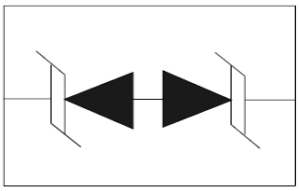
Descriptions

The ESD9N12BA 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 ESD9N12BA may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 5.5A (8/20μs) according to IEC61000-4-5.

The ESD9N12BA is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.



Features

- Stand-off voltage: ±12V Max.
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact discharge)
  IEC61000-4-5 (surge): 5.5A (8/20μs)
- Capacitance: C_J = 27pF typ.
- Ultra-low leakage current: I_R = 0.1nA typ.
  Low clamping voltage: V_{CL} = 20V typ. @ I_{PP} = 16A (TLP)
- Solid-state silicon technology

Applications

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

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	99	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	5.5	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

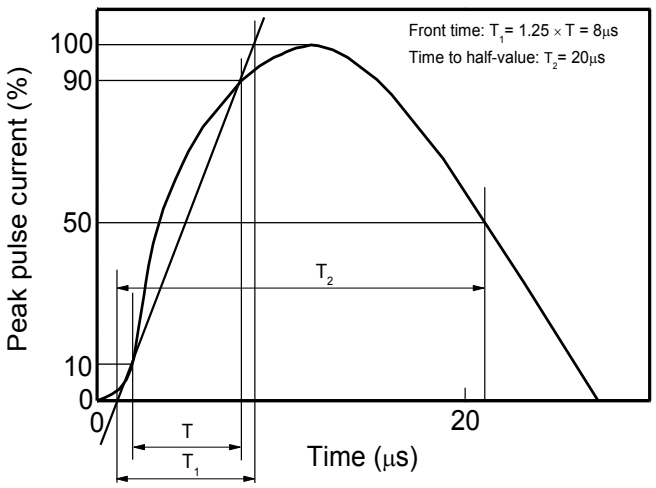
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Stand-off voltage	V_{RWM}				±12	V
Reverse leakage current	I_R	V_{RWM} = 12V		0.1	50	nA
Reverse breakdown voltage	V_{BR}	I_T = 1mA	13		16.5	V
Clamping voltage 1)	V_{CL}	I_{PP} = 16A, t_p = 100ns		20		V
Dynamic resistance 1)	R_{DYN}			0.35		Ω
Clamping voltage 2)	V_{CL}	I_{PP} = 1A, t_p = 8/20μs			16	V
		I_{PP} = 5.5A, t_p = 8/20μs			18	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		27	35	pF
		V_R = 12V, f = 1MHz		14	20	pF

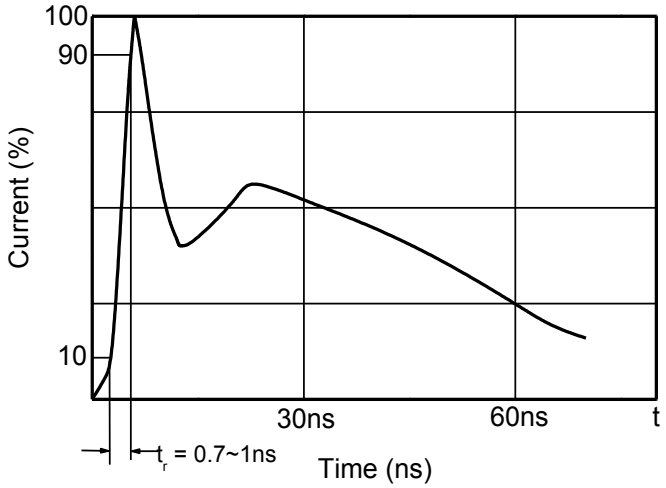
1) TLP parameter: Z_0 = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to16A.

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

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

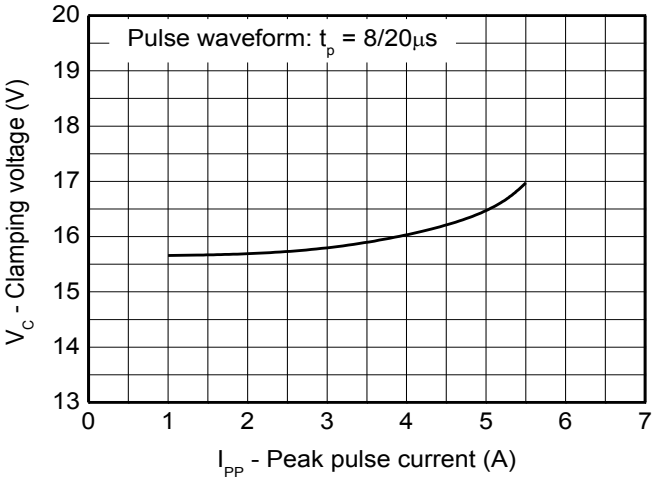


8/20μs waveform per IEC61000-4-5

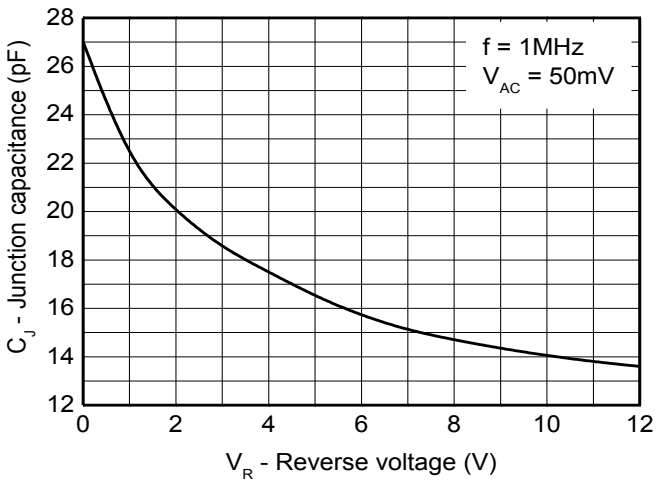


Contact discharge current waveform per IEC61000-4-2

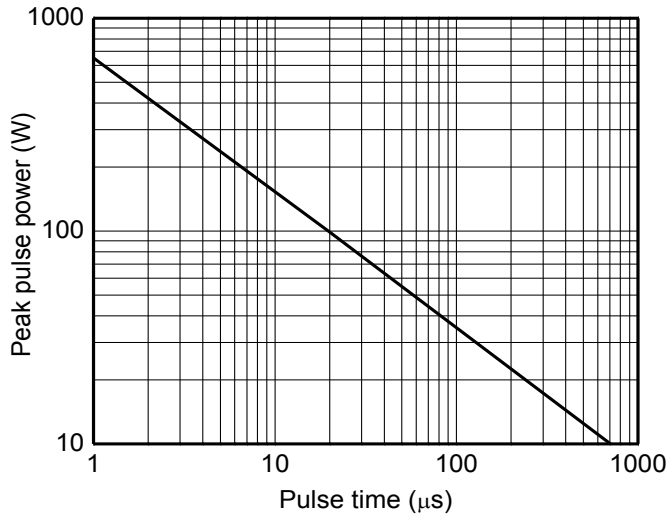
Typical characteristics (T_A=25°C, unless otherwise noted)

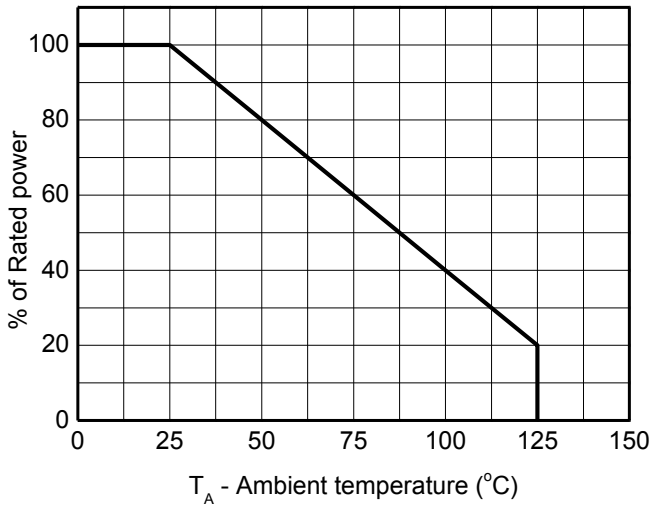


Clamping voltage vs. Peak pulse current



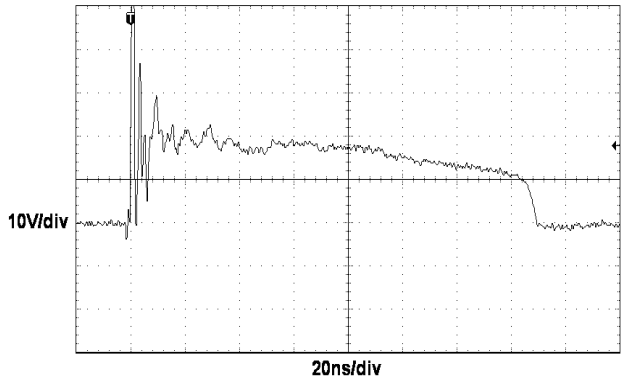
Capacitance vs. Reverse voltage





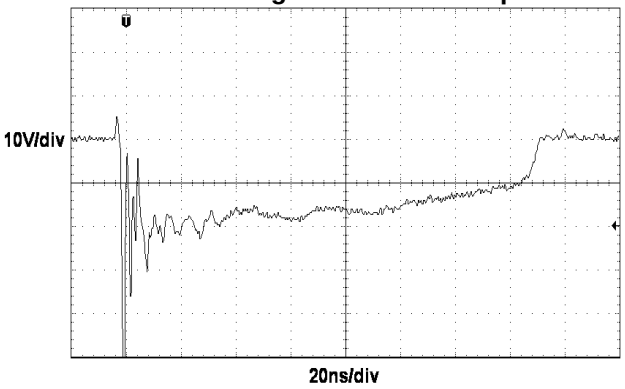
Typical characteristics (T_A=25°C, unless otherwise noted)

Non-repetitive peak pulse power vs. Pulse time

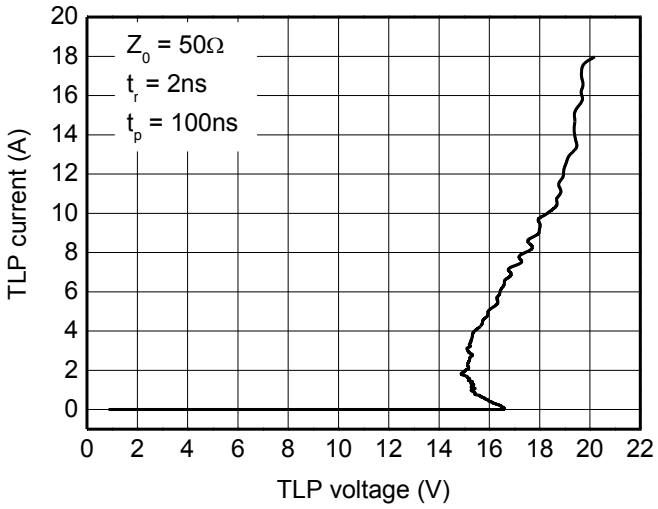


ESD clamping
(+8kV contact discharge per IEC61000-4-2)

Power derating vs. Ambient temperature

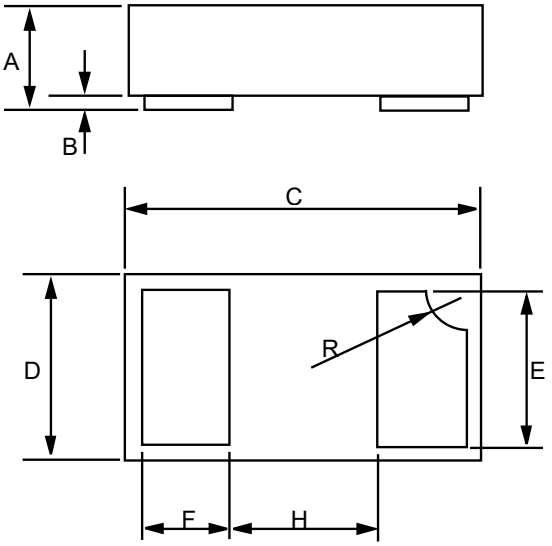


ESD clamping
(-8kV contact discharge per IEC61000-4-2)



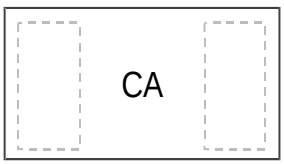
TLP Measurement

DFN1006-2 PACKAGE OUTLINE DIMENSIONS



Dim	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.013	0.020	0.34	0.50
B	0.000	0.002	0.00	0.05
C	0.037	0.042	0.95	1.075
D	0.021	0.026	0.55	0.675
E	0.017	0.021	0.45	0.55
F	0.007	0.011	0.20	0.30
H	0.015Typ.		0.40Typ.	
R	0.001	0.005	0.05	0.15

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW ESD9N12BA	DFN1006-2	10000	Tape and reel