ESDA17-5SC6

Transil™ array for ESD protection

Features

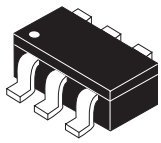
- 5 unidirectional Transil functions
- Minimum breakdown voltage range: V_{BR} min. = 17 V
- Peak pulse power (8/20 µs); 150 W
- Tiny leakage current at stand-off voltage: < 100 nA

Benefits

- High ESD protection level
- High integration
- Suitable for high density boards

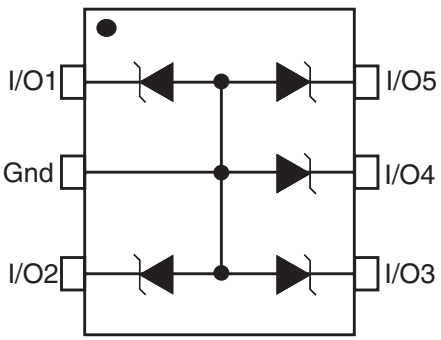
Complies with the following standards:

- IEC 61000-4-2 level 4:
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- MIL STD 883E- Method 3015-7: class 3
  - 25 kV (human body model)



SOT23-6L

Figure 1. Functional diagram



Applications

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

- Computers
- Printers and other peripherals
- Communications systems
- Cellular phone handsets and accessories
- Other telephone sets
- Consumer electronics (Set top boxes, DVD players, TV sets)

Description

The ESDA17-5SC6 is a monolithic array designed to protect up to 5 lines against ESD transients. The device is ideal for applications where board space saving is required.

TM: Transil is a trademark of STMicroelectronics

1 Characteristics

Table 1. Absolute ratings (T_{amb} = 25 °C)

Symbol	Parameter		Value	Unit
V_{PP}	ESD discharge	IEC 61000-4-2 air discharge IEC 61000-4-2 contact discharge	±15 ±8	kV
P_{PP}	Peak pulse power (8/20µs)	T_j initial = T_{amb}	150	W
T_j	Junction temperature		125	°C
T_{stg}	Storage temperature range		-55 to +150	°C
T_L	Maximum lead temperature for soldering during 10 s at 5mm for case		260	°C
T_{op}	Operating temperature range(1)		-40 to +125	°C

1. For a surge greater than the maximum values, the diode will fail in short-circuit.

Figure 2. Electrical characteristics (definitions)

Symbol		Parameter
V_{BR}	=	Breakdown voltage
V_{CL}	=	Clamping voltage
I_{RM}	=	Leakage current @ V_{RM}
V_{RM}	=	Stand-off voltage
I_F	=	Forward current
I_{PP}	=	Peak pulse current
I_R	=	Breakdown current
V_F	=	Forward voltage drop
R_d	=	Dynamic impedance
αT	=	Voltage temperature

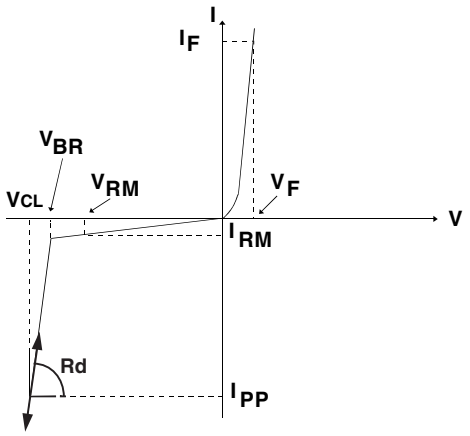


Table 2. Electrical characteristics (values, T_{amb} = 25 °C)

Order code	V_{BR} @ I_R			I_{RM} @ V_{RM}		R_d	αT	C	V_F @ I_F	
	min.	max.		max.		typ.(1)	max. (2)	typ. 0V bias	max.	
	V	V	mA	nA	V	Ω	10^{-4}/°C	pF	V	mA
ESDA17-5SC6	17	19	1	75	14	1	10	33	1.2	10

1. Square pulse, I_{pp} = 15 A, t_p = 2.5 µs.
2. $\Delta V_{BR} = \alpha T^* (T_{amb} - 25\ °C) * V_{BR}$ (25 °C)

Figure 3. Relative variation of peak pulse power versus initial junction temperature

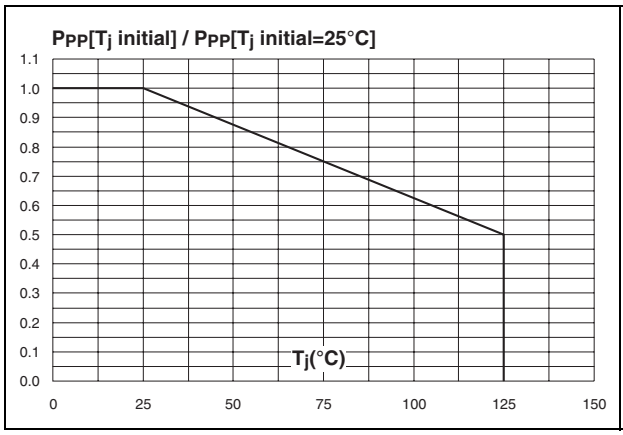


Figure 4. Peak pulse power versus exponential pulse duration

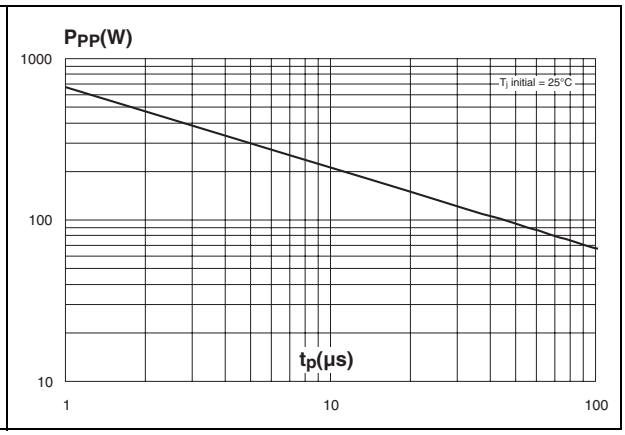


Figure 5. Clamping voltage versus peak pulse current (typical values, rectangular waveform)

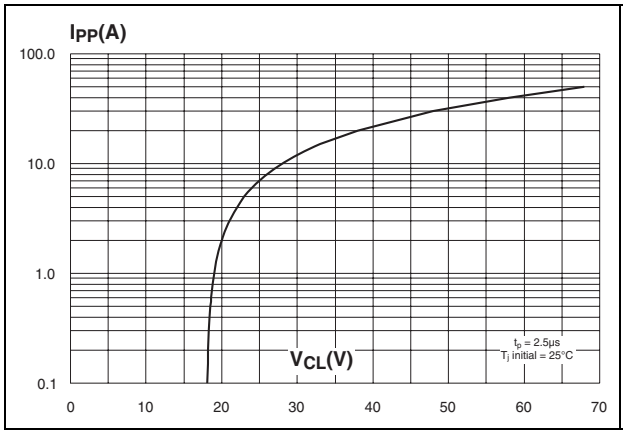


Figure 6. Forward voltage drop versus peak forward current (typical values)

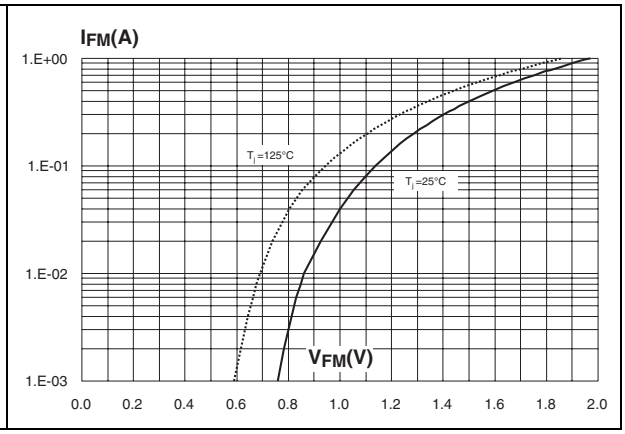


Figure 7. Junction capacitance versus reverse voltage applied (typical values)

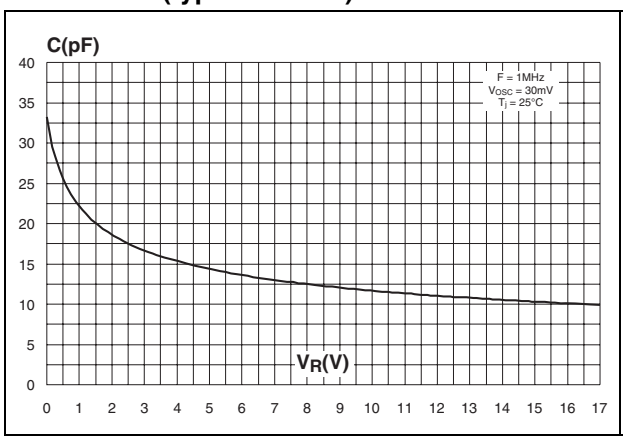
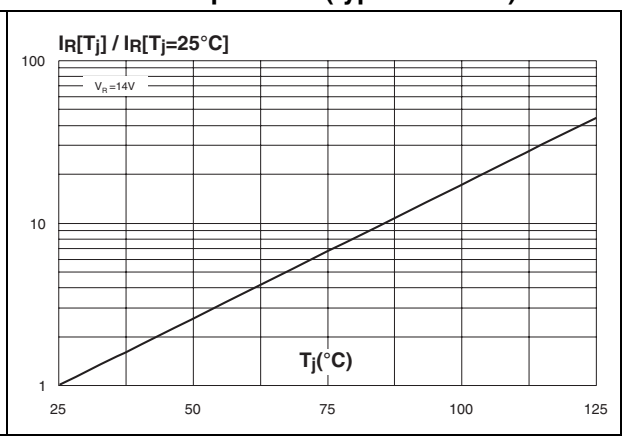
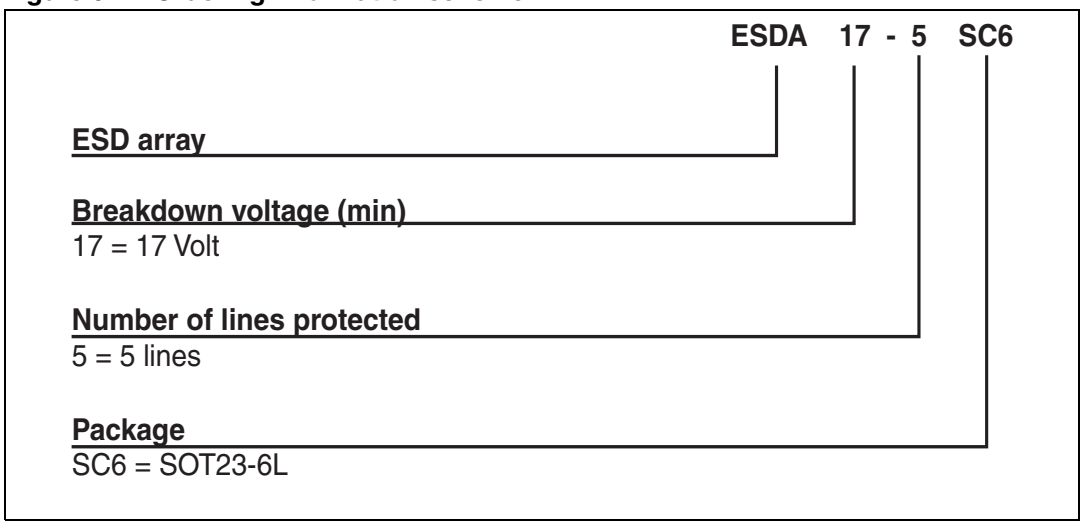


Figure 8. Relative variation of leakage current versus junction temperature (typical values)



2 Ordering information scheme

Figure 9. Ordering information scheme

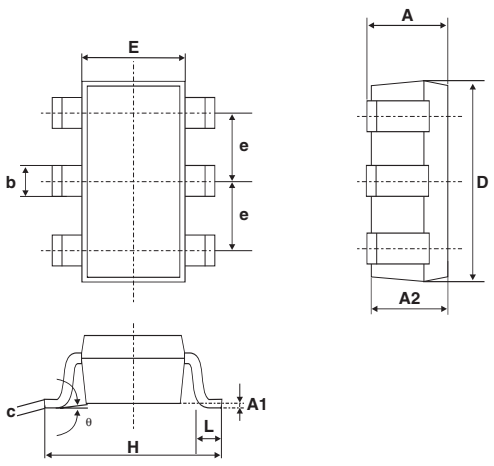


3 Package information

- Epoxy meets UL94, V0
- Lead-free package

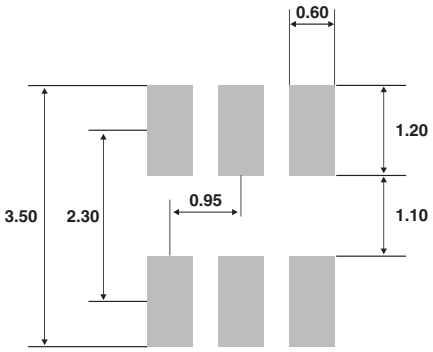
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 3. SOT23-6L dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90		1.45	0.035		0.057
A1	0		0.10	0		0.004
A2	0.90		1.30	0.035		0.051
b	0.35		0.50	0.014		0.020
c	0.09		0.20	0.004		0.008
D	2.80		3.05	0.11		0.118
E	1.50		1.75	0.059		0.069
e		0.95			0.037	
H	2.60		3.00	0.102		0.118
L	0.10		0.60	0.004		0.024
θ	0°		10°	0°		10°

Figure 10. Footprint (dimensions in mm)



4 Ordering information

Table 4. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
ESDA17-5SC6	175	SOT23-6L	16.7 mg	3000	Tape and reel

5 Revision history

Table 5. Document revision history

Date	Revision	Changes
Nov-2002	1A	First issue.
4-Nov-2004	2	SOT23-6L package dimensions change for reference “D” from 3.0 millimeters (0.118 inches) to 3.05 millimeters (0.120 inches).
14-Sep-2011	3	Removed all references to order code ESDA19-5SC6.

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