ESD5Z7V

1-Line, Uni-directional, Transient Voltage Suppressors

http//:www.sh-willsemi.com

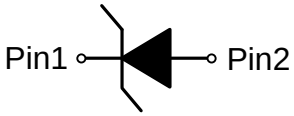
Descriptions

The ESD5Z7V is a TVS (Transient Voltage Suppressor) designed to protect sensitive electronic components which are connected to power lines, low speed data lines and transmission lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and surge.

The ESD5Z7V may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 9.5A (8/20μs) according to IEC61000-4-5.

The ESD5Z7V is available in SOD-523 package. Standard products are Pb-free and Halogen-free.

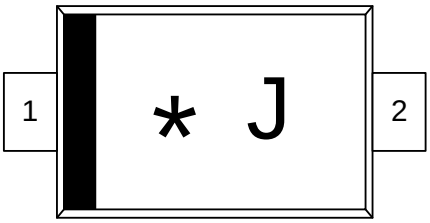
SOD-523



Circuit diagram

Features

- Stand-off voltage: 7V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact and air discharge)
  IEC61000-4-4 (EFT): 80A (5/50ns)
  IEC61000-4-5 (surge): 9.5A (8/20μs)
- Capacitance: C_J = 47pF typ.
- Low leakage current
- Low clamping voltage
- Solid-state silicon technology



J = Device code

* = Month code

Marking & Pin configuration (Top View)

Applications

- Computers and peripherals
- Cellular handsets
- Microprocessors
- Power lines
- Portable Electronics
- Notebooks

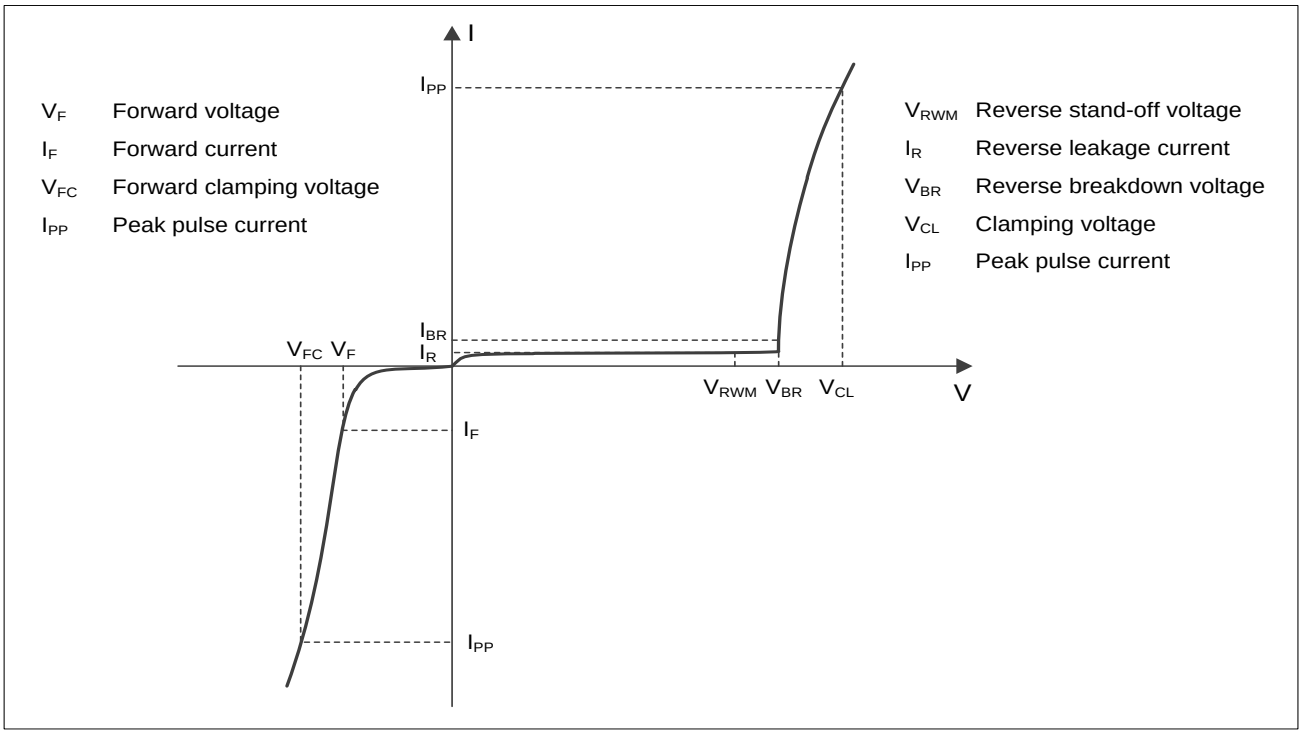
Order information

Device	Package	Shipping
ESD5Z7V-2/TR	SOD-523	3000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{PK}	171	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	9.5	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	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

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



Definitions of electrical characteristics

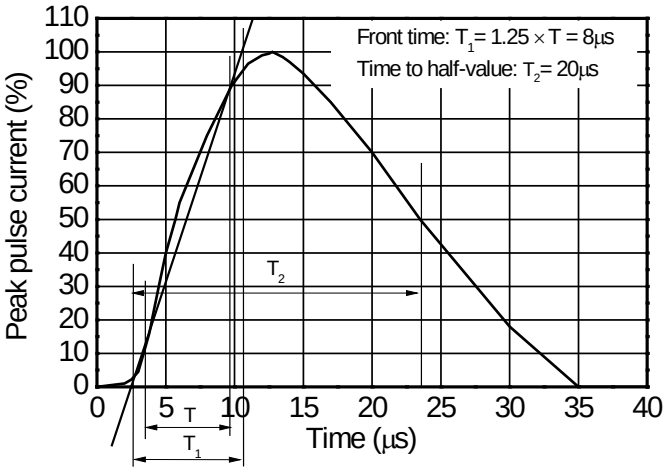
Electrical characteristics (T_A = 25°C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				7	V
Reverse leakage current	I_R	V_{RWM} = 7V			1	μA
Reverse breakdown voltage	V_{BR}	I_{BR} = 1mA	7.5		10	V
Forward voltage	V_F	I_F = 20mA	0.55		1.25	V
Clamping voltage [1)]	V_{CL}	I_{PP} = 1A, t_p = 8/20μs			12	V
		I_{PP} = 9.5A, t_p = 8/20μs			18	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		47	65	pF

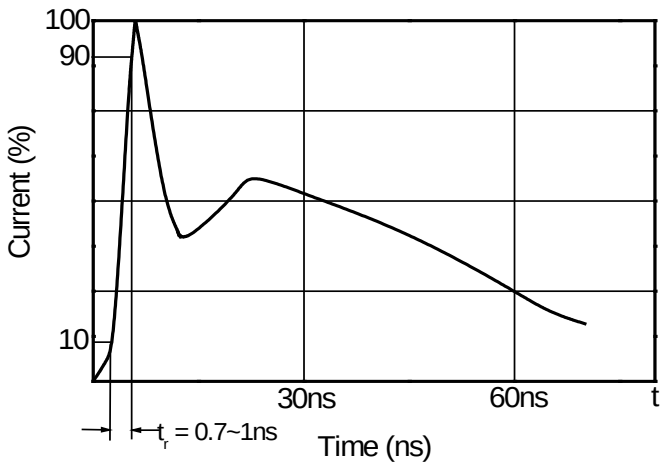
Notes:

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

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

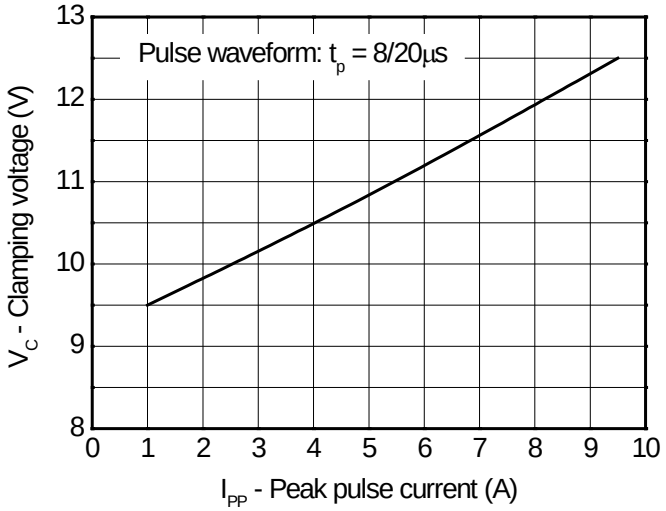


8/20μs waveform per IEC61000-4-5

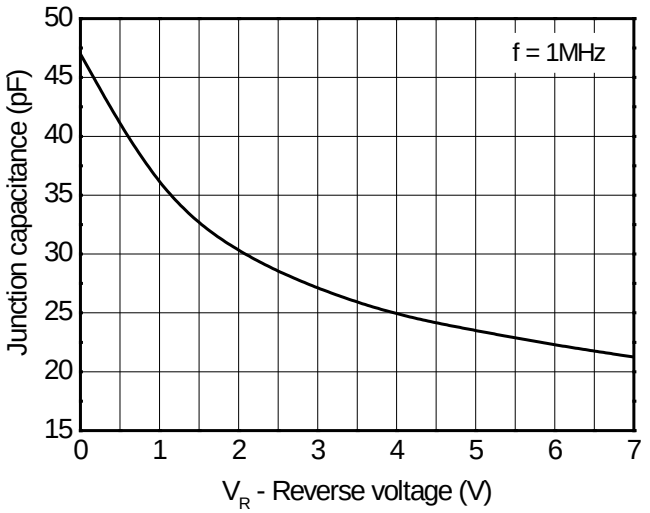


Contact discharge current waveform per IEC61000-4-2

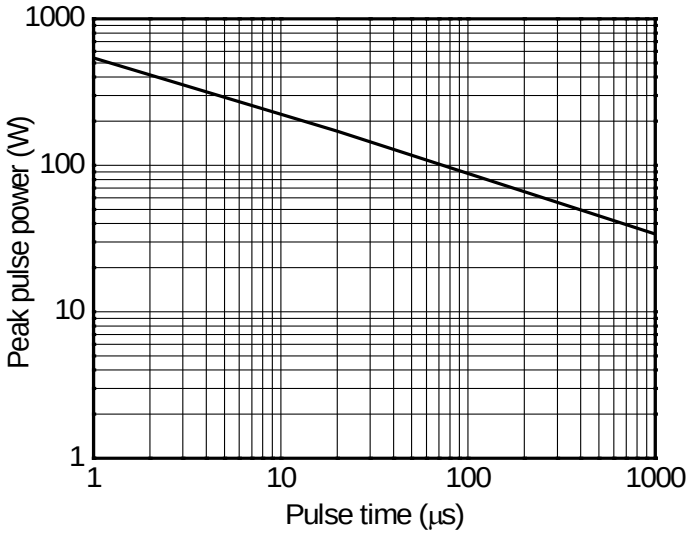
Typical characteristics (T_A = 25°C, unless otherwise noted)



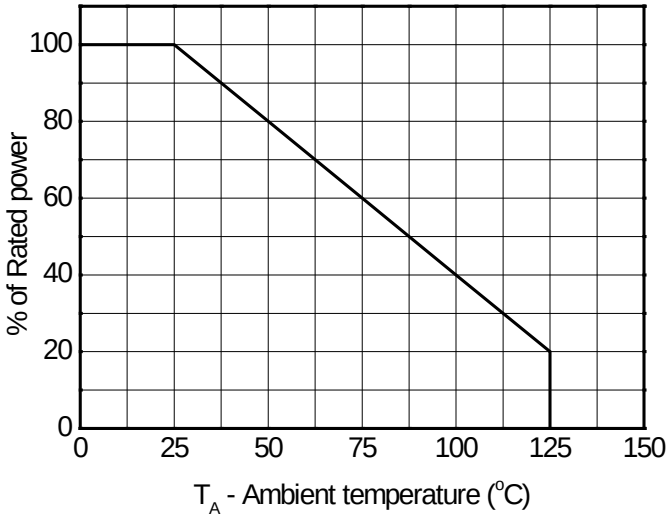
Clamping voltage vs. Peak pulse current



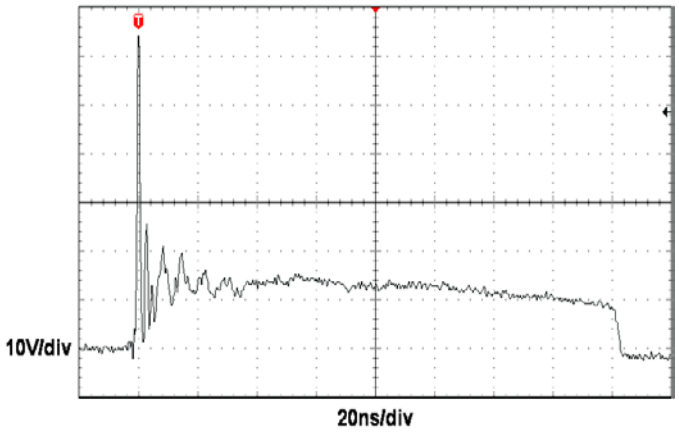
Capacitance vs. Reveres voltage



Non-repetitive peak pulse power vs. Pulse time

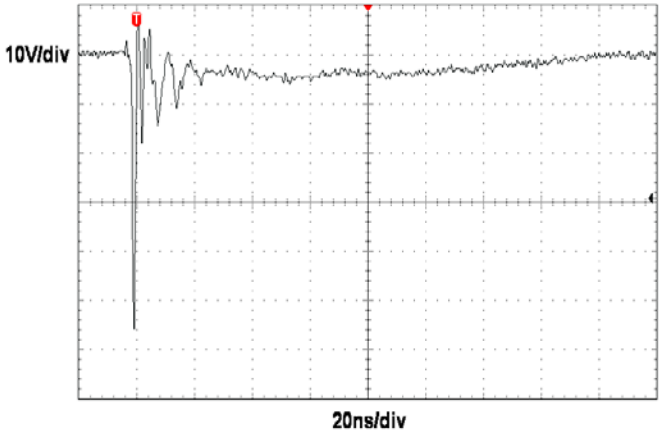


Power derating vs. Ambient temperature



ESD clamping

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

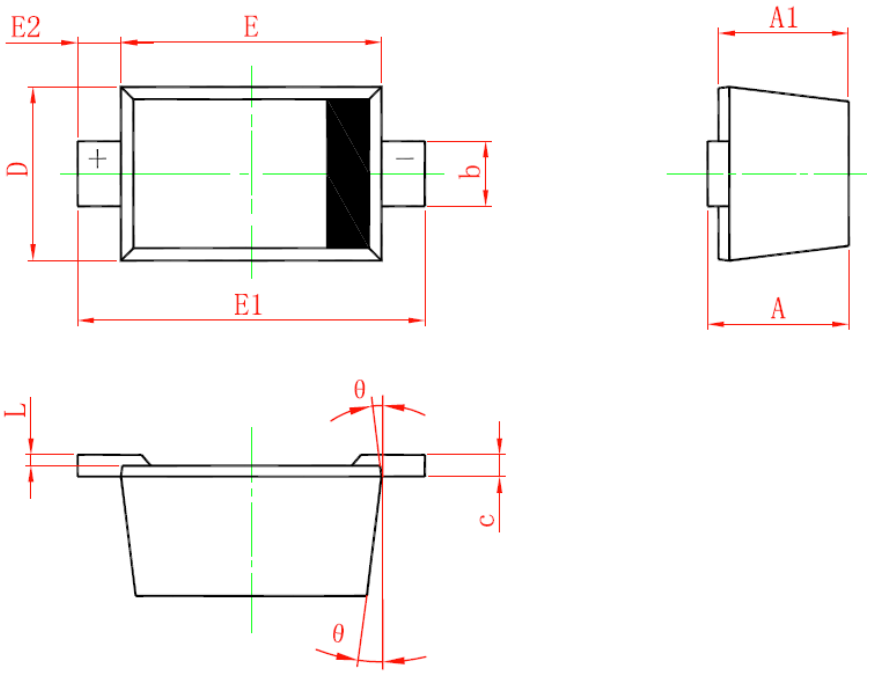


ESD clamping

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

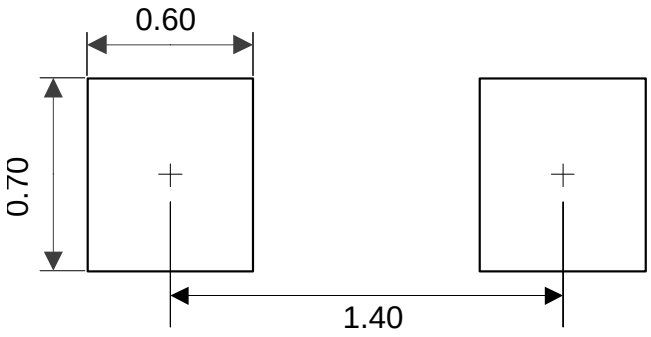
Package outline dimensions

SOD-523



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.510	--	0.770
A1	0.500	--	0.700
b	0.250	0.300	0.350
c	0.080	--	0.150
D	0.750	0.800	0.850
E	1.100	1.200	1.300
E1	1.500	1.600	1.700
E2	0.200 REF.		
L	0.010	--	0.070
θ	7^{o} REF.		

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.