

1-Line, Unii-directional, Transient Voltage Suppressors

Descriptions

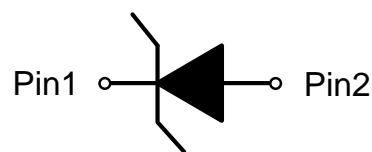
The ESD9N18VUS is a TVS (Transient Voltage Suppressor) designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and lightning.

The ESD9N18VUS may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 5.0A (8/20µs) according to IEC61000-4-5.

The ESD9N18VUS is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.



DFN1006-2L (Bottom View)



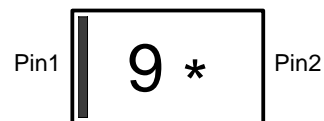
Circuit diagram

Features

- Stand-off voltage: 18V Max
- Transient protection for each line according to IEC61000-4-2 (ESD): ±30kV (contact discharge)
IEC61000-4-5 (surge): 5.0A (8/20µs)
- Capacitance: $C_J = 20\text{pF}$ typ.
- Ultra-low leakage current: $I_R = 0.1\text{nA}$ typ.
- Low clamping voltage: $V_{CL} = 30\text{V}$ typ. @ $I_{PP} = 16\text{A}$ (TLP)
- Solid-state silicon technology

Applications

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



9= Device code
* = Month code (A~Z)

Marking (Top View)

Order information

Device	Package	Shipping
ESD9N18VUS-2/TR	DFN1006-2L	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	180	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	5.0	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	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse maximum working voltage	V_{RWM}				18	V
Reverse leakage current	I_R	$V_{RWM} = 18V$		0.1	50	nA
Reverse breakdown voltage	V_{BR}	$I_T = 1mA$	18.6		22.4	V
Forward voltage	V_F	$I_F = 20mA$	0.65	0.83	1.10	V
Clamping voltage ¹⁾	V_{CL}	$I_{PP} = 16A, t_p = 100ns$		30		V
Dynamic resistance ¹⁾	R_{DYN}			0.42		Ω
Clamping voltage ²⁾	V_{CL}	$I_{PP} = 1A, t_p = 8/20\mu s$			23	V
		$I_{PP} = 5.0A, t_p = 8/20\mu s$			36	V
Junction capacitance	C_J	$V_R = 0V, f = 1MHz$		20	28	pF
		$V_R = 18V, f = 1MHz$		7	15	pF

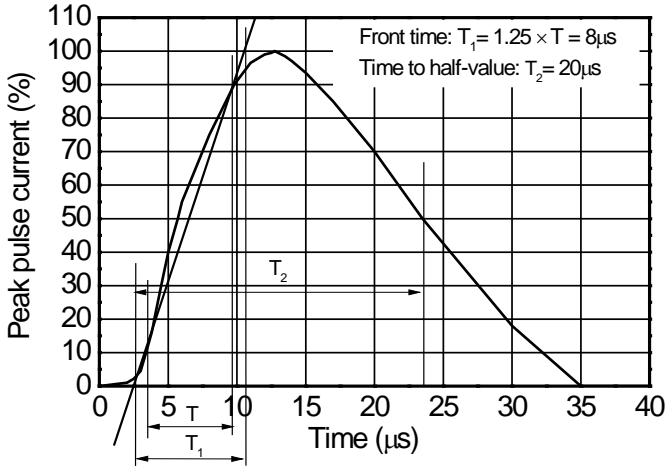
1) TLP parameter: $Z_0 = 50 \Omega$, $t_p = 100ns$, $t_r = 2ns$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

2) According to IEC61000-4-5.

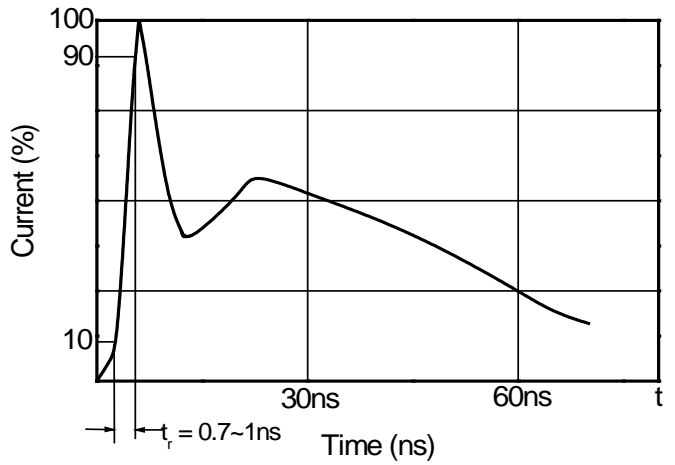


ESD9N18VUS

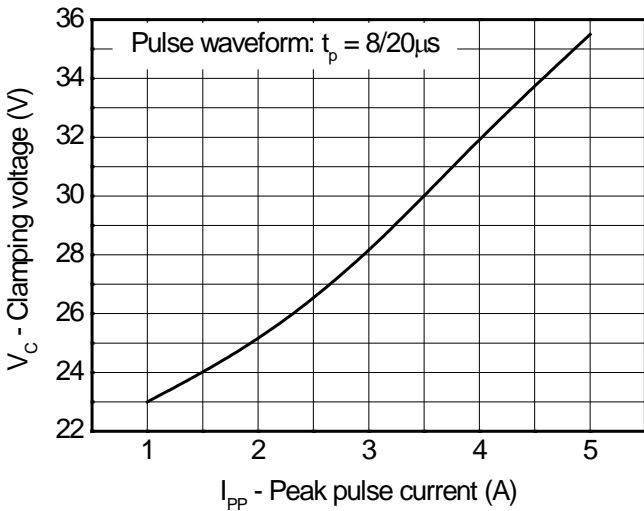
Typical characteristics (T_A=25°C, unless otherwise noted)



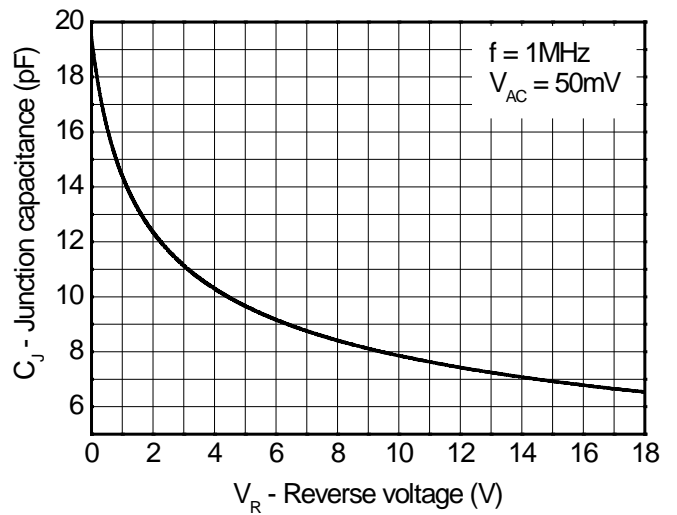
8/20μs waveform per IEC61000-4-5



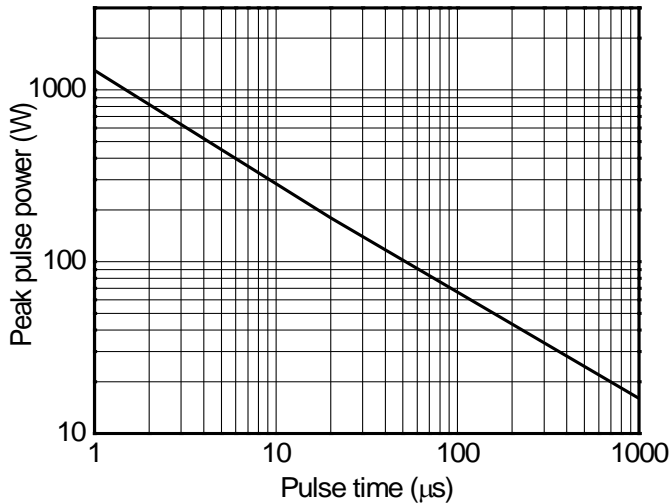
Contact discharge current waveform per IEC61000-4-2



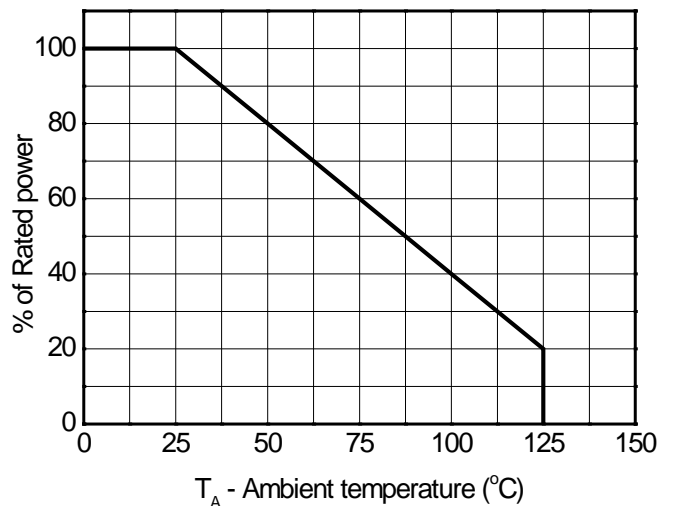
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverses voltage

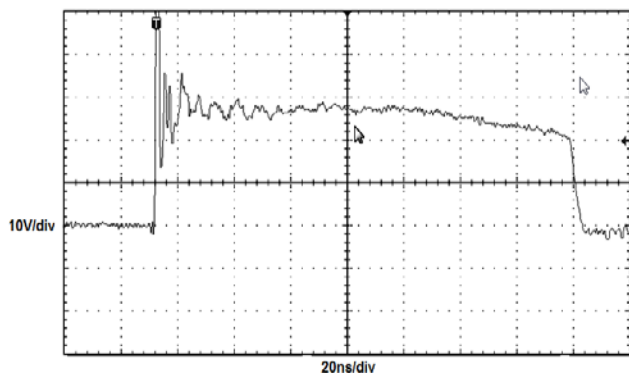


Non-repetitive peak pulse power vs. Pulse time

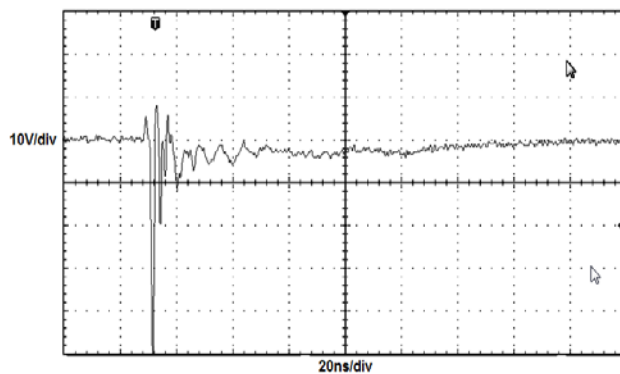


Power derating vs. Ambient temperature

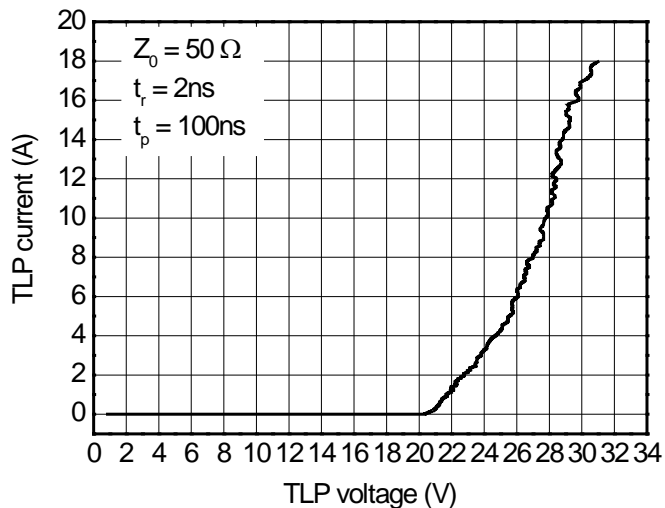
ESD9N18VUS



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



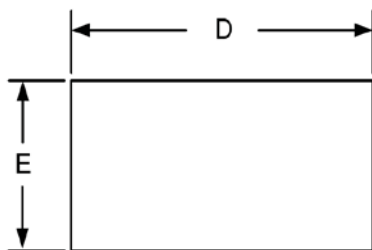
ESD clamping
(-8kV contact discharge per IEC61000-4-2)



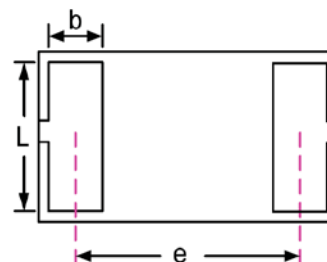
TLP Measurement

Package outline dimensions

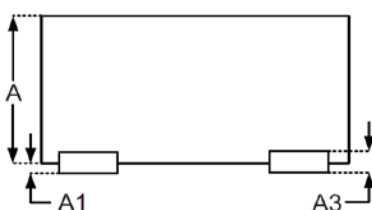
DFN1006-2L



Top View



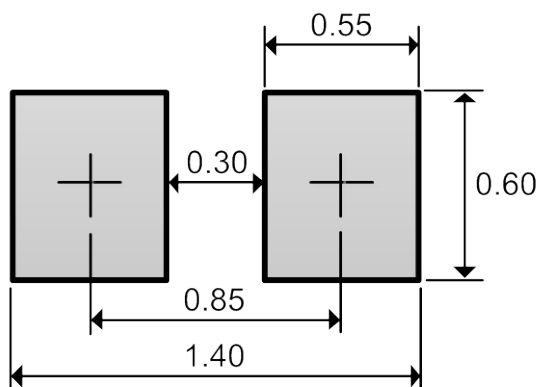
Bottom View



Side View

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.