

ESD56151WXX
1-Line, Bi-directional, Transient Voltage Suppressor
<http://www.sh-willsemi.com>
Descriptions

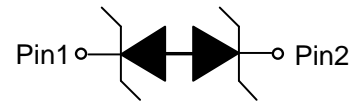
The ESD56151WXX is a transient voltage suppressor designed to protect power interfaces. It is suitable to replace multiple discrete components in portable electronics.

The ESD56151WXX is specifically designed to protect power lines.

The ESD56151WXX is available in SOD-323 package. Standard products are Pb-free and Halogen-free.


SOD-323
Features

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


Circuit diagram
Applications

- Power supply protection
- Power management



X= Device code (O P)

* = Month code

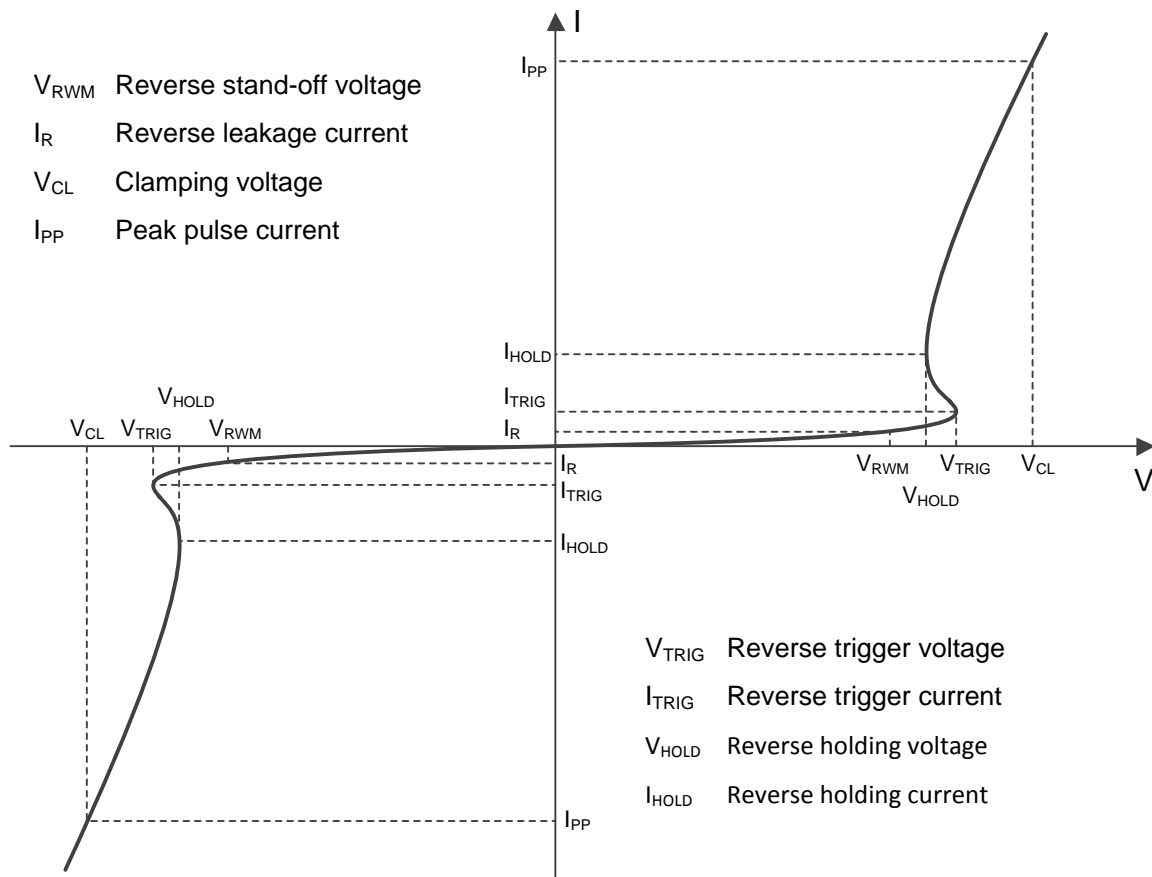
Marking (Top View)
Order information

Table 1.

Device	Package	Shipping	Marking
ESD56151W04-2/TR	SOD-323	3000/Tape&Reel	TO*
ESD56151W05-2/TR	SOD-323	3000/Tape&Reel	TP*

Absolute maximum ratings
Table 2.

Parameter	Symbol	Rating	Unit
Peak pulse power (tp = 8/20μs)	P _{pk}	2400	W
ESD according to IEC61000-4-2 air discharge	V _{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	
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

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

Definitions of electrical characteristics

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

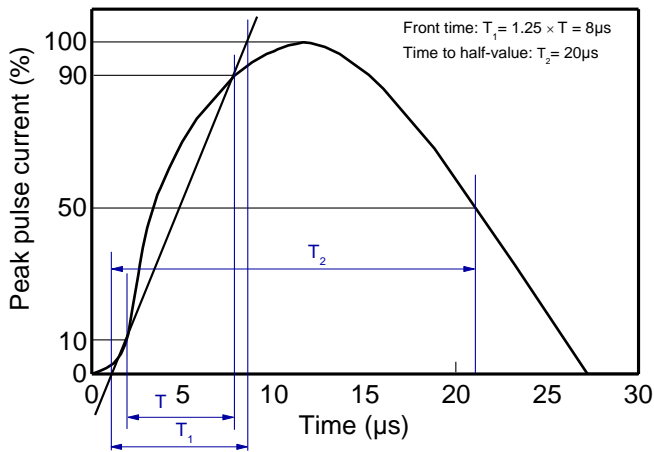
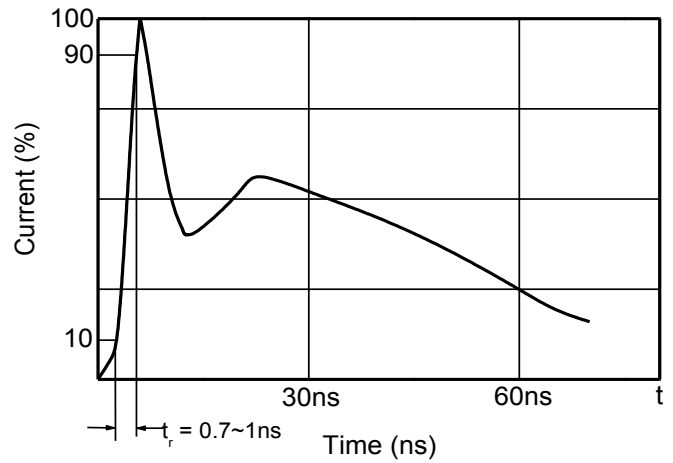
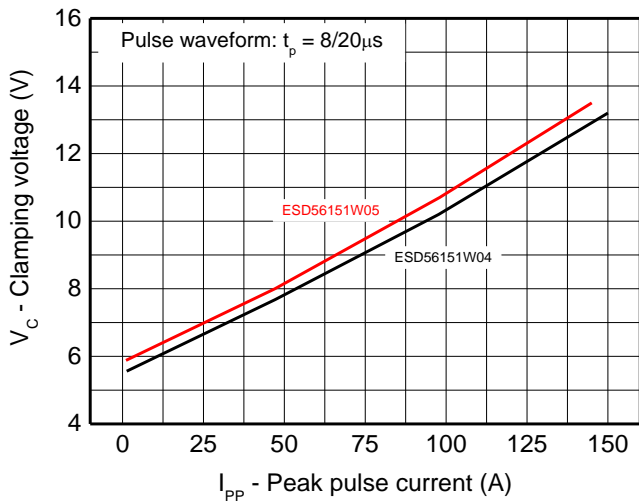
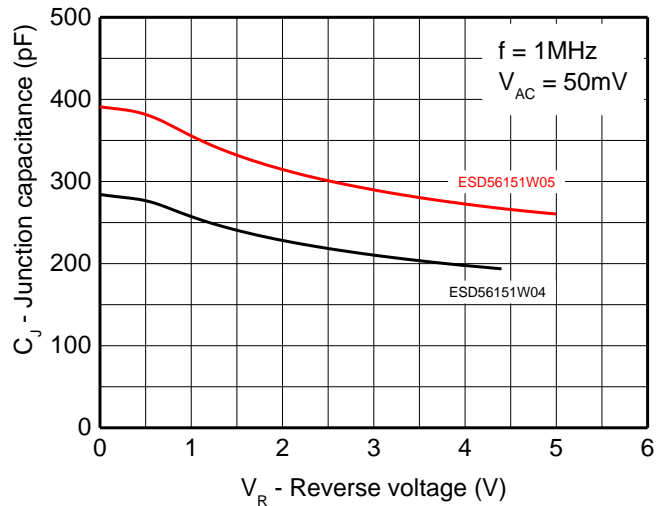
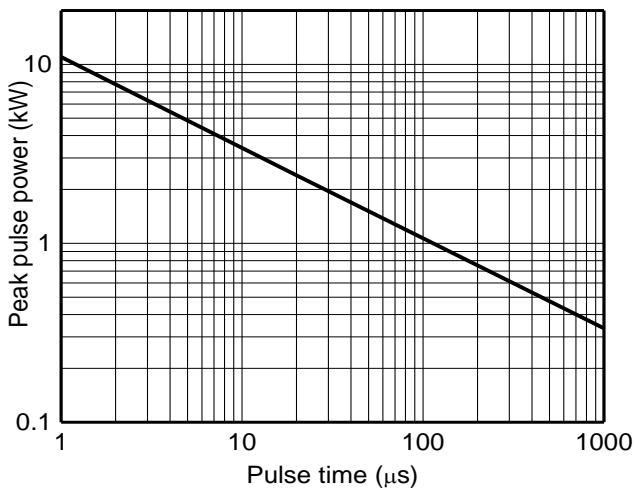
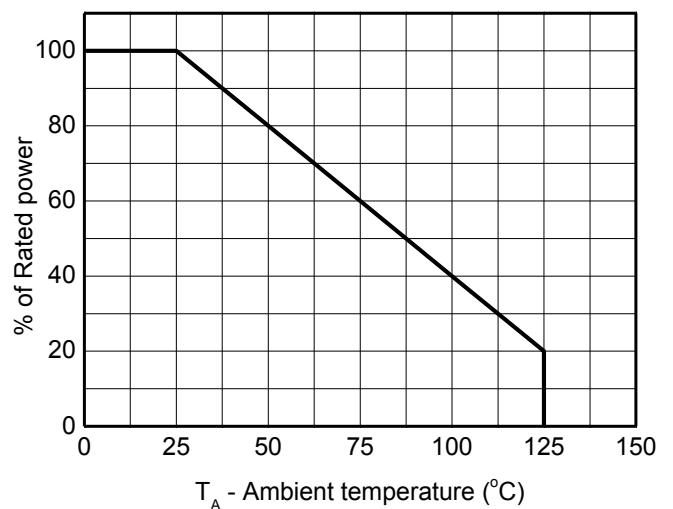
Type number	Reverse Stand-off Voltage V_{RWM} (V)	Breakdown voltage V_{BR} (V) $I_{BR} = 1\text{mA}$			Reverse leakage current I_{RM} (μA) at V_{RWM}		Junction capacitance $F = 1\text{MHz}$, $V_R=0\text{V}$ (pF)	
	Max.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.
ESD56151W04	4.5	4.7	5.3	6.4	-	0.1	280	350
ESD56151W05	5.0	5.3	6.3	7.1	-	0.1	400	450

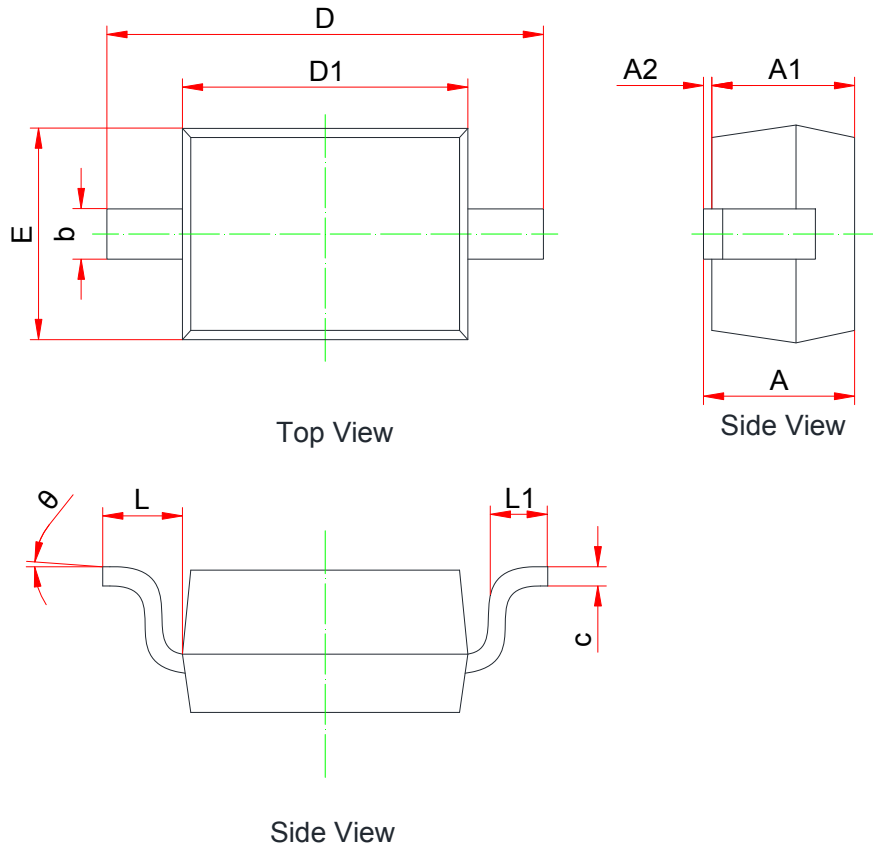
Table 4.

Type number	Rated peak pulse current I_{PP} (A) ¹⁾³⁾	Clamping voltage V_{CL} (V) at I_{PP} (A) ¹⁾³⁾	Clamping voltage V_{CL} (V) at $I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$ ²⁾³⁾	Clamping voltage V_{CL} (V) at $V_{ESD} = 8\text{kV}$ ²⁾³⁾
ESD56151W04	150	16	6.5	7.0
ESD56151W05	145	16	6.7	7.5

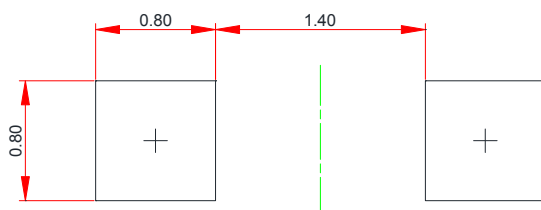
Notes:

- 1) Non-repetitive current pulse, according to IEC61000-4-5. (8/20 μs current waveform)
- 2) Non-repetitive current pulse, according to IEC61000-4-2.
- 3) Measured from pin 1 to pin 2.

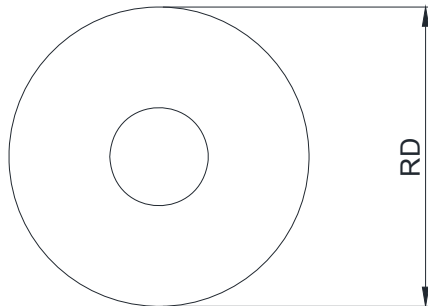
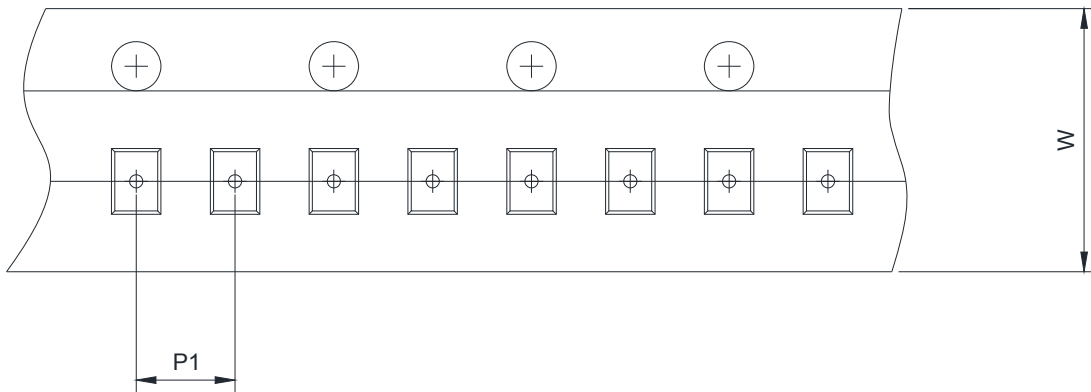
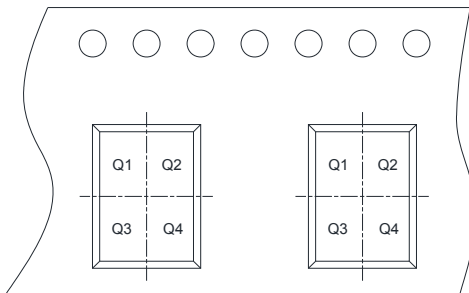
Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)

8/20 μs 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-323


Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.800	-	1.100
A1	0.800	0.850	0.900
A2	0.000	-	0.100
b	0.250	-	0.400
c	0.080	-	0.177
D1	1.600	1.700	1.800
D	2.300	-	2.800
E	1.150	-	1.400
L	0.475 Ref.		
L1	0.100	-	0.500
θ	0°	-	8°

Recommended 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.

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape



 User Direction of Feed

RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4