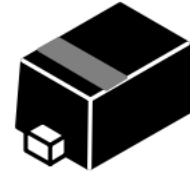
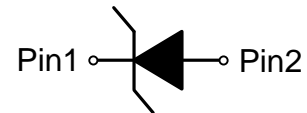


**ESD5Z7V**
**1-Line, Uni-directional, Transient Voltage Suppressors**
<http://www.sh-willsemi.com>
**Descriptions**

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  $\pm 30\text{kV}$  (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 9.5A (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.

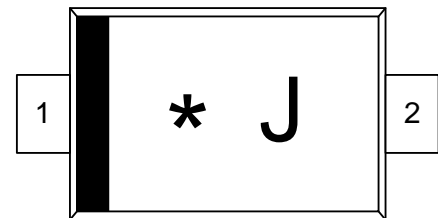
The ESD5Z7V is available in SOD-523 package. Standard products are Pb-free and Halogen-free.


**SOD-523**

**Circuit diagram**
**Features**

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

**Applications**

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



J = Device code

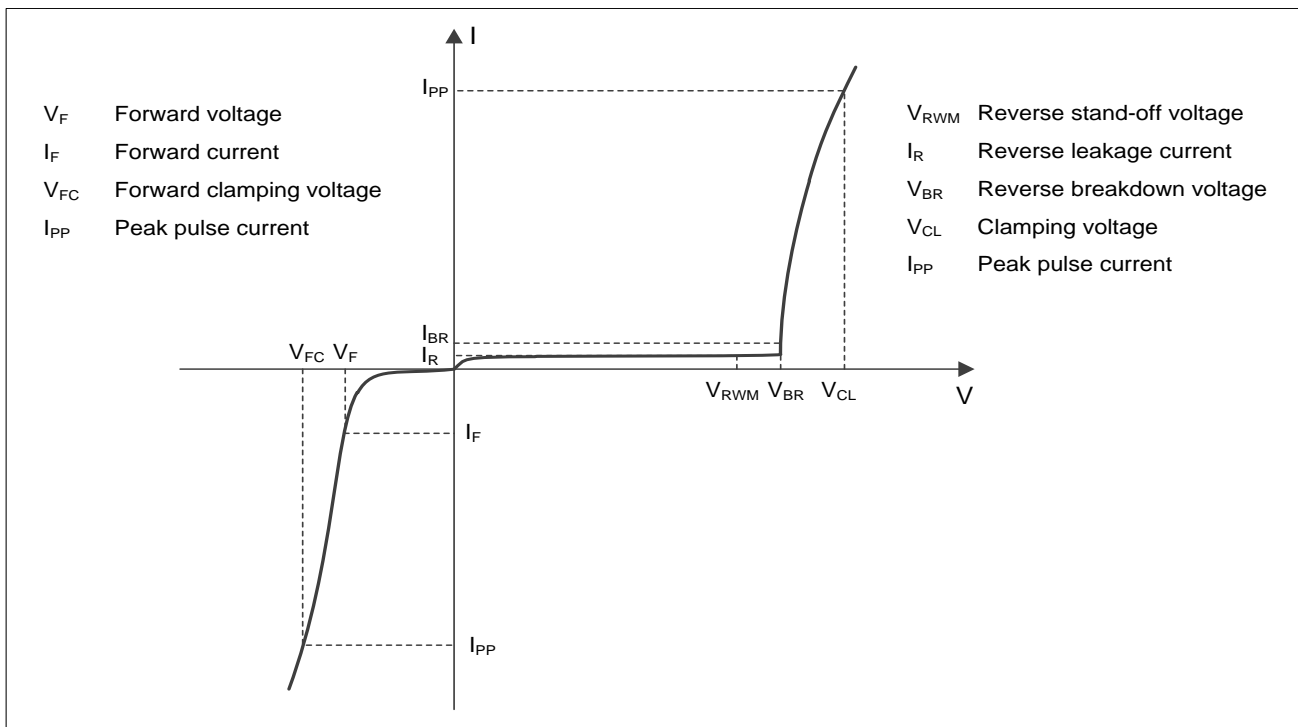
\* = Month code

**Marking & Pin configuration (Top View)**
**Order information**

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

**Absolute maximum ratings**

Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{PK}$	171	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{PP}$	9.5	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
Operation junction temperature	$T_J$	125	$^{\circ}C$
Lead temperature	$T_L$	260	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

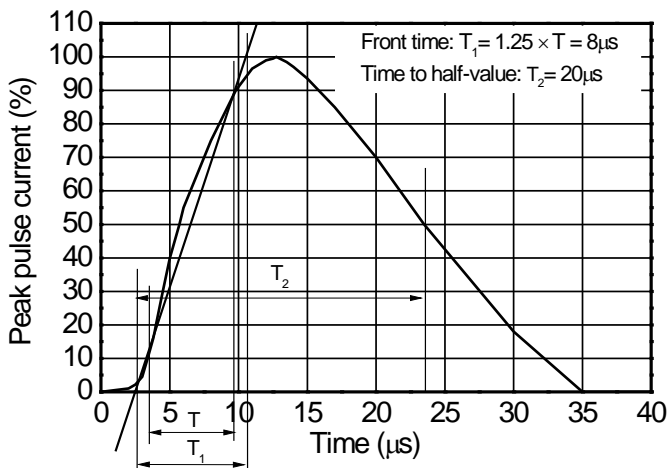
**Electrical characteristics ( $T_A = 25^{\circ}C$ , unless otherwise noted)**

**Definitions of electrical characteristics**

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

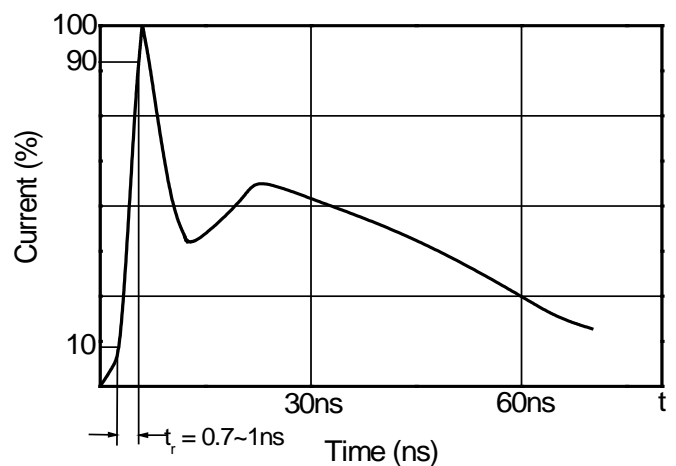
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				7	V
Reverse leakage current	$I_R$	$V_{RWM} = 7V$			1	$\mu\text{A}$
Reverse breakdown voltage	$V_{BR}$	$I_{BR} = 1\text{mA}$	7.5		10	V
Forward voltage	$V_F$	$I_F = 20\text{mA}$	0.55		1.25	V
Clamping voltage <sup>1)</sup>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

Notes:

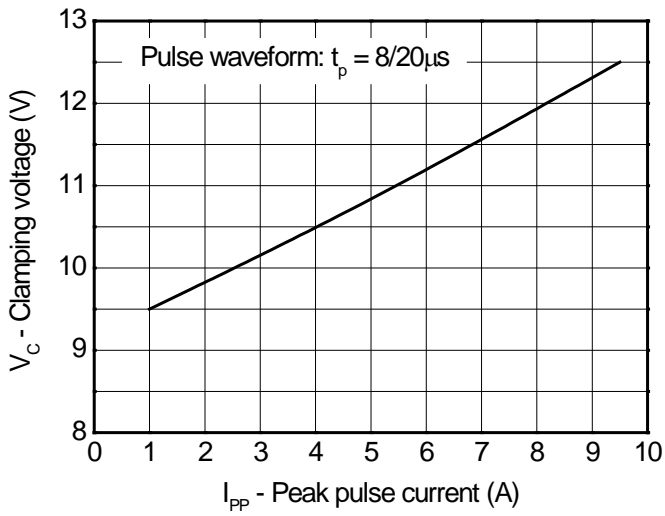
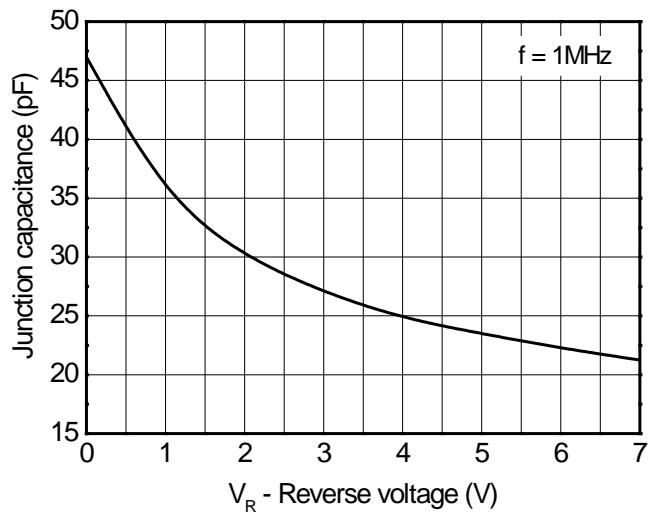
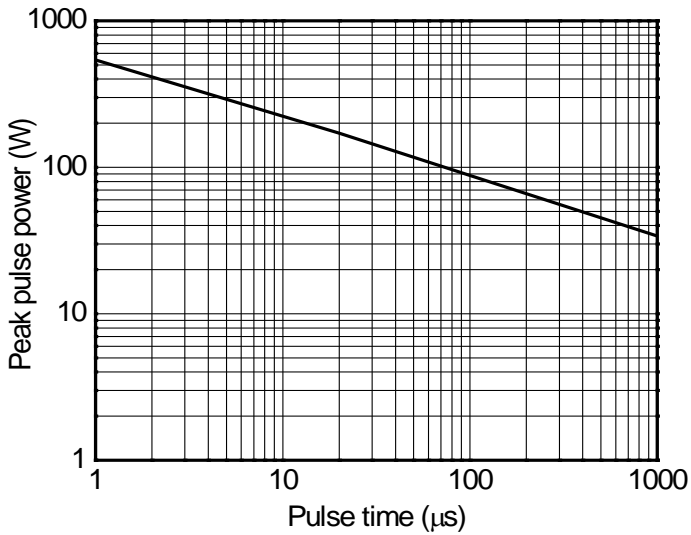
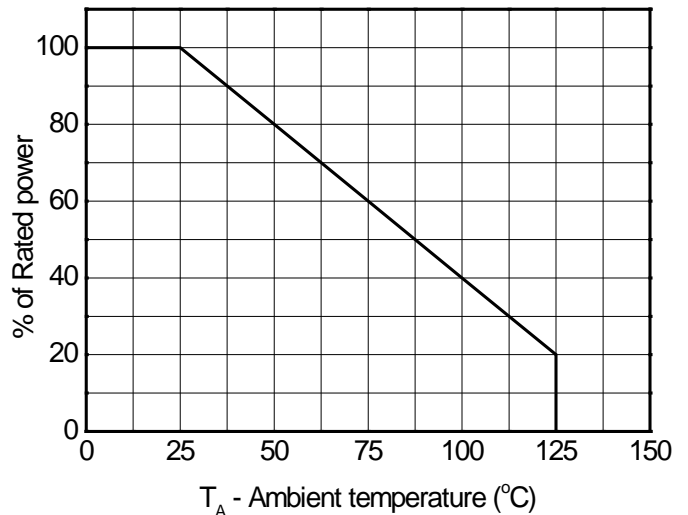
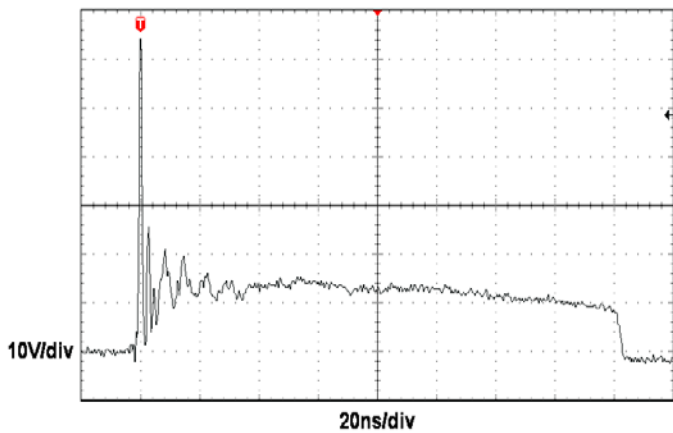
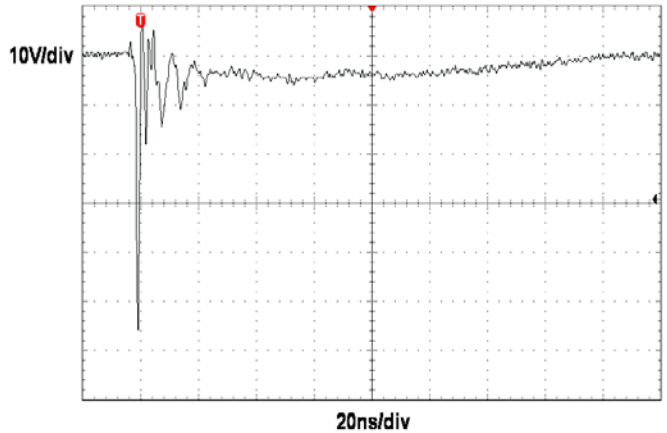
1) Non-repetitive current pulse, according to IEC61000-4-5.

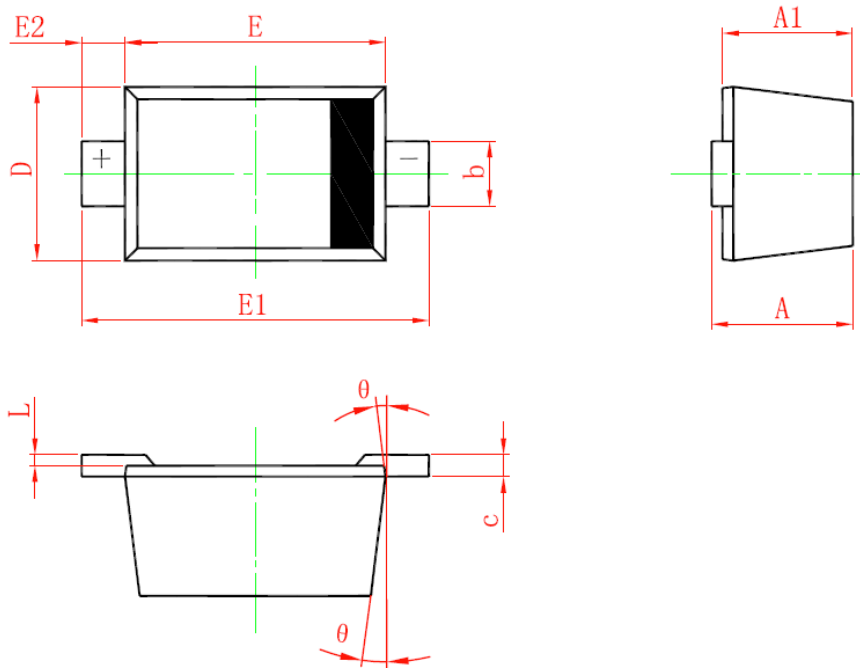
**Typical characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)**


8/20 $\mu\text{s}$  waveform per IEC61000-4-5

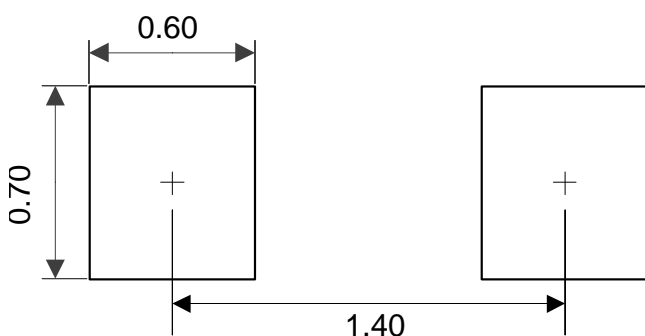


Contact discharge current waveform per IEC61000-4-2

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

**Clamping voltage vs. Peak pulse current**

**Capacitance vs. Reverse 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
theta	7° 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.