

ESDAxxxWx

TRANSIL™ array for data protection

Main applications

Where transient overvoltage protection in ESD sensitive equipment is required, such as :

- Computers
- Printers
- Communication systems
- Cellular phones handsets and accessories
- Wireline and wireless telephone sets
- Set top boxes

Features

- 2 up to 5 Unidirectional Transil functions
- Breakdown voltage: V_{BR} = 6.1 V min. and 25 V min.
- Low leakage current: < 1 µA
- Very small PCB area < 4.2 mm² typically

Description

The ESDAxxxWx are monolithic suppressors designed to protect components connected to data and transmission lines against ESD.

These devices clamp the voltage just above the logic level supply for positive transients, and to a diode drop below ground for negative transients.

Benefits

- High ESD protection level: up to 25 kV
- High integration

Complies with the following standards IEC61000-4-2

Level 4 15 kV (air discharge)

8 kV(contact discharge)

MIL STD 883E - Method 3015-7 Class 3

25 kV HBM (Human Body Model)





SOT323-3L

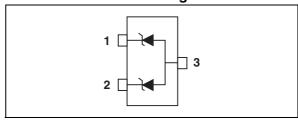
3-3L SOT323-5L

SOT323-6L

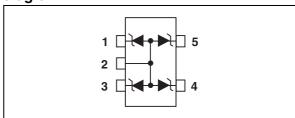
Order codes

Part Numbers	Marking
ESDA6V1W5	E61
ESDA6V1-5W6	E62
ESDA25W	E25
ESDA25W5	E25

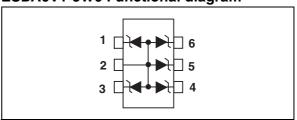
ESDA25W Functional diagram



ESDA6V1W5/ESDA25W5 Functional diagram



ESDA6V1-5W6 Functional diagram



Rev 2

1/11

1 Characteristics ESDAxxxWx

1 Characteristics

Table 1. Absolute Ratings ($T_{amb} = 25^{\circ}C$)

Symbol	Pa	Value	Unit	
		ESDA25W	400	
P _{PP}	P _{PP} Peak pulse power (8/20 μs)	e power (8/20 µs) ESDA25W5 / ESDA6V1W5		W
		ESDA6V1-5W6	100	
T _j	Junction temperature	125	°C	
T _{stg}	Storage temperature range	-55 to +150	°C	
T _L	Maximum lead temperature for so	260	°C	
T _{op} Operating temperature ra	Operating temperature range ⁽¹⁾	ESDA25W / ESDA25W5 / ESDA6V1W5	-40 to +125	°C
		ESDA6V1-5W6	-40 to +125	5

^{1.} The values of the operating parameters versus temperature are given through curves and αT parameter.

1.1 Electrical Characteristics $(T_{amb} = 25^{\circ}C)$

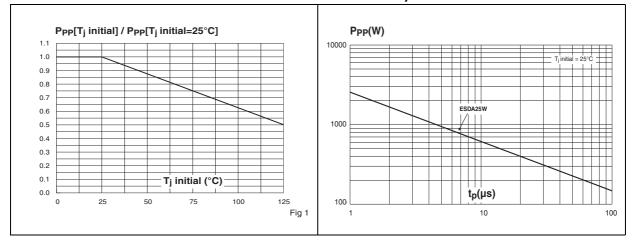
Symbol	Parameter	
V _{RM}	Stand-off voltage	↑ I
V _{BR}	Breakdown voltage	I _F
V _{CL}	Clamping voltage	
I _{RM}	Leakage current	V_{F}
I _{PP}	Peak pulse current	V _{CL} V _{BR} V _{RM}
I _R	Reverse leakage current	IRM
IF	Forward current	
αΤ	Voltage temperature coefficient	
V _F	Forward voltage drop	Slope: 1/R _d
С	Capacitance	ļ
R _d	Dynamic resistance	

V _{BR}			I _{RM} @	V _{RM}	V _F	@ I _F	R _d	αΤ	С	
Part Numbers	min.	max.	@ I _R			max.		typ. ⁽¹⁾	max. ⁽²⁾	typ.
Part Numbers	111111.	IIIax.								0V bias
	V	٧	mA	μΑ	٧	V	mA	Ω	10 ⁻⁴ /°C	pF
ESDA25W	25	30	1	1	24	1.2	10	1.1	10	65
ESDA25W5	25	30	1	1	24	1.2	10	1.9	10	30
ESDA6V1-5W6	6.1	7.2	1	1	3	1.25	200	0.61	6	50
ESDA6V1W5	6.1	7.2	1	1	3	1.25	200	0.35	6	90

^{1.} Square pulse I_{pp} = 15 A, t_p = 2.5 μs

Figure 1. Peak power dissipation versus initial junction temperature

Figure 2. Peak pulse power versus exponential pulse duration (T_i initial = 25°C) (ESDA25W)

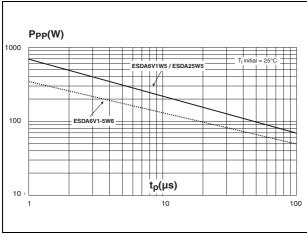


^{2.} $V_{BR} = aT^* (T_{amb} - 25 \,^{\circ}C) \,^* V_{BR} (25 \,^{\circ}C)$

1 Characteristics ESDAxxxWx

Figure 3. Peak pulse power versus exponential pulse duration $(T_j \text{ initial} = 25^{\circ}\text{C}) \text{ (ESDA25W5 / ESDA6V1W5 / ESDA6V1-5W6)}$

Figure 4. Clamping voltage versus peak pulse current (T_j initial = 25°C, rectangular waveform, t_p = 2.5 μ s) (ESDA25W / ESDA25W5)



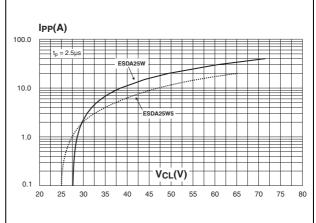
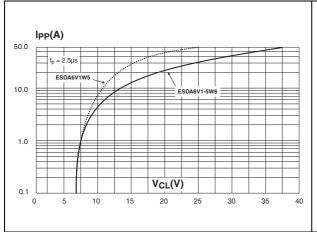
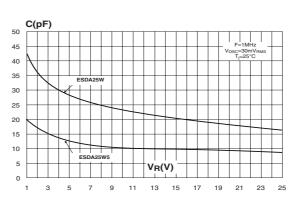


Figure 5. Clamping voltage versus peak pulse Figure 6. current (T_j initial = 25°C, rectangular waveform, t_p = 2.5 μ s) (ESDA6V1W5 / ESDA6V1-5W6)

Capacitance versus reverse applied voltage (typical values) (ESDA25W / ESDA25W5)





ESDAxxxWx 1 Characteristics

Figure 7. Capacitance versus reverse applied Figure 8. Relative variation of leakage current voltage (typical values) versus junction temperature (typical values)

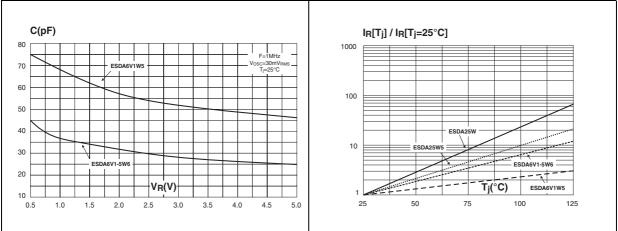


Figure 9. Peak forward voltage drop versus peak forward current (typical values) (ESDA25W / ESDA25W5)

Figure 10. Peak forward voltage drop versus peak forward current (typical values) (ESDA6V1W5 / ESDA6V1-5W6)

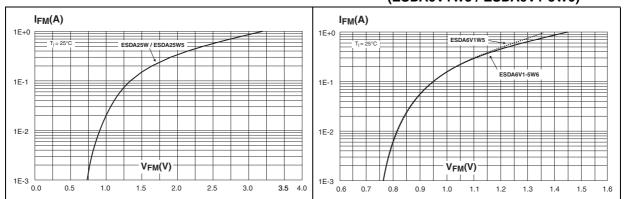
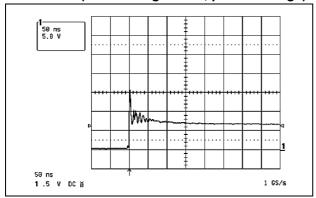
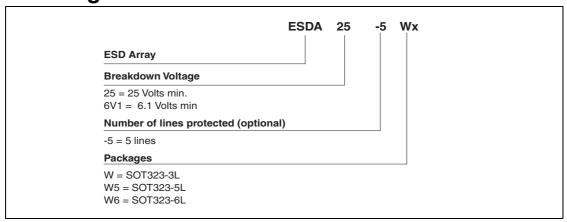


Figure 11. ESD response to IEC61000-4-2 (air discharge 15 kV, positive surge)



2 Ordering information scheme



Inches

Тур.

0.079

0.049

0.026

0.083

800.0

Max.

0.043

0.004

0.016

0.010

0.086

0.053

0.094

0.012

30°

3 Package mechanical data

3.1 SOT323-3L package

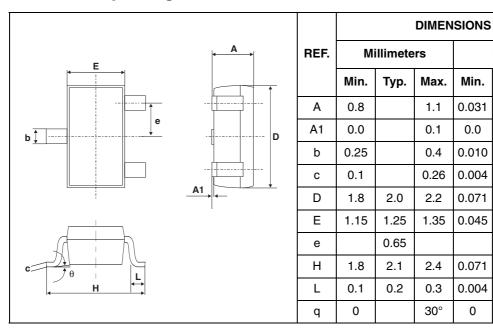
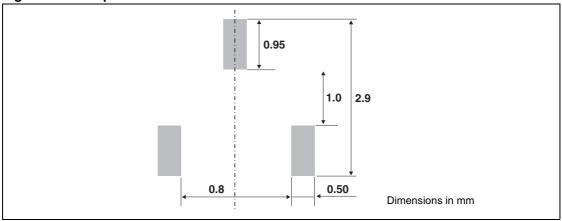


Figure 12. Footprint dimensions



3.2 SOT323-5L package

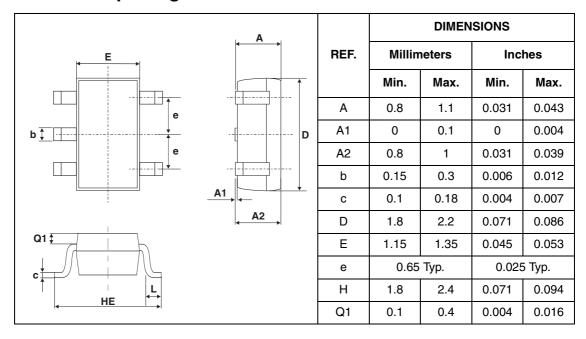
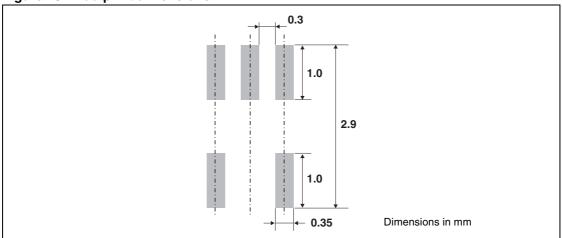


Figure 13. Footprint dimensions



3.3 SOT323-6L package

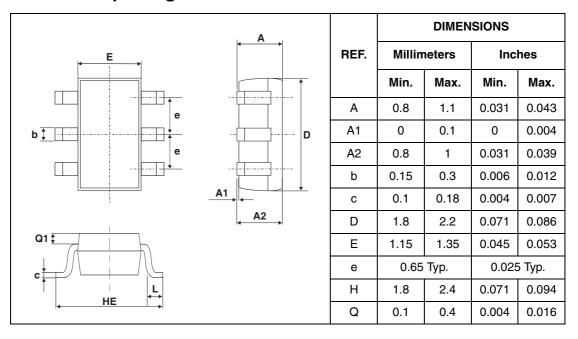
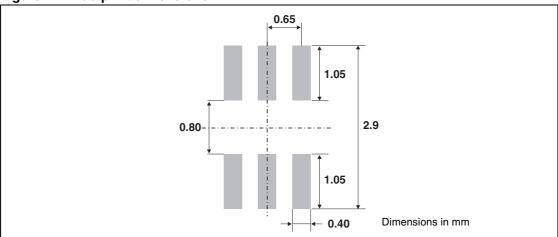


Figure 14. Footprint dimensions



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4 Ordering information ESDAxxxWx

4 Ordering information

Part Number	Marking	Package	Weight	Base qty	Delivery mode
ESDA6V1W5	E61	SOT323-5L			
ESDA6V1-5W6	E62	SOT323-6L	6 ma	3000	Tape & reel
ESDA25W	E25	SOT323-3L	6 mg	3000	таре а теег
ESDA25W5	E25	SOT323-5L			

5 Revision history

Date	Revision	Changes
20-Jul-2005	1	Initial release
29-Aug-2005	2	Added notes to table on page2, removed annotations in Figure 1.

ESDAxxxWx 5 Revision history

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