

ESD9B5VDA

**1-Line, Low capacitance, Bi-directional
Transient Voltage Suppressors**

Descriptions

The ESD9B5VDA is a transient voltage suppressor (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 multilayer varistors (MLV) in consumer equipment applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

The ESD9B5VDA may be used to provide ESD protection up to $\pm 20\text{kV}$ (contact and air discharge) according to IEC61000-4-2 and withstand peak pulse current up to 5A (8/20 μs) according to IEC61000-4-5.

The ESD9B5VDA is available in SOD-923 package. Standard products are Pb-free and Halogen-free.

Features

- Reverse stand-off voltage: $\pm 5\text{V}$ Max.
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 20\text{kV}$ (Contact and Air)
IEC61000-4-4 (EFT): 40A (5/50ns)
IEC61000-4-5 (surge): 5A (8/20 μs)
- Capacitance: $C_J = 13\text{pF}$ typ.
- Leakage current: $I_R < 1\mu\text{A}$ typ.
- Low clamping voltage
- Small Package SOD-923

Applications

- Mobile phone
- PAD
- Notebook
- LCD TV
- Other electronics equipment

<http://www.sh-willsemi.com>



SOD-923



Circuit Diagram



**9C = Device code
Marking**

Order information

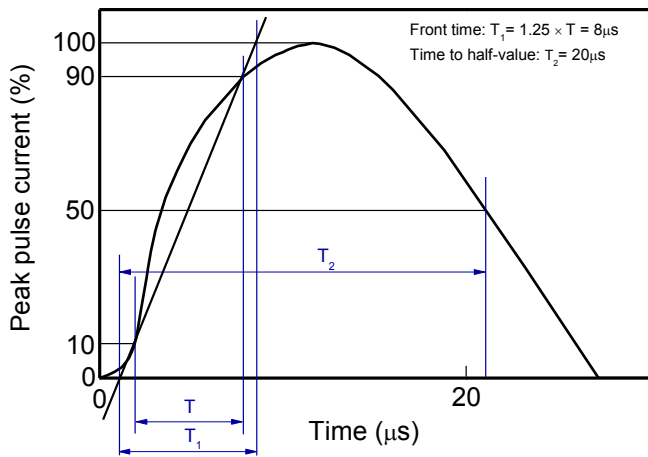
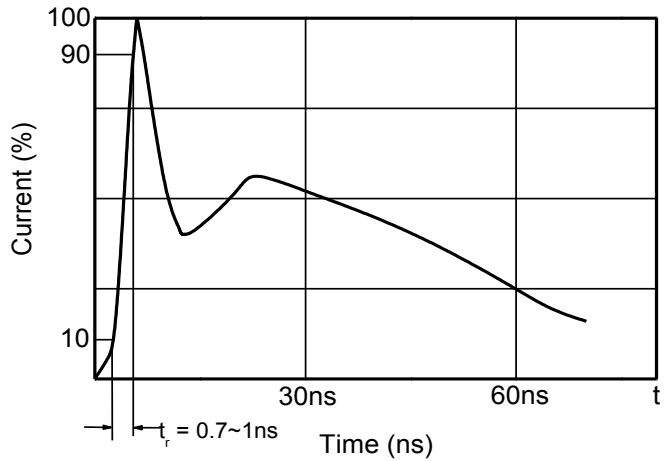
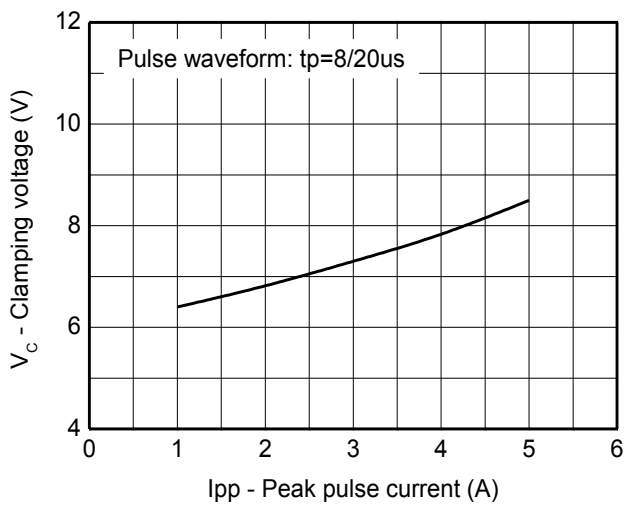
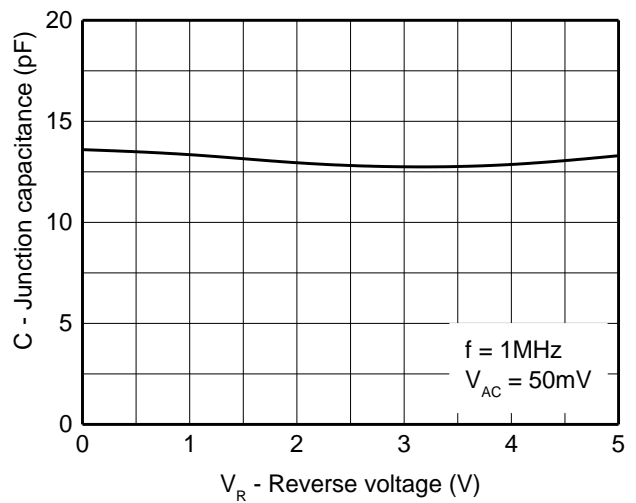
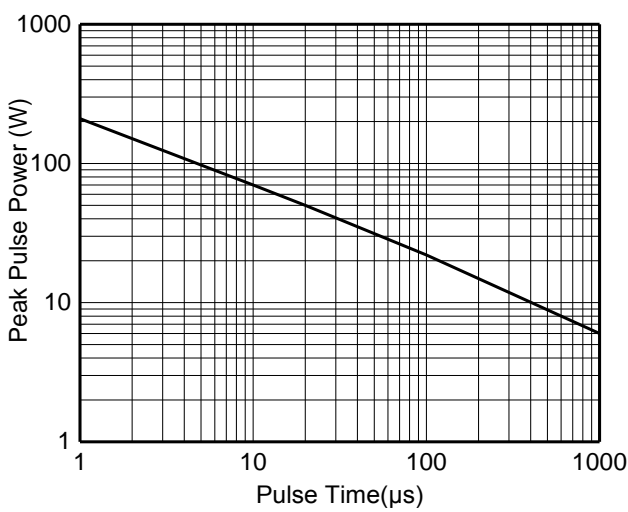
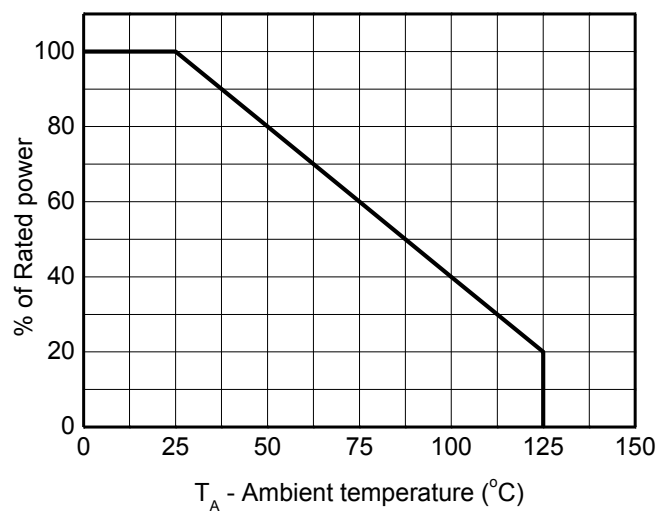
Device	Package	Shipping
ESD9B5VDA-2/TR	SOD-923	10000/Tape&Reel

Absolute maximum ratings

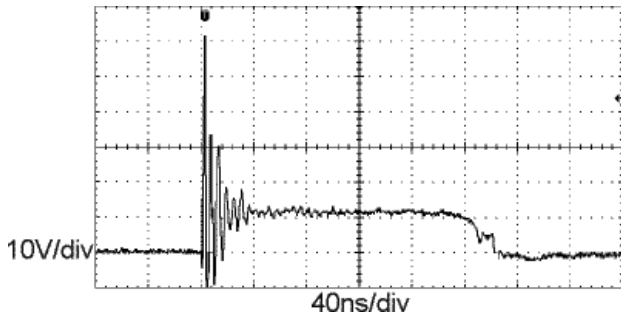
Parameter	Symbol	Rating	Unit
Peak pulse power (tp = 8/20μs)	P _{pk}	50	W
Peak pulse current (tp = 8/20μs)	I _{pp}	5	A
ESD according to IEC61000-4-2 air discharge	V _{ESD}	±20	KV
ESD according to IEC61000-4-2 contact discharge		±20	
Junction temperature	T _J	125	°C
Operating temperature	T _{OP}	-40~85	°C
Lead temperature	T _L	260	°C
Storage temperature	T _{STG}	-55~150	°C

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

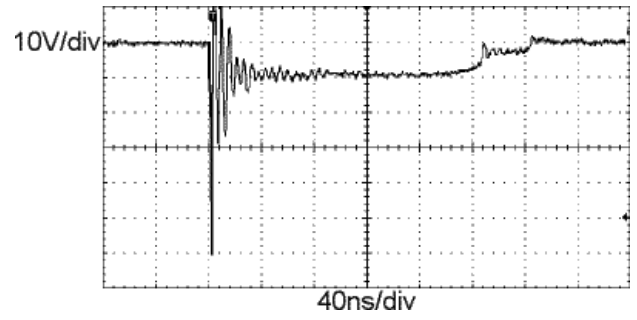
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				±5	V
Reverse leakage current	I _R	V _{RWM} = 5V			1	μA
Reverse breakdown voltage	V _{BR}	I _{BR} = 1mA	5.8	7.5	8.5	V
Clamping voltage	V _{CL}	I _{pp} = 1A, tp = 8/20μs			7.5	V
		I _{pp} = 5A, tp = 8/20μs			10	V
Junction capacitance	C _J	V _R = 0V, f = 1MHz		13	16	pF

Typical characteristics (Ta=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. Reverse voltage

Non-repetitive peak pulse power vs. Pulse time

Power derating vs. Ambient temperature

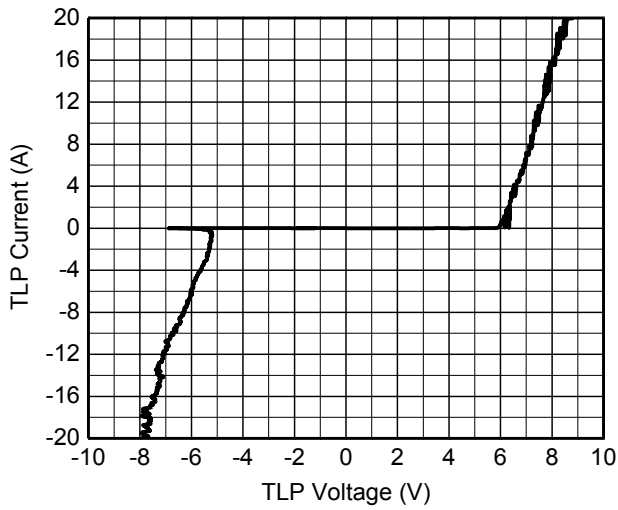
Typical characteristics (Ta=25°C, unless otherwise noted)



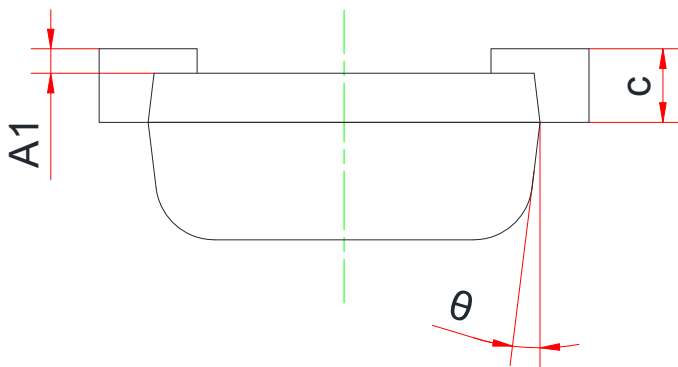
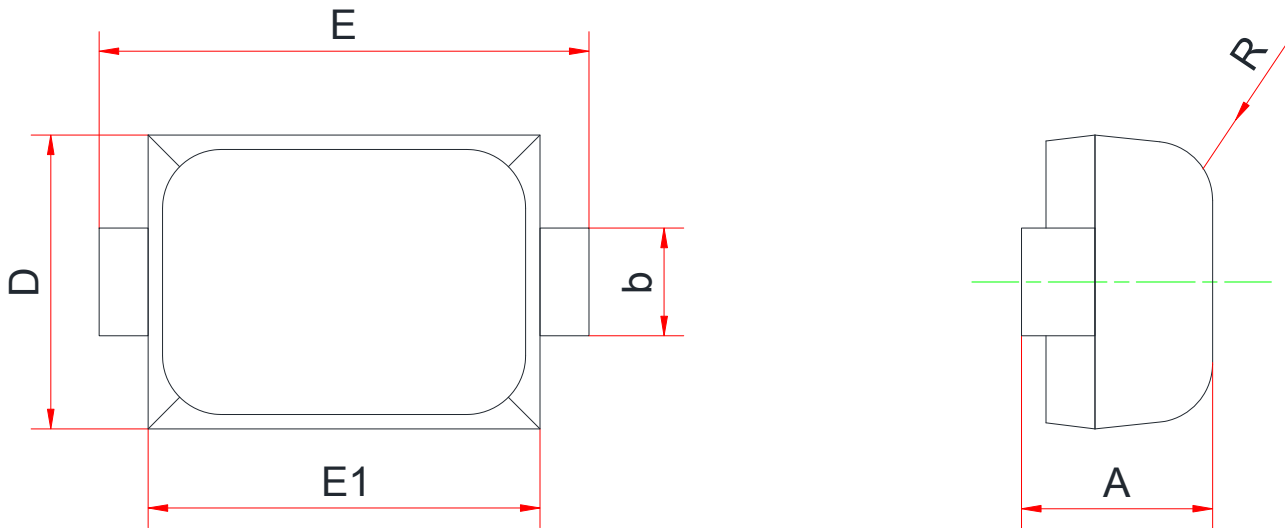
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



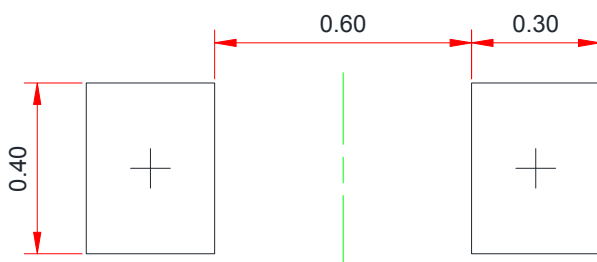
ESD clamping
(-8kV contact discharge per IEC61000-4-2)



TLP Measurement

Package outline dimensions
SOD-923


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	-	0.42	0.45
A1	0.00	-	0.05
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.55	0.60	0.65
E	0.95	1.00	1.05
E1	0.75	0.80	0.85
θ	6° Ref.		
R	-	-	0.12

Recommend PCB Layout (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.