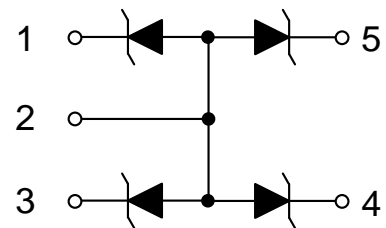


ESDA6V1AW5
4-Lines, Uni-directional, Transient Voltage Suppressors
<http://www.sh-willsemi.com>
Descriptions

The ESDA6V1AW5 array is 4-line ESD transient voltage suppressor which provides a very high level of protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). These devices clamp the voltage just above the logic level supply for positive transient and to a diode drop below ground for negative transient.

The ESDA6V1AW5 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 3.5A (8/20 μs) according to IEC61000-4-5.

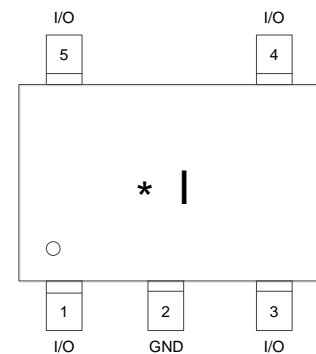
The ESDA6V1AW5 is available in SOT-353 package. Standard products are Pb-free and Halogen-free.


SOT-353

Circuit diagram
Features

- Reverse stand-off voltage: 5V max.
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 30\text{kV}$ (contact discharge)
IEC61000-4-5 (surge): 3.5A (8/20 μs)
- Capacitance: $C_j = 18\text{pF}$ typ.
- Low leakage current
- Low clamping voltage
- Solid-state silicon technology

Applications

- Cell Phone Handsets and Accessories
- Personal Digital Assistants
- Notebooks, Desktops, and Servers
- Portable Instrument



I = Device code

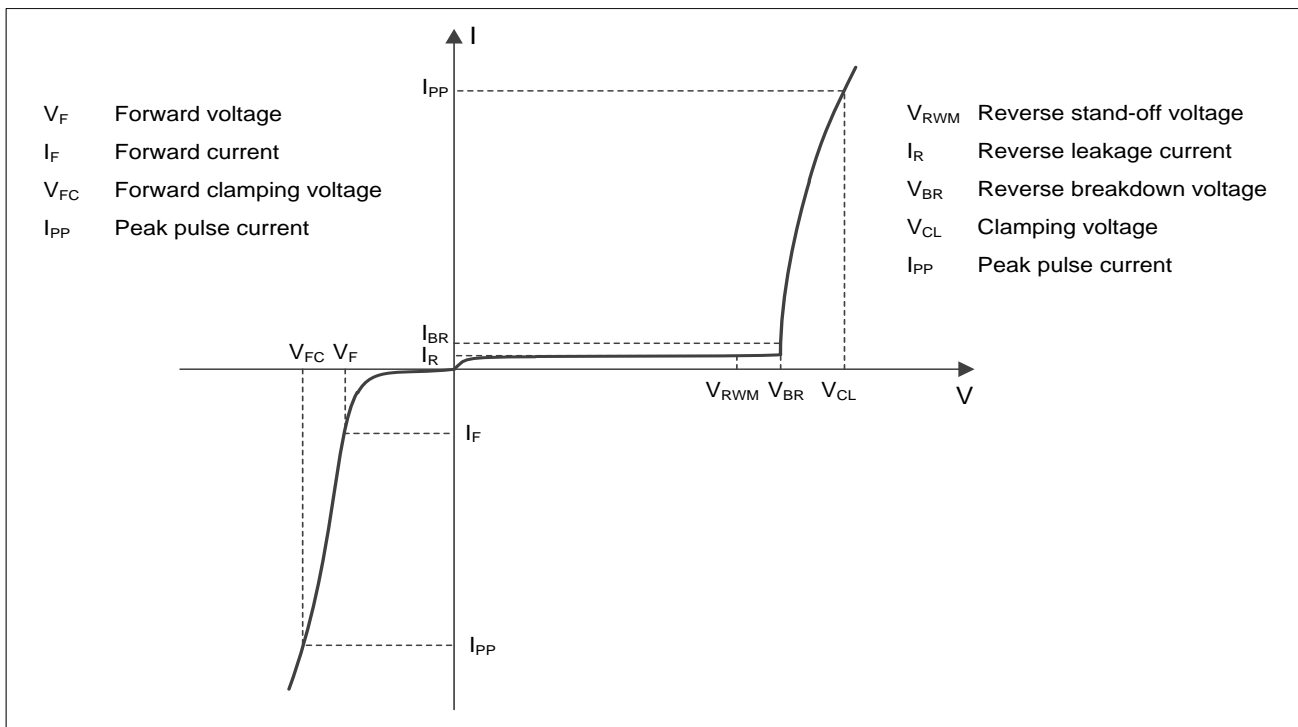
* = Date code

Marking & Pin configuration
Order information

Device	Package	Shipping
ESDA6V1AW5-5/TR	SOT-353	3000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	42	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}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Junction temperature	T_J	125	$^{\circ}C$
Operation temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

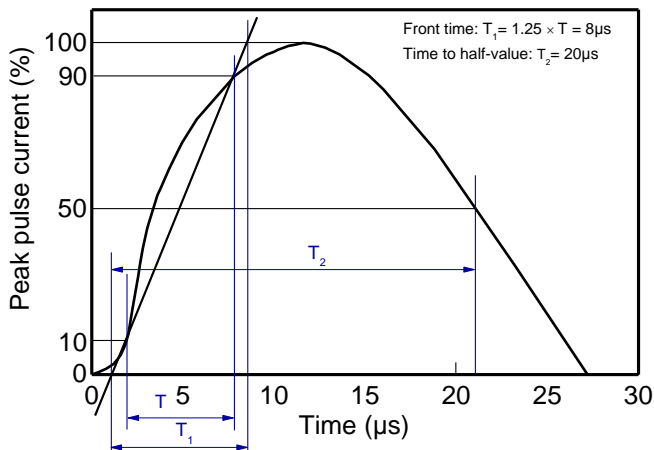
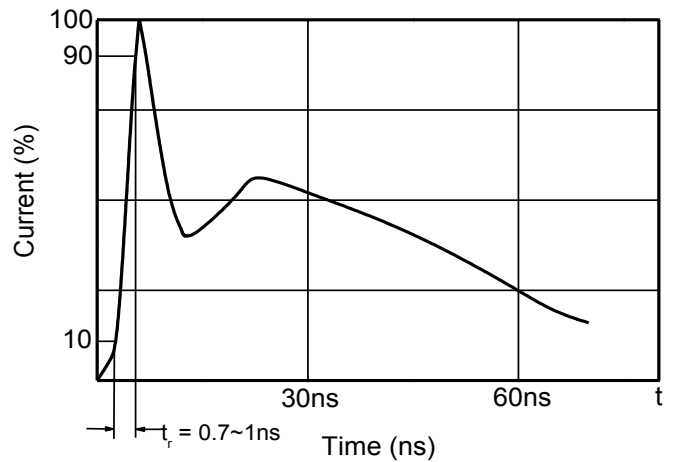
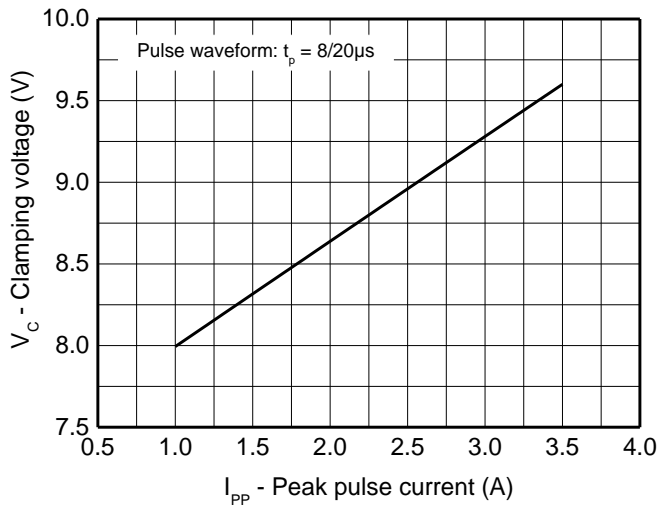
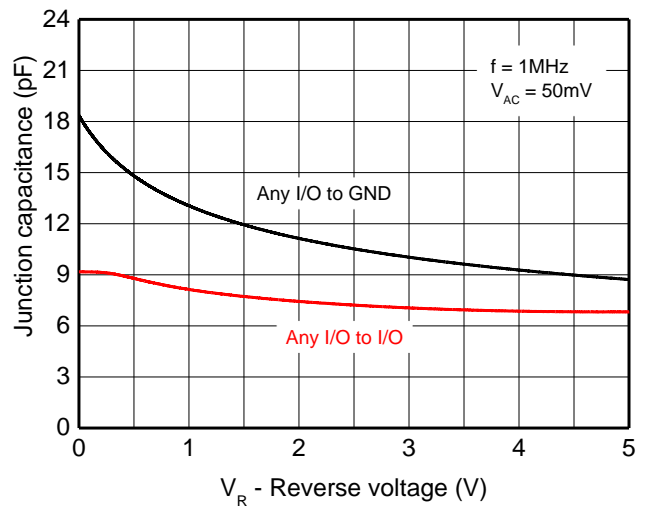
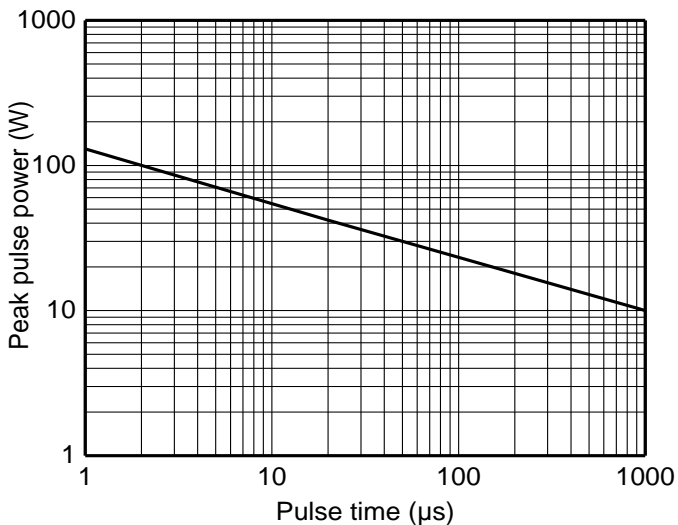
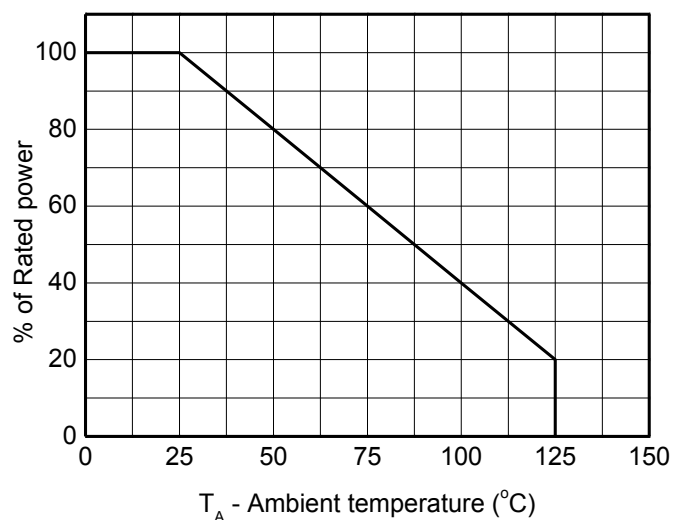
Electrical characteristics ($T_A = 25^{\circ}C$, unless otherwise noted)

Definitions of electrical characteristics

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

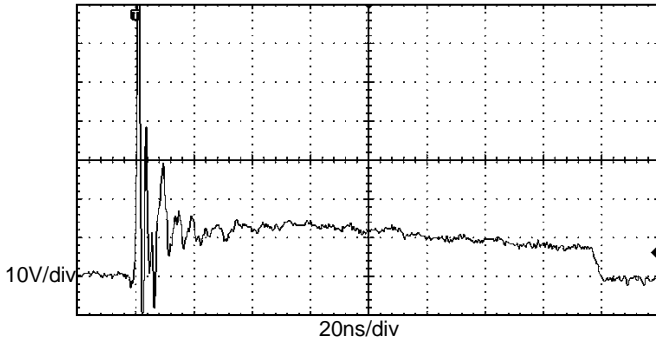
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5.0	V
Reverse leakage current	I_R	$V_{RWM} = 5\text{V}$			1	μA
Reverse breakdown voltage	V_{BR}	$I_{BR} = 1\text{mA}$	6.2	7.2	8.2	V
Forward voltage	V_F	$I_F = 10\text{mA}$	0.4	0.8	1.2	V
Clamping voltage ¹⁾	V_{CL}	$I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$		12.5		V
Clamping voltage ²⁾	V_{CL}	$V_{ESD} = +8\text{kV}$		13		V
Dynamic resistance ¹⁾	R_{DYN}			0.3		Ω
Clamping voltage ³⁾	V_{CL}	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$			10	V
		$I_{PP} = 3.5\text{A}$, $t_p = 8/20\mu\text{s}$			12	V
Junction capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$ Any I/O to GND		18	24	pF
		$V_R = 0\text{V}$, $f = 1\text{MHz}$ Any I/O to I/O		9	12	pF

Notes:

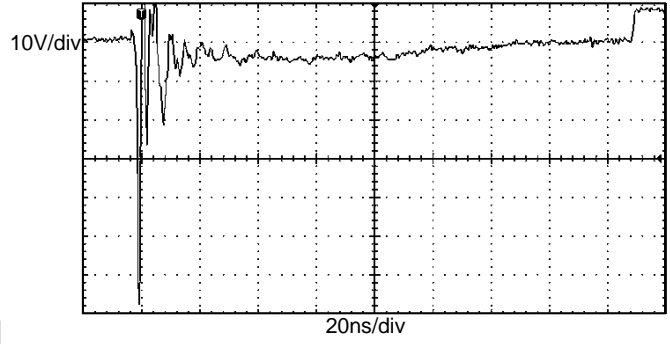
- 1) TLP parameter: $Z_0 = 50\ \Omega$, $t_p = 100\text{ns}$, $t_r = 2\text{ns}$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

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

8/20μs 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

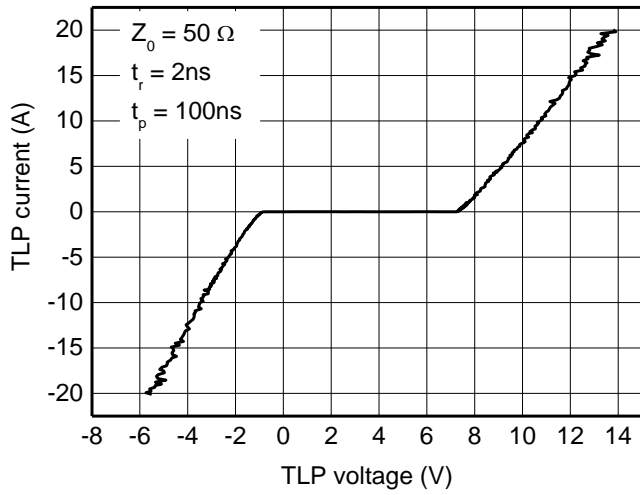
Typical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)



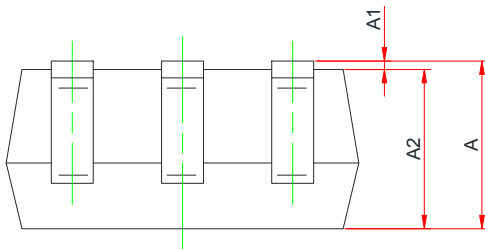
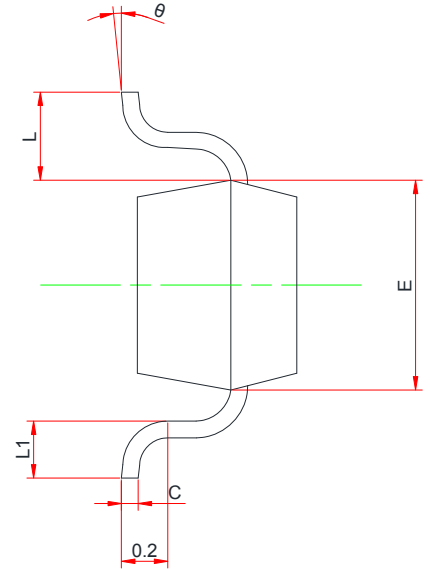
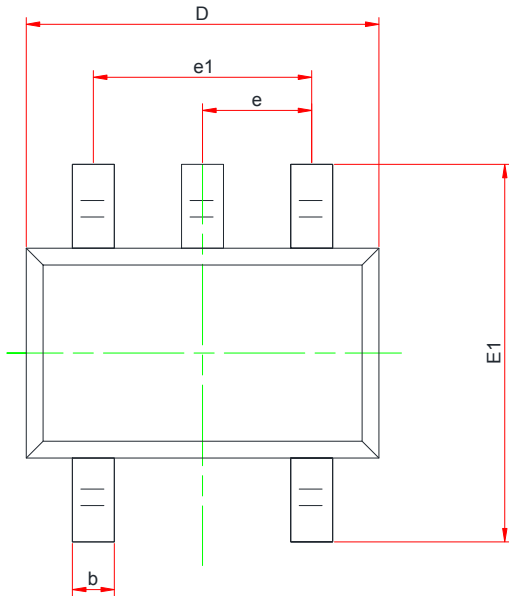
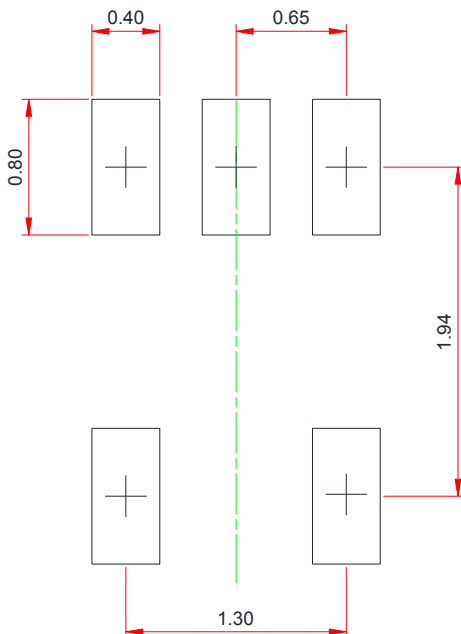
ESD clamping
 (+8kV contact discharge per IEC61000-4-2)



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



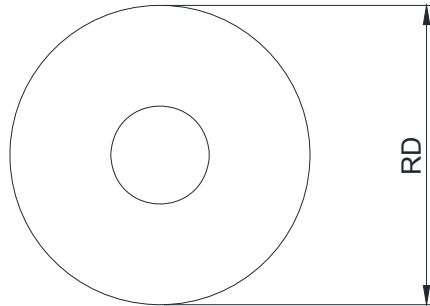
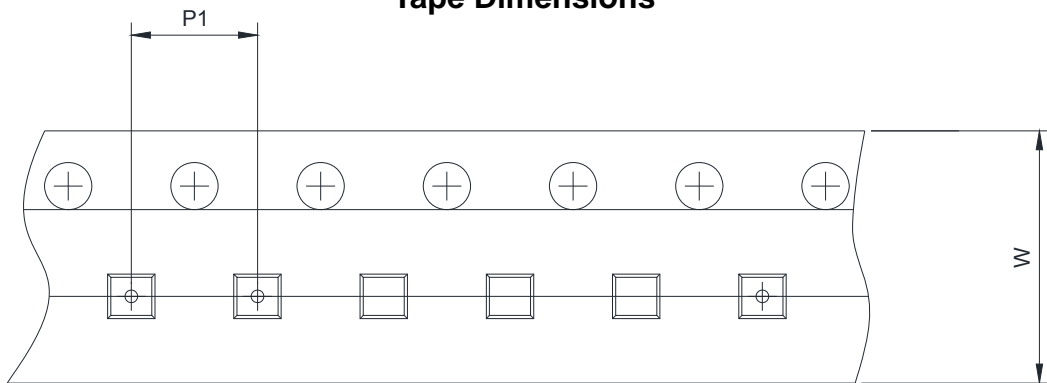
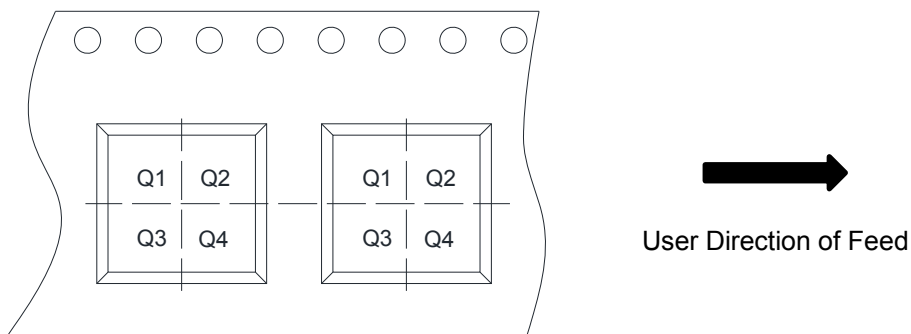
TLP Measurement

Package outline dimensions
SOT-353

Recommend land pattern (Unit: mm)


Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.85	-	1.10
A1	0.00	-	0.10
A2	0.80	0.90	1.00
b	0.15	0.25	0.35
c	0.08	-	0.15
D	2.00	2.10	2.20
E	1.15	1.25	1.35
E1	2.15	2.30	2.45
e	0.650 TYP		
e1	1.20	1.30	1.40
L	0.50 REF		
L1	0.26	0.36	0.46
θ	0°	-	8°

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


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		
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input checked="" type="checkbox"/> 4mm	<input type="checkbox"/> 8mm	
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1	<input type="checkbox"/> Q2	<input checked="" type="checkbox"/> Q3	<input type="checkbox"/> Q4