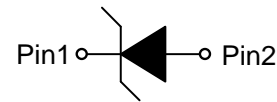


**ESD5621WXX**
**1-Line, Uni-directional, Transient Voltage Suppressor**
<http://www.sh-willsemi.com>
**Descriptions**

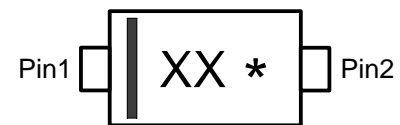
The ESD5621WXX is a uni-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

The ESD5621WXX may be used to provide ESD protection up to  $\pm 30\text{kV}$  (contact and air discharge) according to IEC61000-4-2, and with high surge capability used to protect USB voltage bus pin. (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.

The ESD5621WXX is available in SOD-323F package. Standard products are Pb-free and Halogen-free.


**SOD-323F (Bottom View)**

**Circuit diagram**
**Features**

- Reverse stand-off voltage: 4.5V ~ 15V
- Surge protection according to IEC61000-4-5 see [Table 4](#)
- ESD protection according to IEC61000-4-2  $\pm 30\text{kV}$  (contact and air discharge)
- Low clamping voltage
- Solid-state silicon technology



XX = Device code

\* = Month code

**Marking (Top View)**
**Applications**

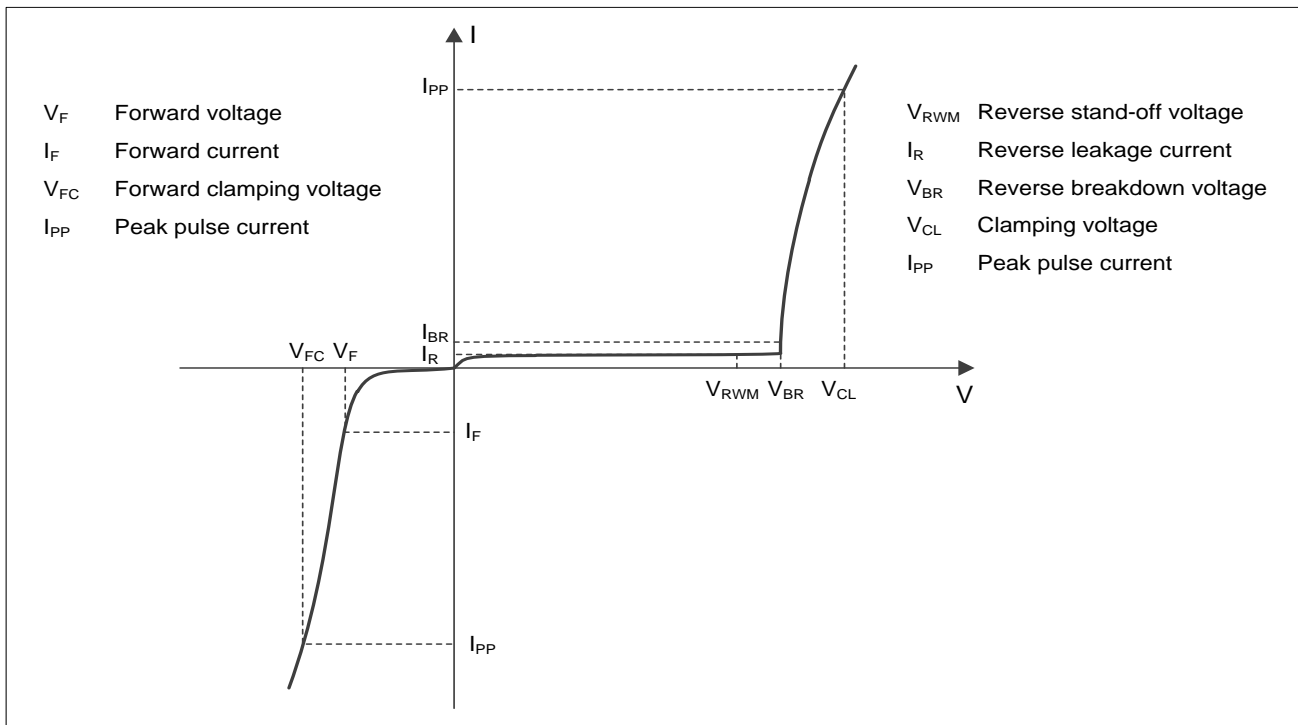
- Power supply protection
- Power management

**Order information**
**Table 1.**

Device	Package	Shipping	Marking
ESD5621W04-2/TR	SOD-323F	3000/Tape&Reel	TE*
ESD5621W05-2/TR	SOD-323F	3000/Tape&Reel	TG*
ESD5621W-2/TR	SOD-323F	3000/Tape&Reel	Q*
ESD5621W15-2/TR	SOD-323F	3000/Tape&Reel	TD*

**Absolute maximum ratings**
**Table 2.**

Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p=8/20\mu s$ )	Ppk	1400	W
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
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 ( $T_A = 25^{\circ}C$ , unless otherwise noted)**

**Definitions of electrical characteristics**

**Electrical characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)**
**Table 3.**

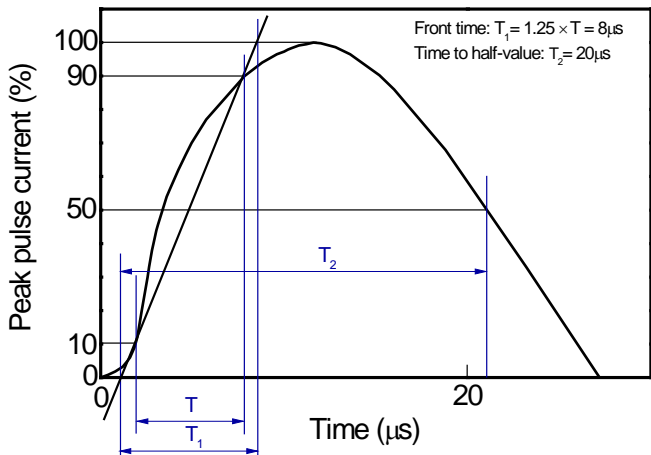
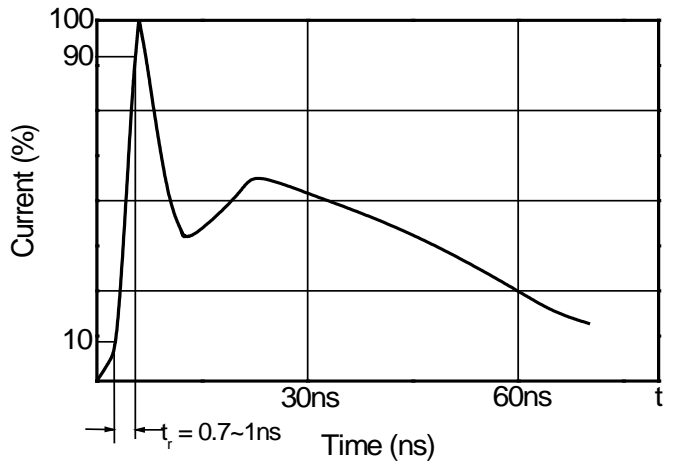
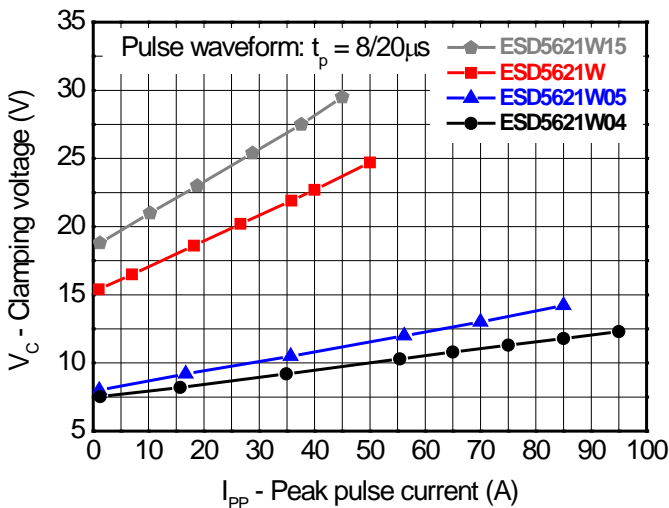
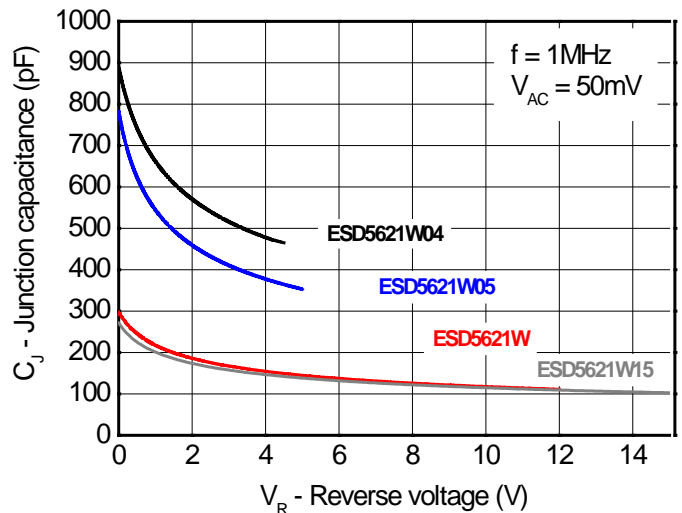
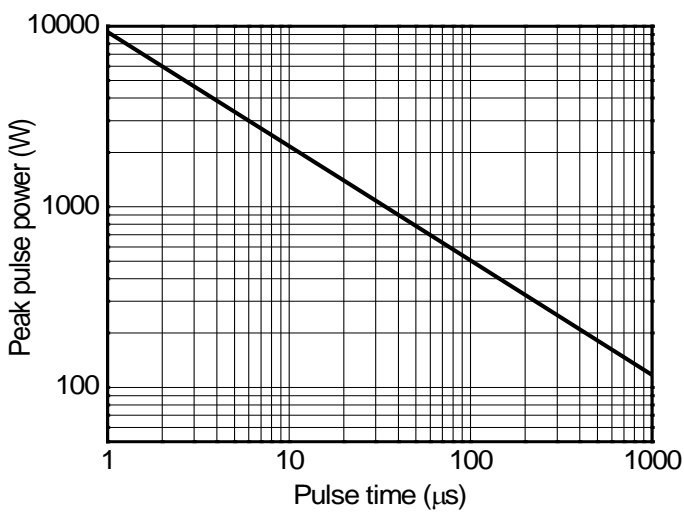
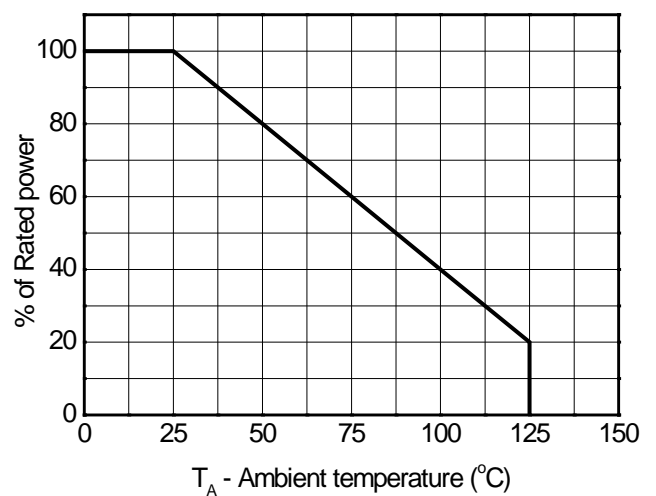
Type number	Reverse Standoff Voltage $V_{RWM}$ (V)	Breakdown voltage $V_{BR}$ (V) $I_{BR} = 1\text{mA}$			Reverse leakage current $I_{RM}$ ( $\mu\text{A}$ ) at $V_{RWM}$		Forward voltage $V_F$ (V) $I_F = 20\text{mA}$		Junction capacitance $F = 1\text{MHz}$ , $V_R = 0\text{V}$ (pF)	
	Max	Min	Typ	Max	Typ	Max	Min	Max	Typ	Max
ESD5621W04	4.5	5.2	6.1	7.0	-	5.0	0.45	1.25	900	1200
ESD5621W05	5.0	6.5	7.5	8.5	-	1.0	0.45	1.25	800	1100
ESD5621W	12.0	13.0	15.0	17.0	-	0.1	0.45	1.25	300	400
ESD5621W15	15.0	16.0	18.0	20.0	-	0.1	0.45	1.25	270	350

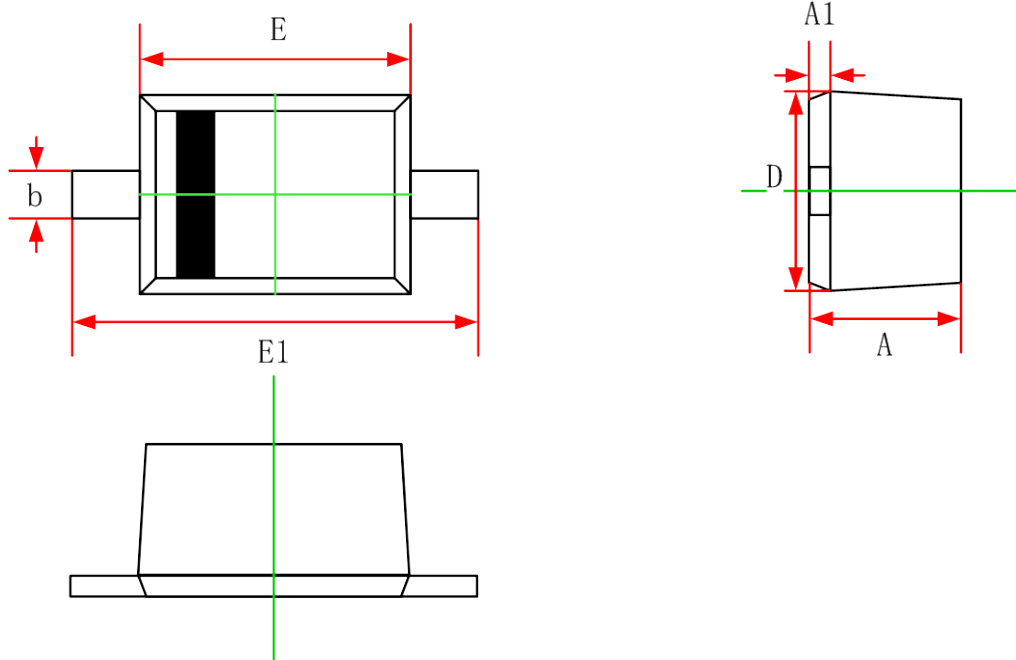
**Table 4.**

Type number	Rated peak pulse current $I_{PP}$ (A) <sup>1)3)</sup>	Clamping voltage $V_{CL}$ (V) at $I_{PP}$ (A) <sup>1)3)</sup>	Clamping voltage $V_{CL}$ (V) at $I_{PP} = 16\text{A}$ , $t_p = 100\text{ns}$ <sup>2)3)</sup>	Clamping voltage $V_{CL}$ (V) at $V_{ESD} = 8\text{kV}$ <sup>2)3)</sup>
ESD5621W04	95	14.5	7.0	8.0
ESD5621W05	85	16.0	8.0	9.0
ESD5621W	50	27.5	16.0	17.0
ESD5621W15	45	31.0	20.0	21.0

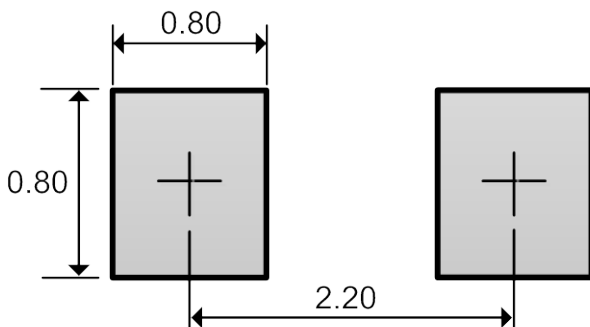
**Notes:**

- 1) Non-repetitive current pulse, according to IEC61000-4-5. (8/20 $\mu\text{s}$  current waveform)
- 2) Non-repetitive current pulse, according to IEC61000-4-2.
- 3) Measured from pin 1 to pin 2.

**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**

**Clamping voltage vs. Peak pulse current**

**Capacitance vs. Reverse voltage**

**Non-repetitive peak pulse power vs. Pulse time**

**Power derating vs. Ambient temperature**

**Package outline dimensions**
**SOD-323F**


Symbol	Dimensions in millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
<b>A</b>	0.800	1.100	0.031	0.043
<b>A1</b>	0.100	0.150	0.004	0.006
<b>b</b>	0.250	0.400	0.010	0.016
<b>D</b>	1.150	1.350	0.045	0.053
<b>E</b>	1.600	1.800	0.063	0.071
<b>E1</b>	2.300	2.800	0.091	0.110

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


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