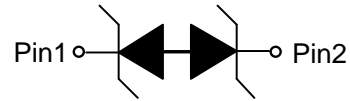
The ESD9N5B is a Bi-directional transient voltage suppressor (TVS) to protect sensitive electronic components from electrostatic discharge (ESD). It is particularly well-suited for cellular phones, PMP, MID, PDA, digital cameras and other electronic equipment.

The ESD9N5B may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 8A (8/20 μs) according to IEC61000-4-5.

The ESD9N5B is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.



DFN1006-2L (Bottom View)



Pin configuration

Features

- Reverse stand-off voltage: $\pm 5\text{V}$ Max
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 30\text{kV}$ (Contact and Air)
IEC61000-4-4 (EFT): 40A (5/50ns)
IEC61000-4-5 (surge): 8A (8/20 μs)
- Capacitance: $C_J = 17.5\text{pF}$ typ.
- Low leakage current: $I_R < 1\text{nA}$ typ.
- Low clamping voltage
- Solid-state silicon technology



* = Month (A~Z)
B = Device code
Marking

Order information

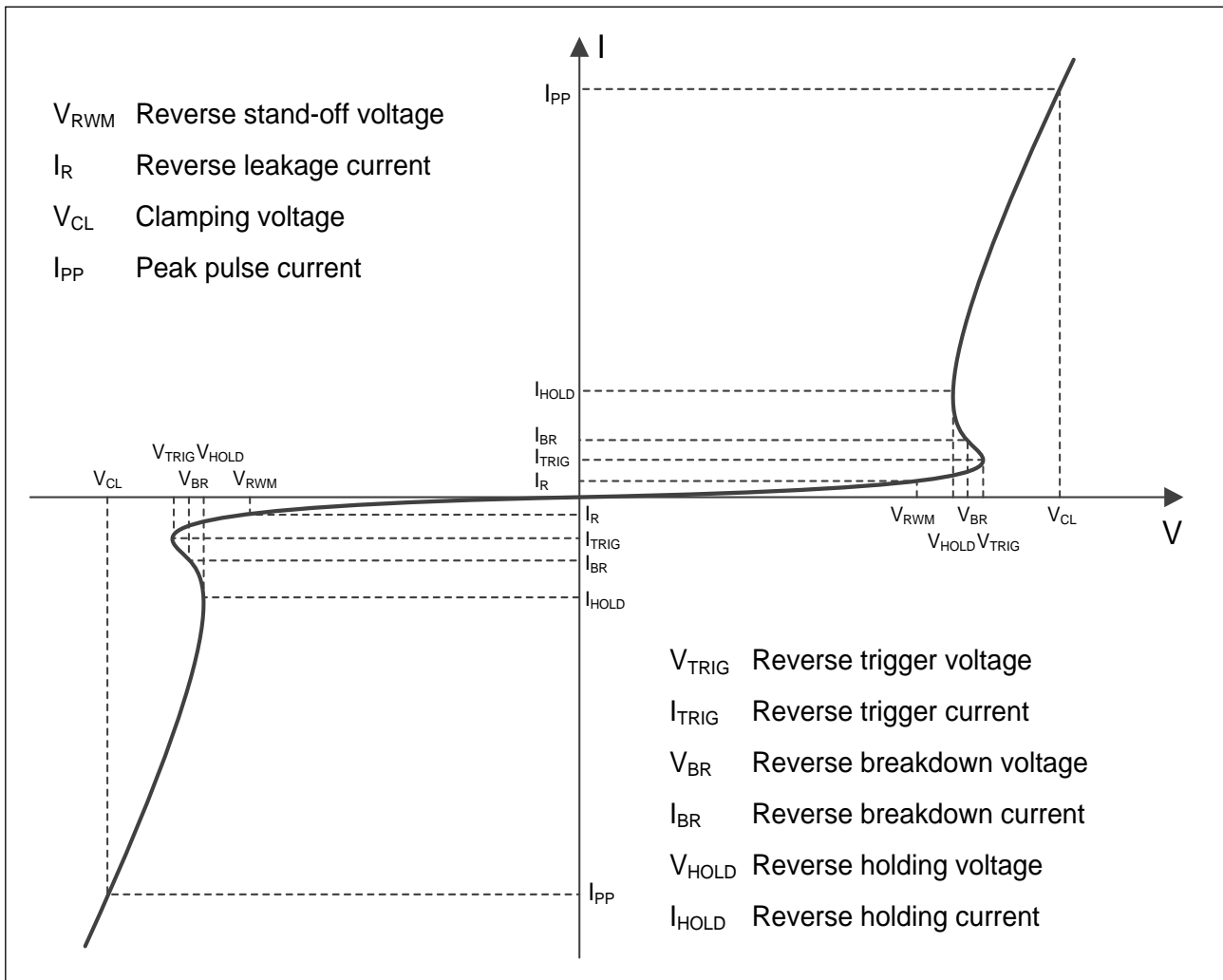
Device	Package	Shipping
ESD9N5B-2/TR	DFN1006-2L	10000/Tape&Reel

Applications

- Cell phone
- PMP
- MID
- PDA
- Digital camera
- Other electronics equipment

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p=8/20\mu s$)	Ppk	96	W
Peak pulse current ($t_p=8/20\mu s$)	Ipp	8	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

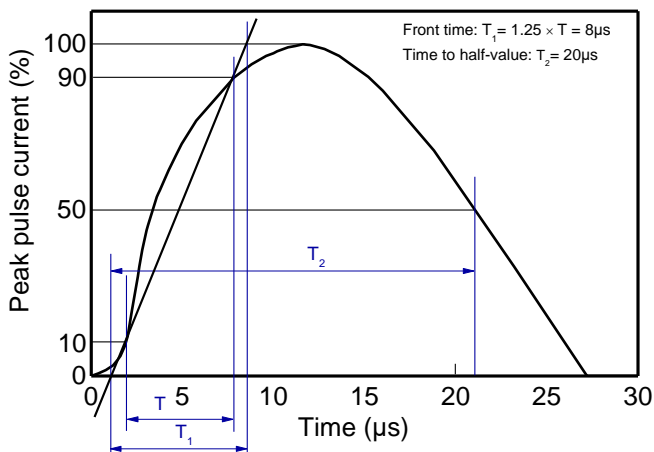
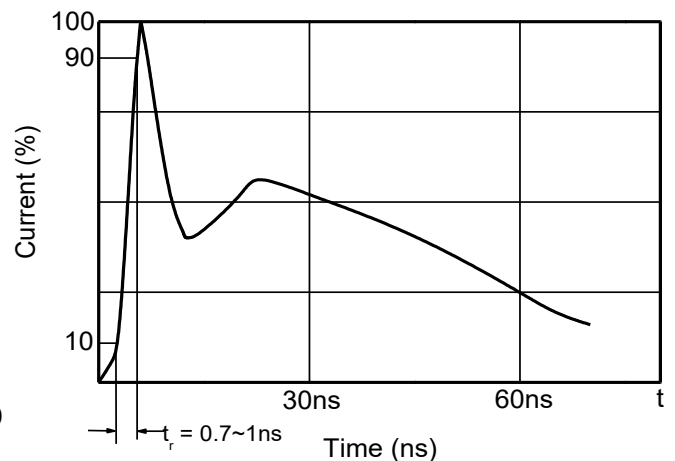
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Definitions of electrical characteristics

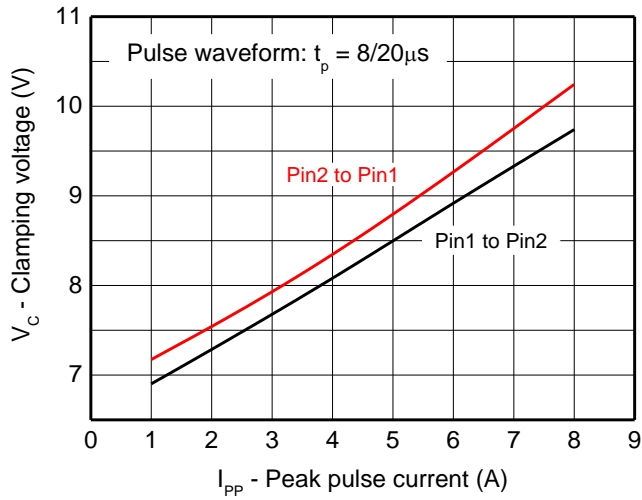
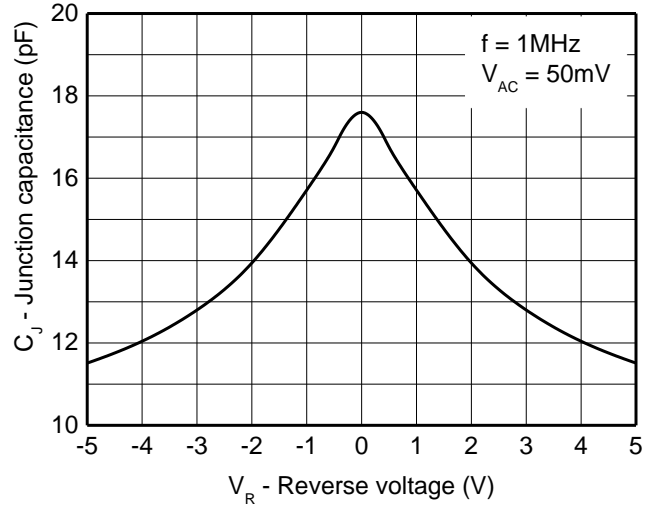
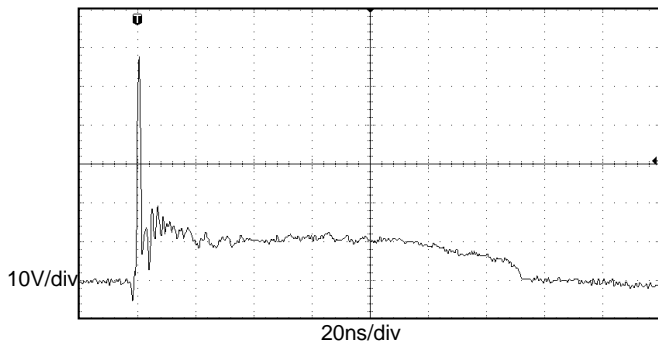
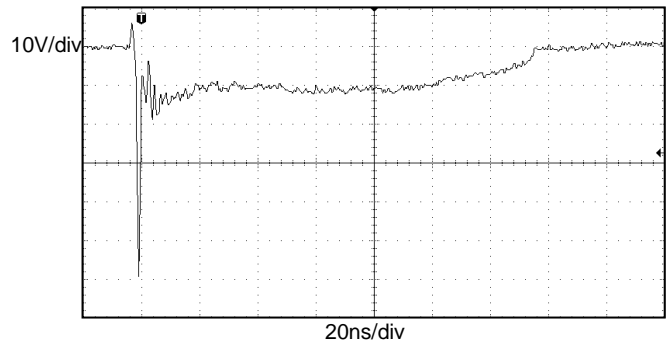
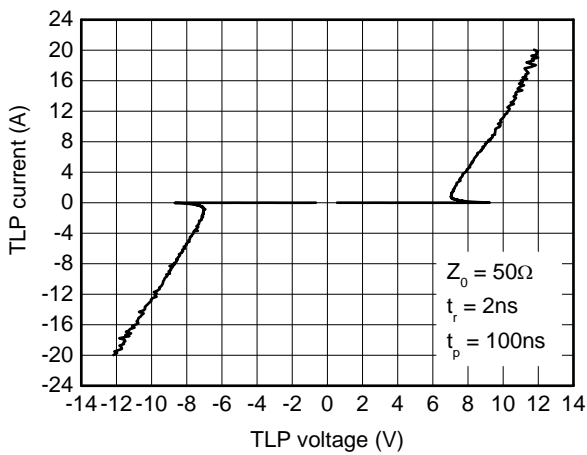
Electronics characteristics (Ta=25 °C, unless otherwise noted)

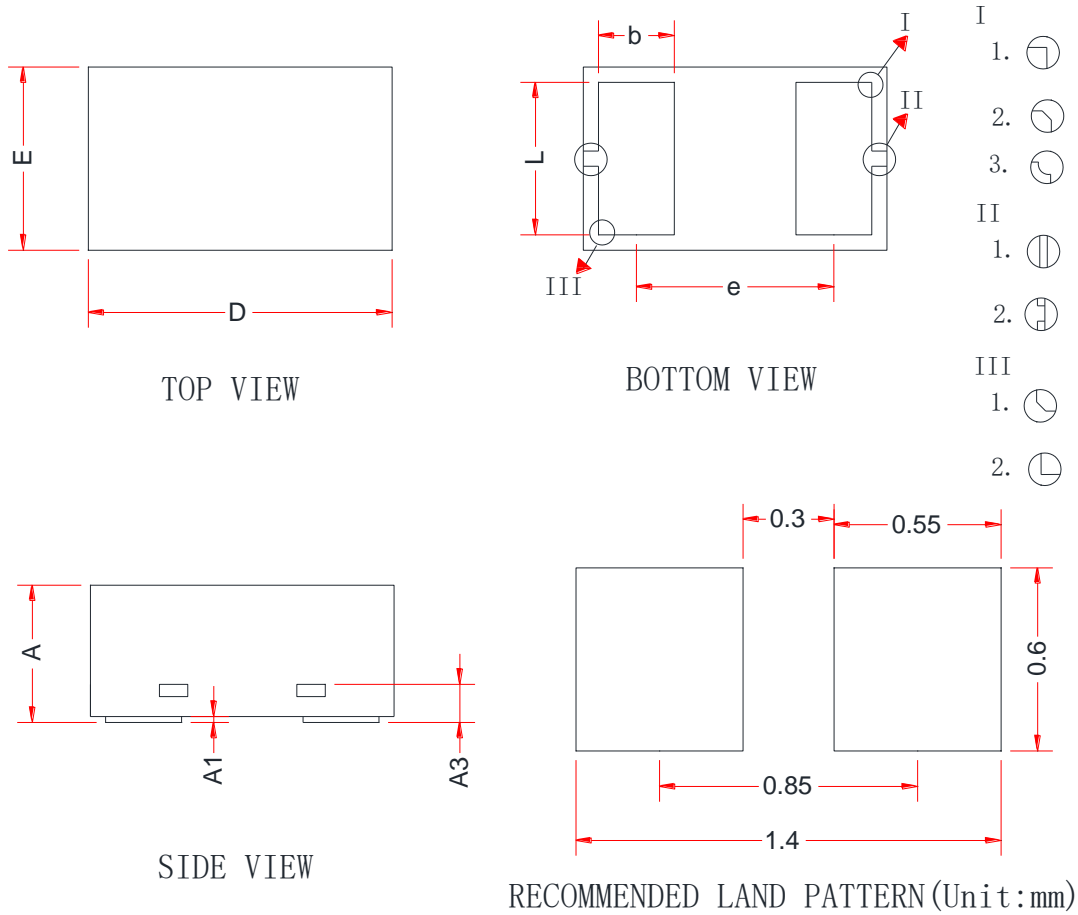
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				± 5.0	V
Reverse leakage current	I_R	$V_{RWM} = 5.0V$			1	μA
Reverse breakdown voltage	V_{BR}	$I_{BR} = 1mA$	5.6		8.5	V
Reverse holding voltage	V_{HOLD}	$I_{HOLD} = 50mA$	5.6		8.5	V
Clamping voltage ¹⁾	V_{CL}	$I_{PP} = 16A, t_p = 100ns$		11		V
Clamping voltage ²⁾	V_{CL}	$V_{ESD} = 8kV$		11		V
Clamping voltage ³⁾	V_{CL}	$I_{PP} = 1A, t_p = 8/20\mu s$			9	V
		$I_{PP} = 8A, t_p = 8/20\mu s$			12	V
Junction capacitance	C_J	$V_R = 0V, f = 1MHz$		17.5	22	pF
		$V_R = 5.0V, f = 1MHz$		11.5	15	pF

Notes:

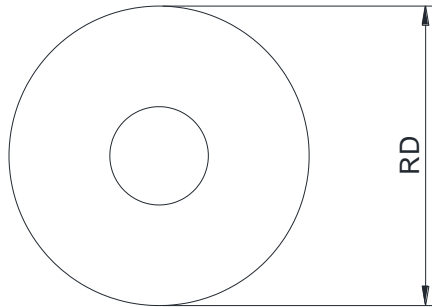
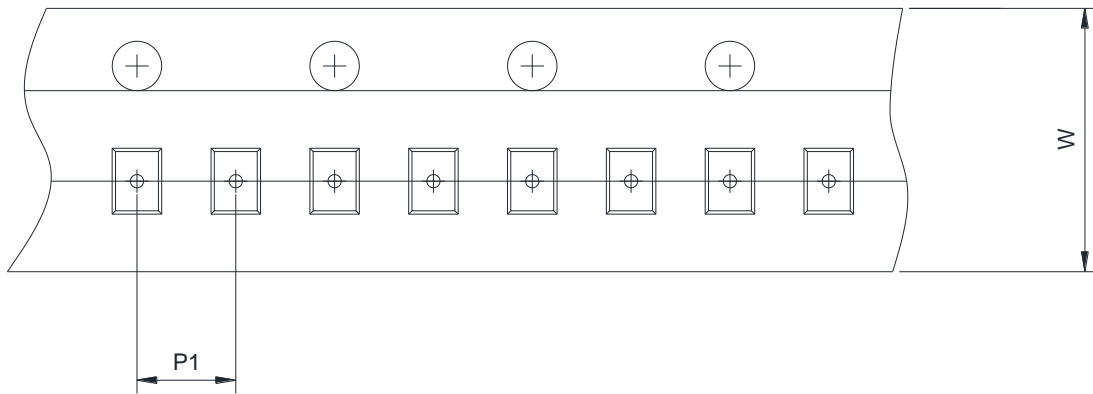
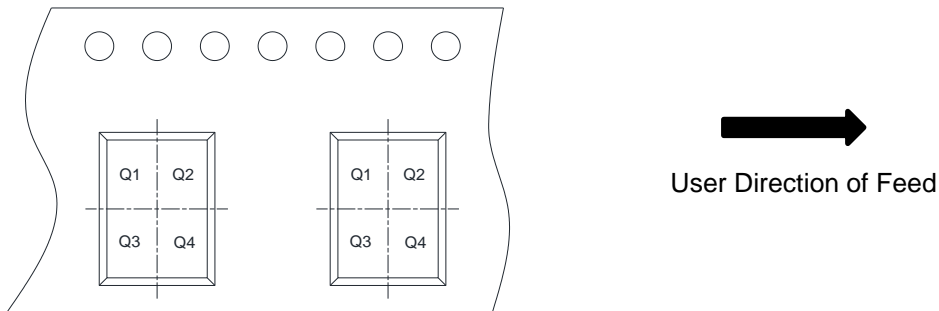
- 1) TLP parameter: $Z_0 = 50\Omega, t_p = 100ns, t_r = 2ns$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.


8/20 μs waveform per IEC61000-4-5

Contact discharge current waveform per IEC61000-4-2

Typical characteristics (Ta=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


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


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input checked="" type="checkbox"/> 2mm	<input type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4