

# ESD9N5BU

## 1-Line, Bi-directional, Ultra-low Capacitance, Transient Voltage Suppressors

### Descriptions

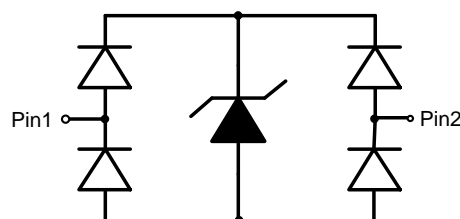
The ESD9N5BU is a transient voltage suppressors (TVS) which provide a very high level protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

The ESD9N5BU was past ESD transient voltage up to ±12KV (contact) according to IEC61000-4-2 and withstand peak current up to 3A for 8/20µs pulse according to IEC61000-4-5.

The ESD9N5BU is available in DFN1006 package. Standard products are Pb-free and Halogen-free.



DFN1006-2L (Bottom View)



Circuit Diagram

### Features

- Reverse stand-off voltage: ±5.0V max.
- Transient protection for each line according to IEC61000-4-2 (ESD) : ±12kV (contact discharge)  
: ±15kV (air discharge)
- IEC61000-4-4 (EFT) :40A (5/50ns)
- IEC61000-4-5 (surge) :3A (8/20µs)
- Ultra-low capacitance
- Low clamping voltage
- Low leakage current
- Small package

### Applications

- Mobile phone
- PAD
- Notebook
- STB
- LCD TV
- Digital camera
- Other electronics equipments



\* = Month (A-Z)  
U = Device code  
Marking (Top View)

### Order information

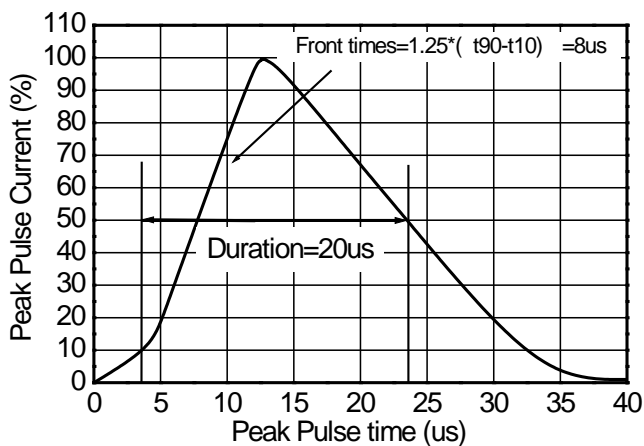
Device	Package	Shipping
ESD9N5BU-2/TR	DFN1006-2L	10000/Tape&Reel

**Absolute maximum ratings**

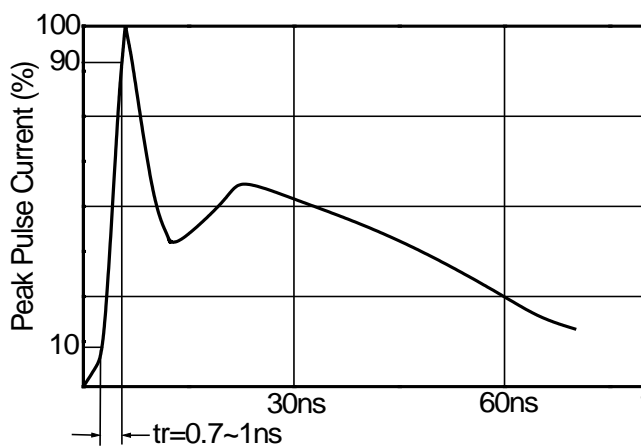
Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20μs)	Ppk	54	W
Peak pulse current (tp=8/20μs)	Ipp	3	A
ESD voltage IEC61000-4-2 air	V <sub>ESD</sub>	±15	KV
ESD voltage IEC61000-4-2 contact		±12	
Operation junction temperature	T <sub>J</sub>	125	°C
Lead temperature	T <sub>L</sub>	260	°C
Storage temperature	T <sub>sg</sub>	-55~150	°C

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				±5.0	V
Reveres leakage current	I <sub>R</sub>	V <sub>RWM</sub> = 5V			1.0	μA
Reveres breakdown voltage	V <sub>BR</sub>	I <sub>T</sub> = 1mA	7.0	8.5	10.0	V
Clamping voltage	V <sub>C</sub>	Ipp=1A tp=8/20us			14	V
		Ipp=3A tp=8/20us			18	V
Junction capacitance	C <sub>J</sub>	F=1MHz, V <sub>R</sub> =0V		0.45	0.7	pF

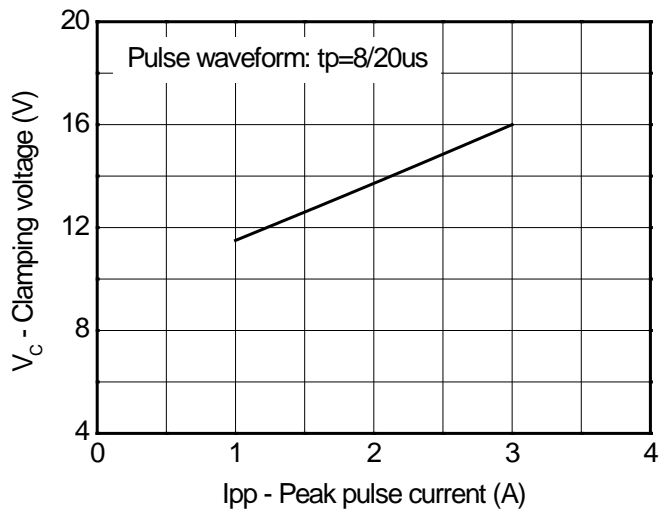


**8/20us waveform**

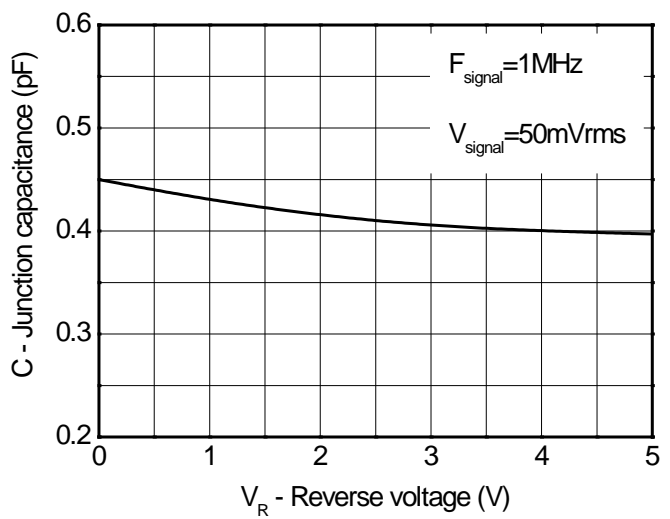


**IEC61000-4-2 waveform**

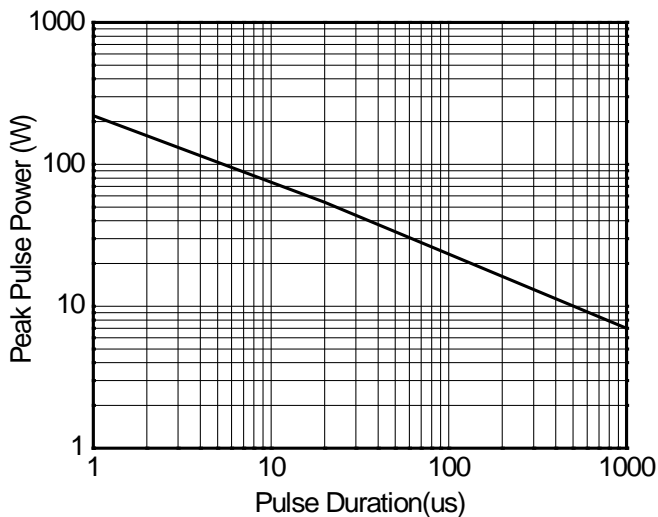
Typical characteristics (Ta=25°C, unless otherwise noted)



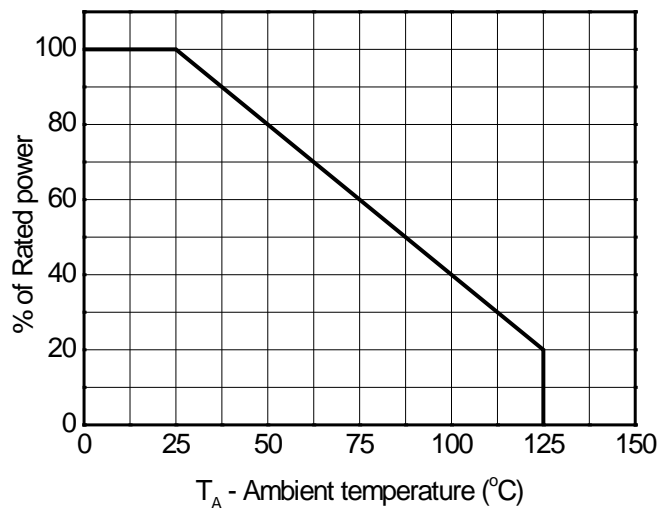
Clamping voltage vs. Peak pulse current



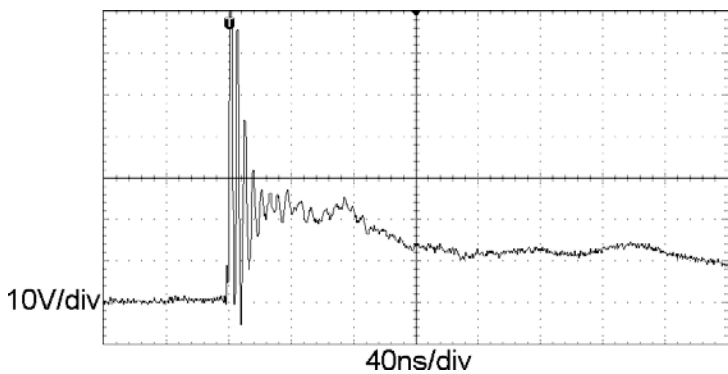
Capacitance vs. Reverse voltage



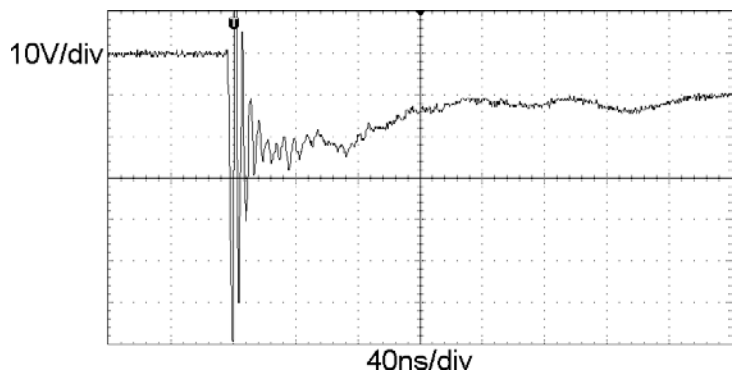
Non-Repetitive Peak Pulse Power vs. Pulse time



Power derating vs. Temperature



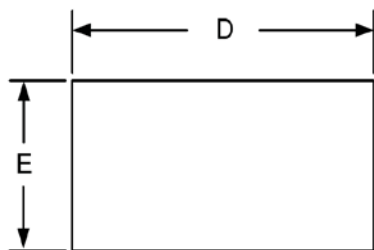
ESD clamping voltage  
(IEC61000-4-2 +8KV contact)



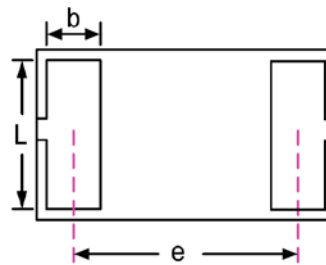
ESD clamping voltage  
(IEC61000-4-2 -8KV contact)

Package outline dimensions

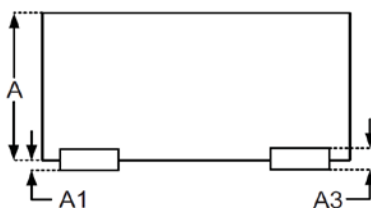
DFN1006-2L



Top View



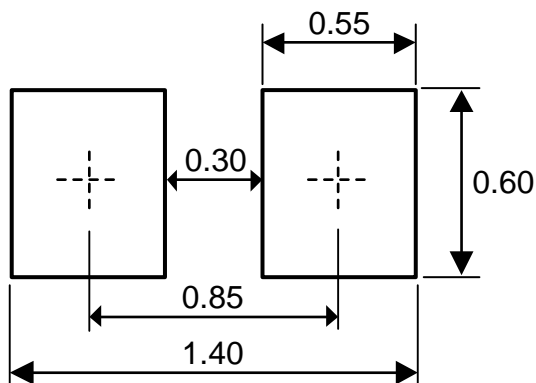
Bottom View



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)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.