ESD9D5U

1-Line, Uni-directional, Ultra-low Capacitance Transient Voltage Suppressor

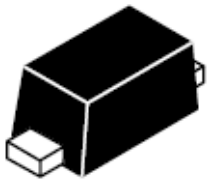
http//:www.sh-willsemi.com

Descriptions

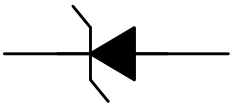
The ESD9D5U is transient voltage suppressors (TVS) which provide a very high level protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). It is designed to replace multilayer varistors (MLV) in consumer equipment applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

The ESD9D5U may be used to provide ESD protection up to ±8KV (contact) according to IEC61000-4-2 and withstand peak pulse current up to 3A for 8/20μs pulse according to IEC61000-4-5.

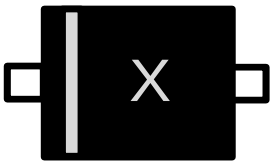
The ESD9D5U is available in SOD-923 package. Standard products are Pb-free and Halogen-free.



SOD-923



Circuit diagram



SOD-923
X = Device code
Marking (Top View)

Features

- Working voltage : 5V
- Peak power (tp=8/20μs) : 42W
- ESD protection(IEC61000-4-2) : ±8KV contact
- ESD protection(IEC61000-4-2) : ±15KV air
- Low clamping voltage
- Low leakage current
- Small package SOD-923

Order information

Device	Package	Shipping
ESD9D5U-2/TR	SOD-923	10000/Tape&Reel

Applications

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

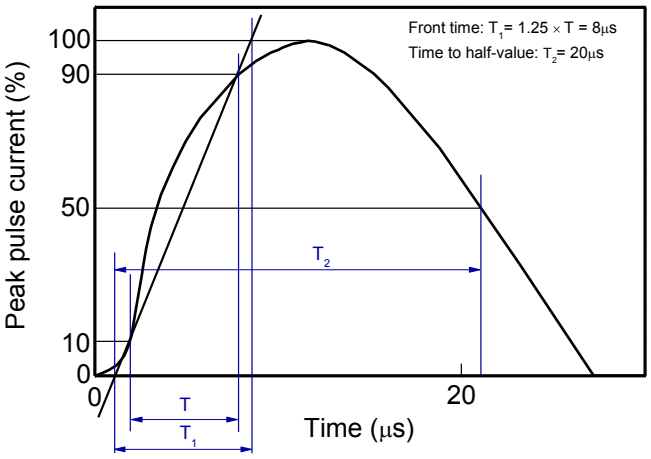
Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20μs)	Ppk	42	W
Peak pulse current (tp=8/20μs)	Ipp	3	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±15	KV
ESD according to IEC61000-4-2 contact discharge		±8	KV
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

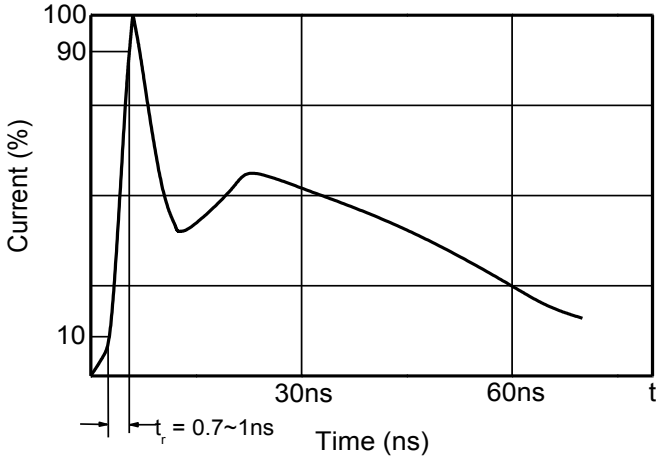
Electronics characteristics (Ta=25°C, unless otherwise noted)

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			1.0	μA
Reverse breakdown voltage	V_{BR}	I_T=1mA	6.5			V
Forward voltage	V_F	I_F=10mA	0.4		1.4	V
Clamping voltage	V_{CL}	Ipp=1A tp=8/20μs			10.5	V
		Ipp=3A tp=8/20μs			14.0	V
Junction capacitance	C_J	VR = 0V, f = 1MHz		0.5	0.9	pF

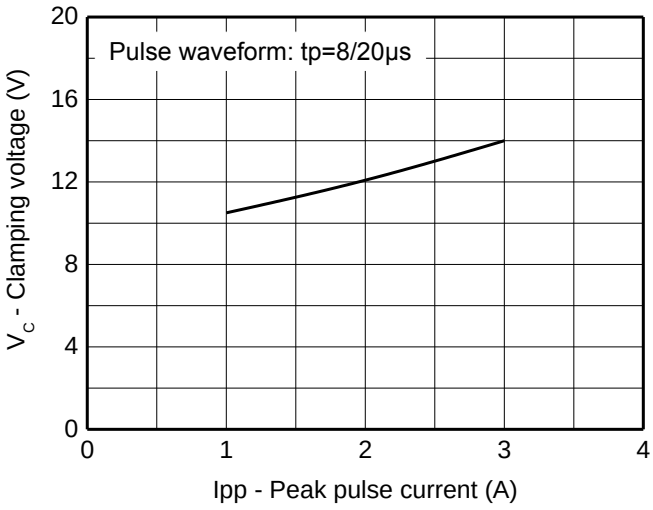
Typical characteristics (Ta=25°C, unless otherwise noted)



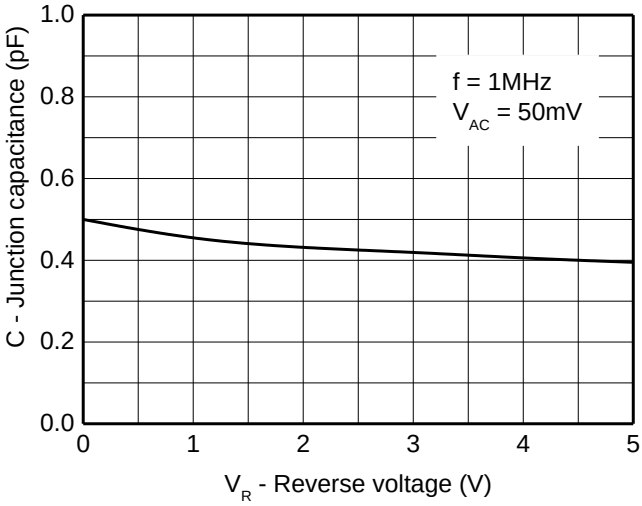
8/20μs waveform per IEC61000-4-5



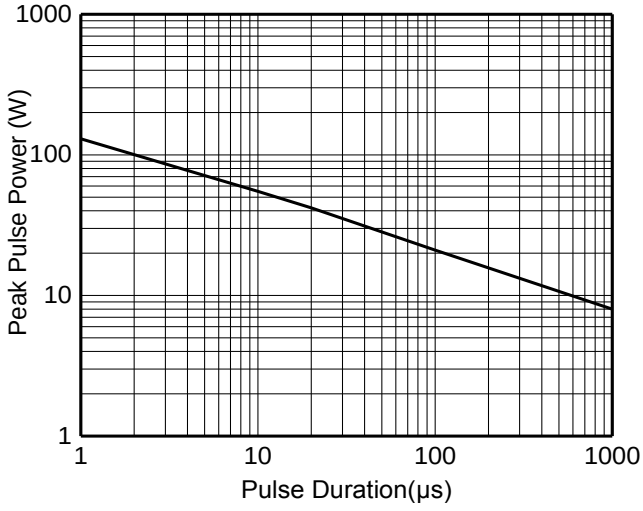
Contact discharge current waveform per IEC61000-4-2



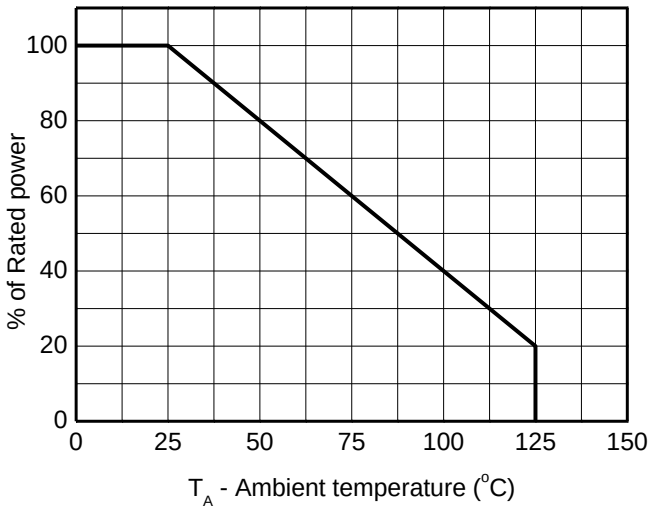
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

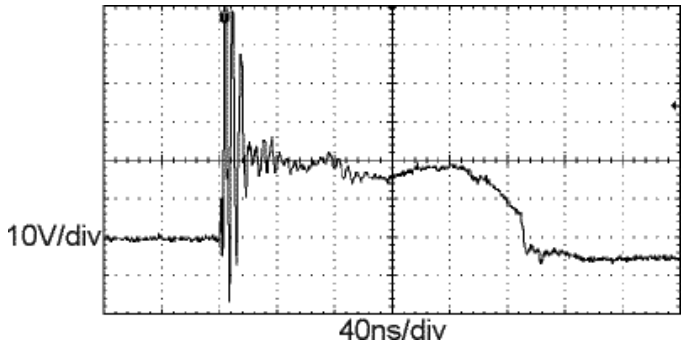


Non-repetitive peak pulse power vs. Pulse time

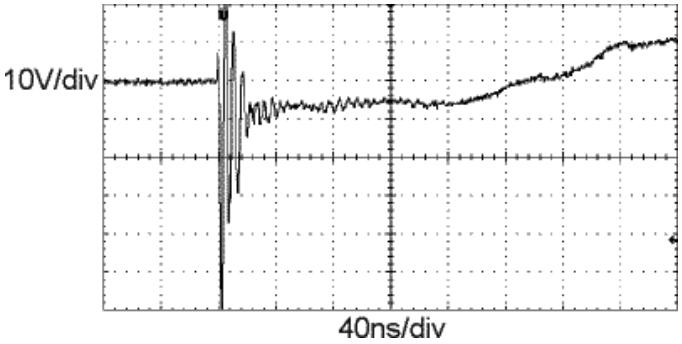


Power derating vs. Ambient temperature

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



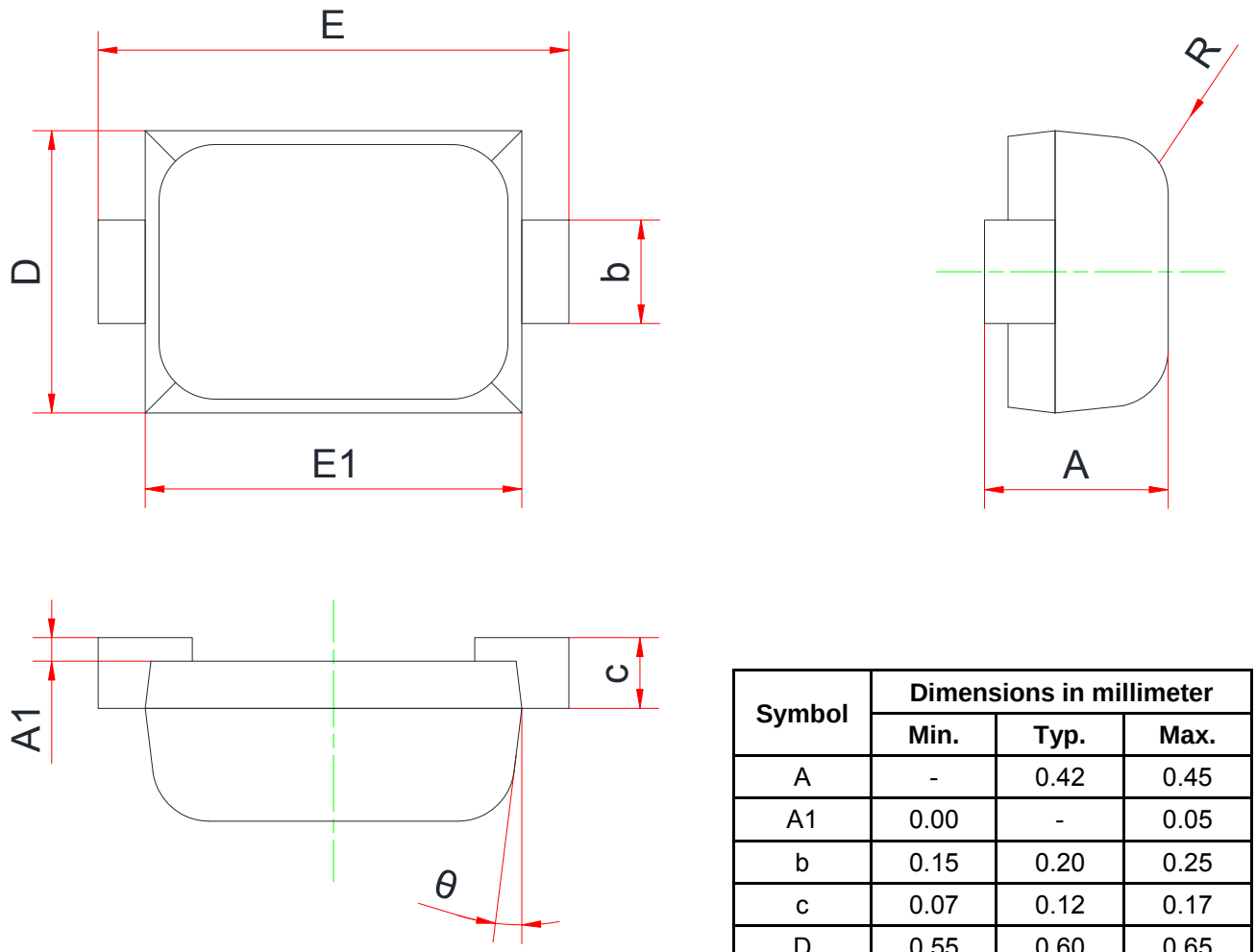
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



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

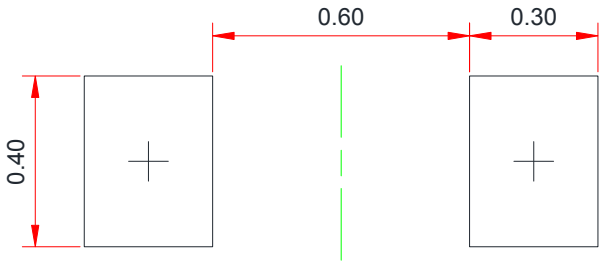
Package outline dimensions

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^{o} 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.