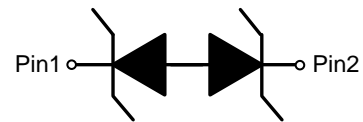


**ESD5B5VL**
**1-Line, Bi-directional, Transient Voltage Suppressors**
<http://www.sh-willsemi.com>
**Descriptions**

The ESD5B5VL is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components that may be subjected to ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning. It is particularly well-suited for cellular phones, portable device, digital cameras, power supplies and many other portable applications because of its small package and low weight.

The ESD5B5VL may be used to provide ESD protection up to  $\pm 8\text{kV}$  (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 3.5A (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.

The ESD5B5VL is available in SOD-523 package. Standard products are Pb-free and Halogen-free.


**SOD-523**

**Circuit diagram**


B = Device code

\* = Date code ( A~Z)

**Marking (Top View)**
**Features**

- Stand-off voltage:  $\pm 5\text{V}$  Max
- Transient protection for each line according to IEC61000-4-2 (ESD):  $\pm 8\text{kV}$  (contact discharge)  
IEC61000-4-4 (EFT): 40A (5/50ns)  
IEC61000-4-5 (surge): 3.5A (8/20 $\mu\text{s}$ )
- Capacitance:  $C_J = 5\text{pF}$  typ.
- Solid-state silicon technology

**Applications**

- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Digital Cameras
- MP3/MP4/PMP Players

**Order information**

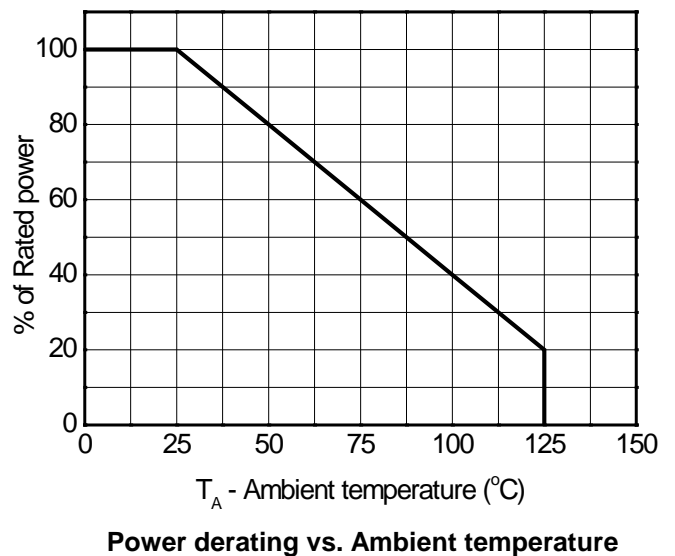
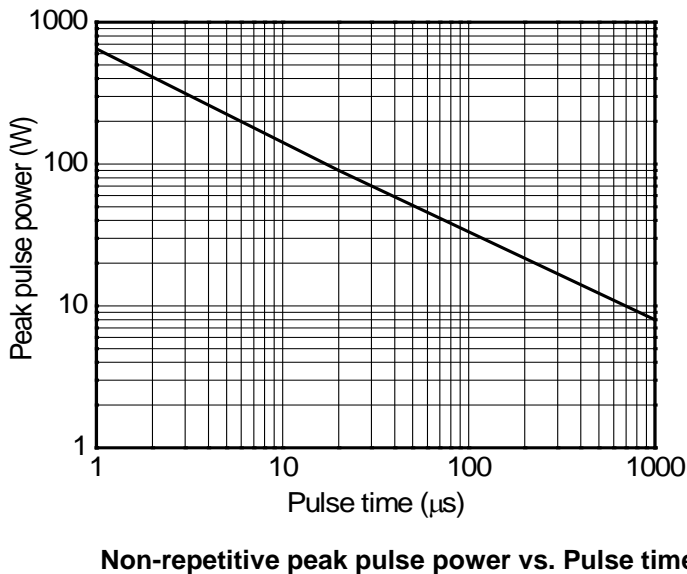
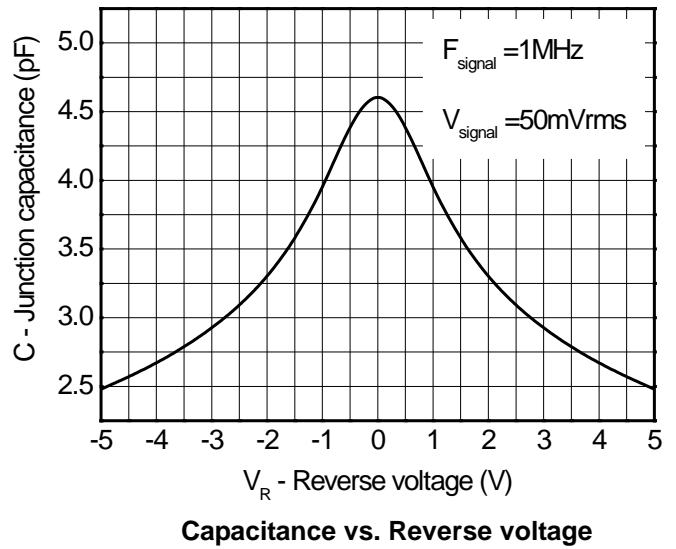
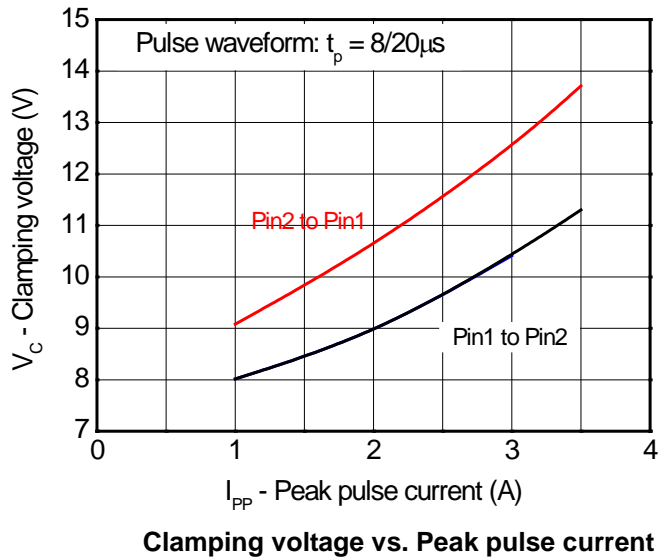
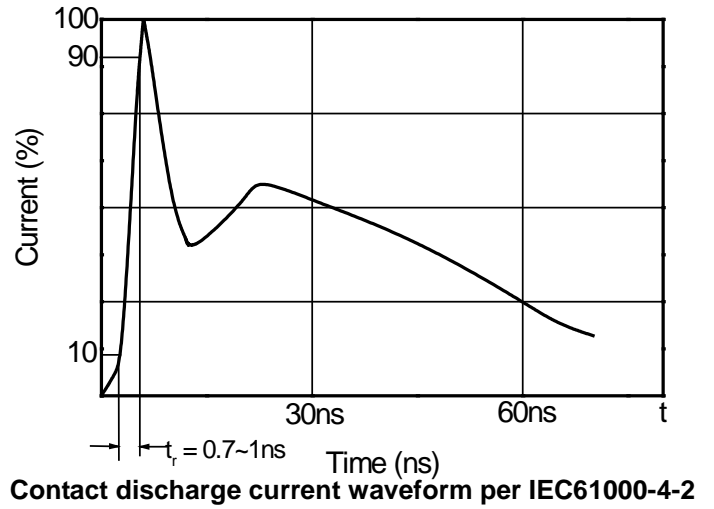
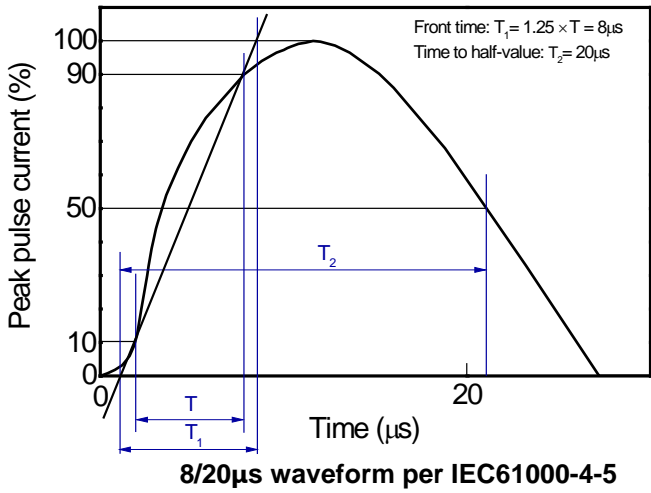
Device	Package	Shipping
ESD5B5VL-2/TR	SOD-523	3000/Tape&Reel

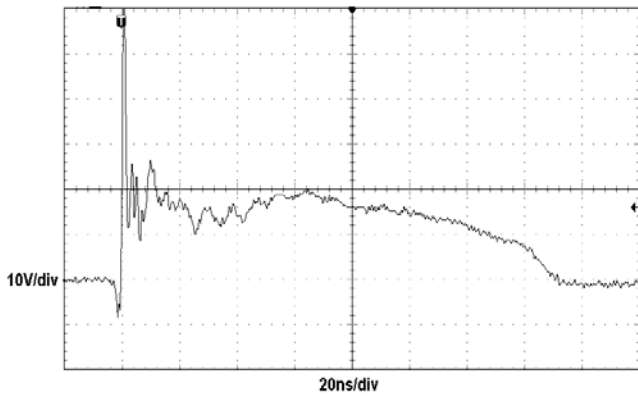
**Absolute maximum ratings**

Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	50	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{pp}$	3.5	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 15$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 8$	
Junction temperature	$T_J$	125	$^{\circ}C$
Operating temperature	$T_{OP}$	-40~85	$^{\circ}C$
Lead temperature	$T_L$	260	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

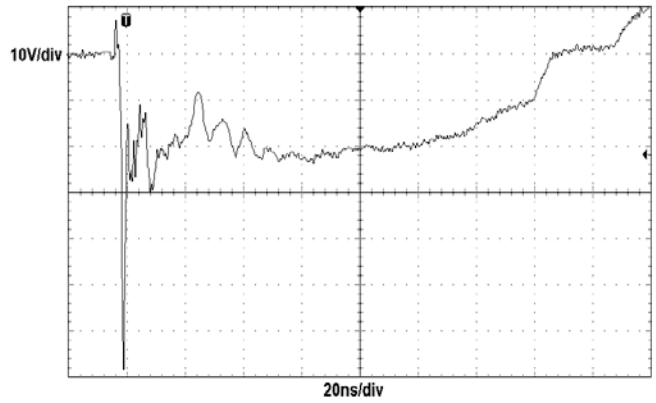
**Electrical characteristics (TA=25  $^{\circ}C$ , unless otherwise noted)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				$\pm 5$	V
Reverse leakage current	$I_R$	$V_{RWM} = 5V$			1	$\mu A$
Reverse breakdown voltage	$V_{BR12}$	$I_T = 1mA$	6.5	7.7	8.1	V
Forward voltage	$V_{BR21}$	$I_F = 1mA$	6.5	7.8	8.1	V
Clamping voltage	$V_{CL}$	$V_{ESD} = 8kV$		20		V
Clamping voltage	$V_C$	$I_{pp} = 1A$ $t_p = 8/20\mu s$			10	V
		$I_{pp} = 3.5A$ $t_p = 8/20\mu s$			14	V
Junction capacitance	$C_J$	$V_R = 0V$ , $f = 1MHz$		5.0	10	pF
		$V_R = 5V$ , $f = 1MHz$		2.5	5	pF

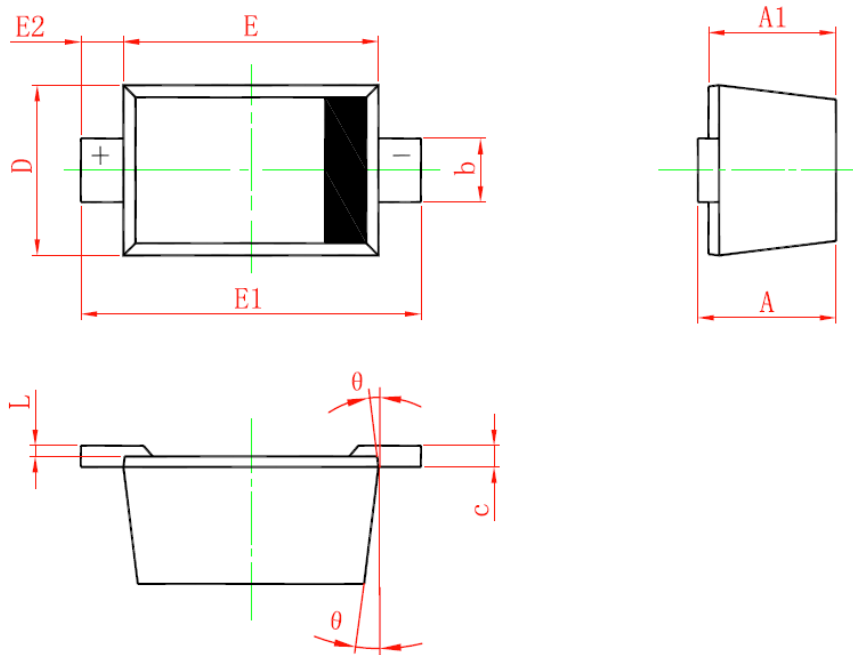
**Typical characteristics ( $T_A=25^\circ\text{C}$ , unless otherwise noted)**




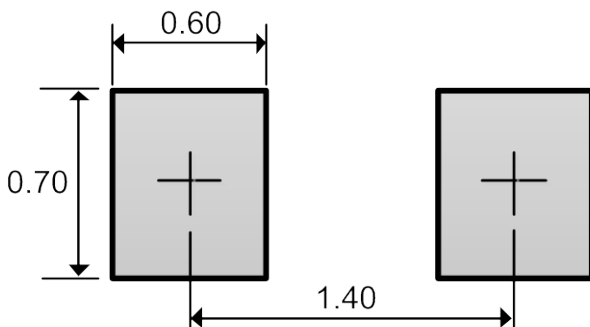
**ESD clamping**  
**(+8kV contact discharge per IEC61000-4-2)**



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

**Package outline dimensions**
**SOD-523**


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.510	0.640	0.770
A1	0.500	0.600	0.700
b	0.250	0.300	0.350
c	0.080	0.115	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	0.040	0.070
$\theta$	7° Ref		

**Recommend land pattern (Unit: mm)**


*Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.*