

ESD5425AT

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Power Dissipation-350W

Reverse Stand-off Voltage-5.0V

FEATURES

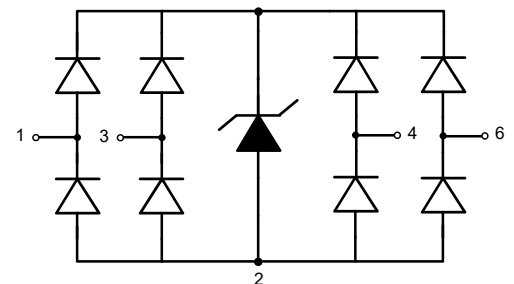
- ◆ For surface mount applications
- ◆ 4-Lines, Uni-directional
- ◆ Transient protection for each line according to
IEC61000-4-2 (ESD): $\pm 30\text{kV}$
IEC61000-4-5 (Surge): 25A ($8/20\mu\text{S}$)
- ◆ Low capacitance : $C_{\text{I/O-GND}}=3\text{pF}$ (Typ.)
- ◆ Ultra-low leakage current: $I_{\text{R}}=20\text{nA}$ (Typ.)
- ◆ Low clamping voltage: $V_{\text{C}} = 11.2\text{V}$ @ $I_{\text{PP}} = 16\text{A}$ (TLP)
- ◆ Solid-state silicon technology

DESCRIPTIONS

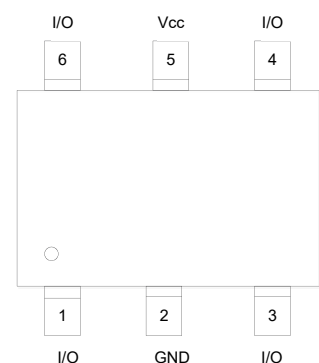
- ◆ The ESD5425AT is a low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD.
- ◆ The ESD5425AT incorporates four pairs of low capacitance steering diodes plus a TVS diode.
- ◆ The ESD5425AT is available in SOT23-6L package.
- ◆ Standard products are Pb-free and Halogen-free.



SOT23-6L



Circuit diagram



Dated: 06/2016

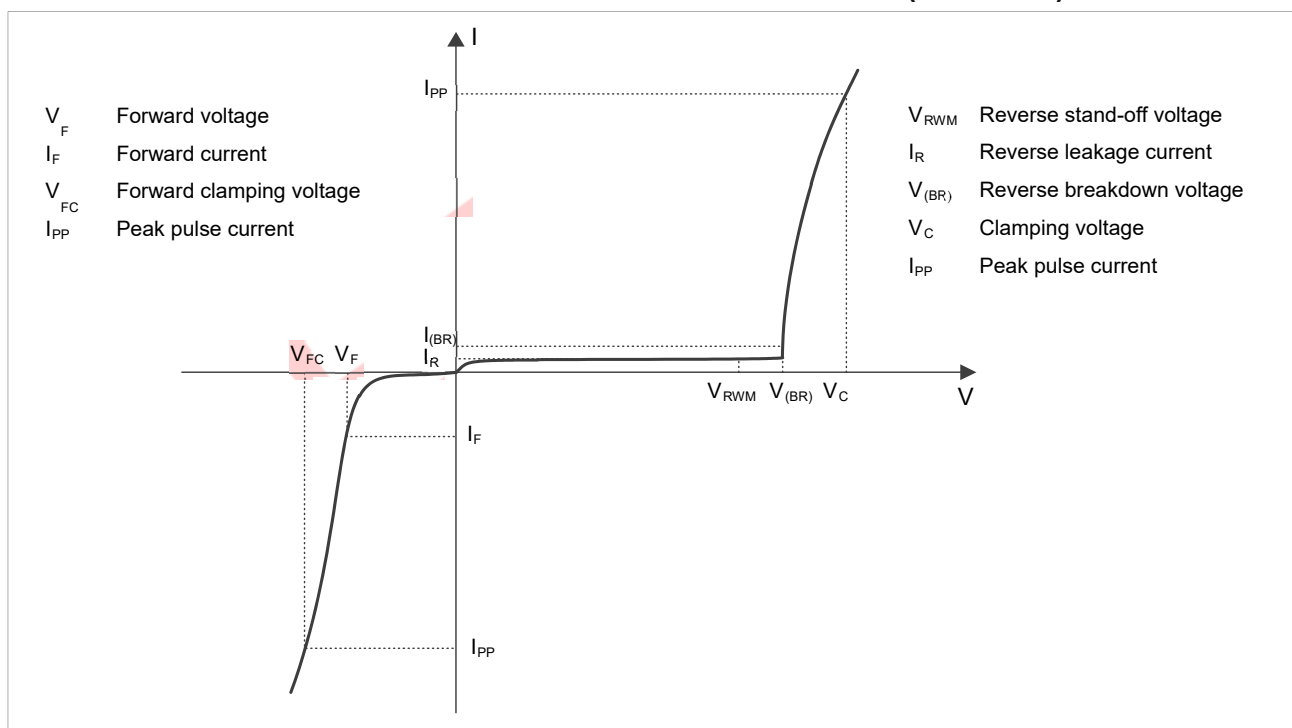
Rev: 1.0

ESD5425AT

MAXIMUM RATINGS CHARACTERISTICS

Parameter	Symbol	Value	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{PPM}	350	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	25	A
ESD according to IEC61000-4-2 (air discharge)	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 (contact discharge)		± 30	
Operation junction temperature	T_J	125	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

Definitions of electrical characteristics ($T_A = 25^{\circ}C$)



ESD5425AT

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	$V_{RWM} = 5V$			1	μA
Reverse breakdown voltage	$V_{(BR)}$	$I_{(BR)} = 1\text{mA}$	7.0	8.5	9.5	V
Forward voltage	V_F	$I_F = 10\text{mA}$	0.6	0.9	1.2	V
Clamping voltage (Note1)	V_C	$I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$		11.2		V
Dynamic resistance (Note1)	R_{DYN}	$t_p = 100\text{ns}$		0.11		Ω
Clamping voltage (Note2)	V_C	$V_{ESD} = 8\text{kV}$		12		V
Clamping voltage (Note3)	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$		9.5		V
		$I_{PP} = 25\text{A}$, $t_p = 8/20\mu\text{s}$		14		V
Dynamic resistance (Note3)	R_{DYN}	$t_p = 8/20\mu\text{s}$		0.19		Ω
Junction capacitance	$C_{I/O - GND}$	$V_R = 0V$, $f = 1\text{MHz}$, $V_{CC} = \text{floated}$, Any I/O to GND		3.0	5	pF
	$C_{I/O - I/O}$	$V_R = 0V$, $f = 1\text{MHz}$, Any I/O to I/O		1.5	2.5	pF

Notes: 1. TLP parameter: $Z_0 = 50\Omega$, $t_p = 100\text{ns}$, averaging window from 60ns to 80ns, R_{DYN} is calculated from 4A to 16A.

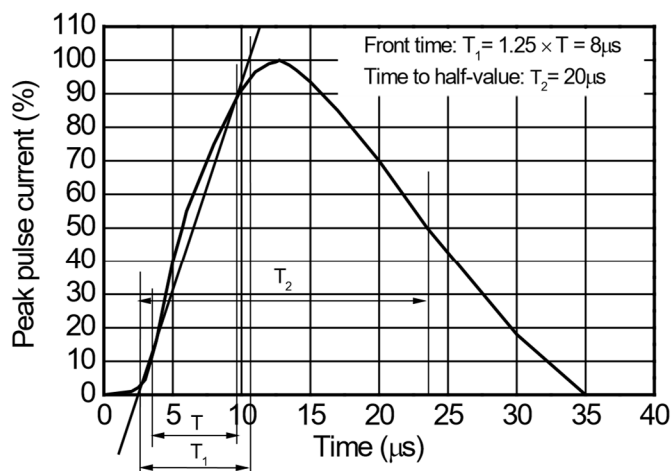
2. Contact discharge mode, according to IEC61000-4-2.

3. Non-repetitive current pulse, according to IEC61000-4-5. R_{DYN} is calculated from 5A to 20A.

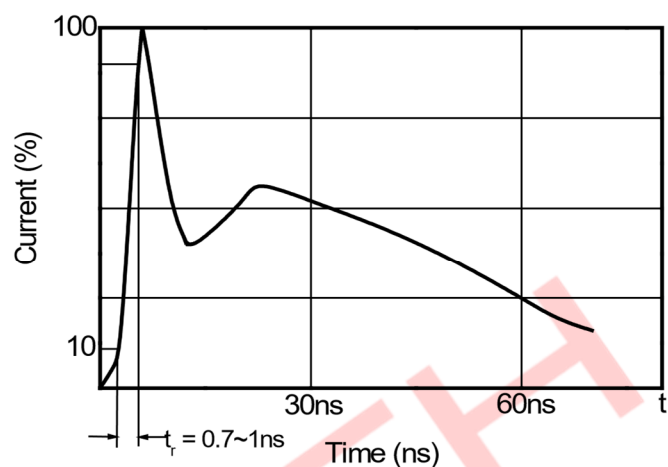
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Rev: 1.0

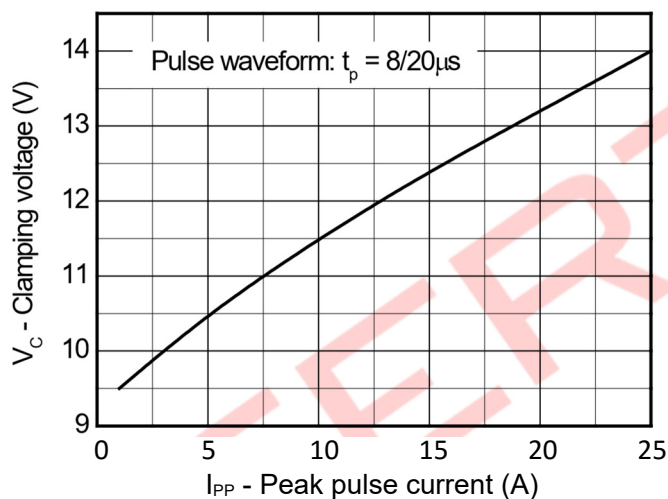
RATINGS AND CHARACTERISTIC CURVES



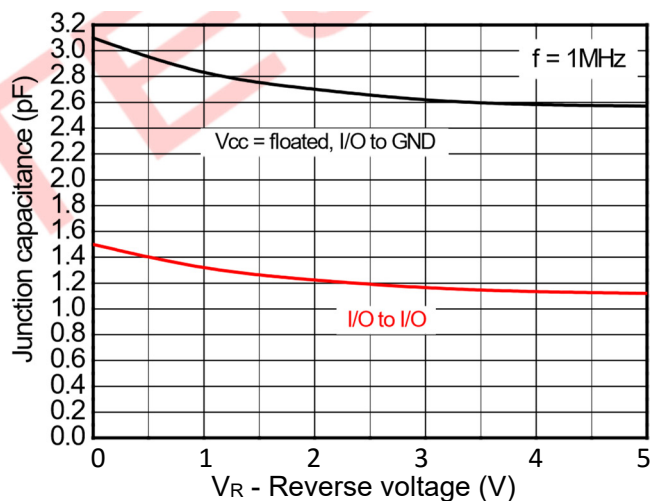
8/20μs waveform per IEC61000-4-5



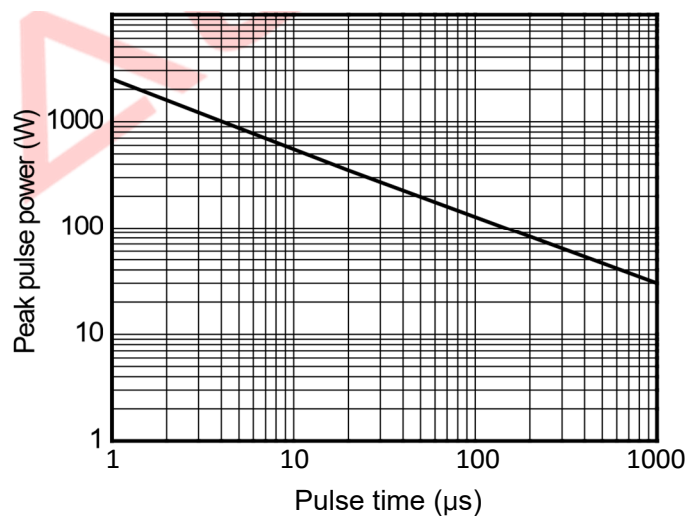
Contact discharge current waveform per IEC61000-4-2



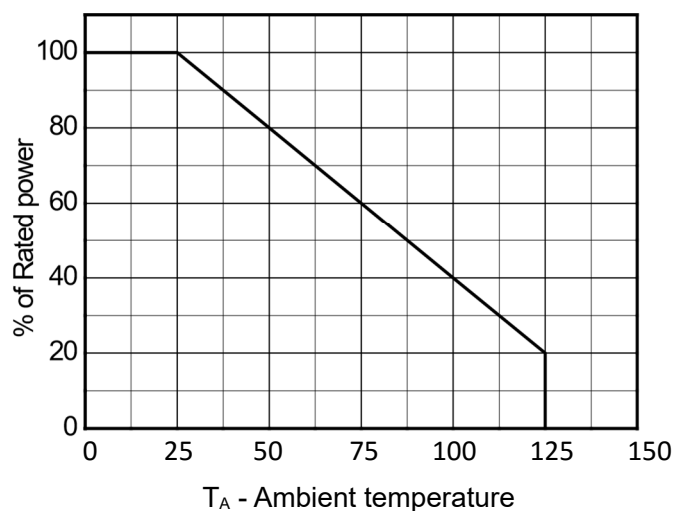
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

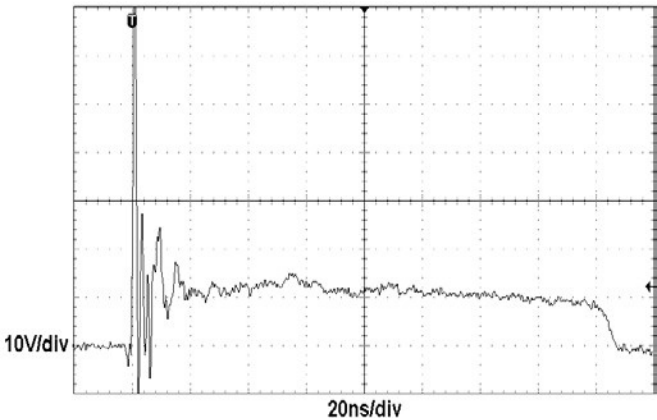


Non-repetitive peak pulse power vs. Pulse time



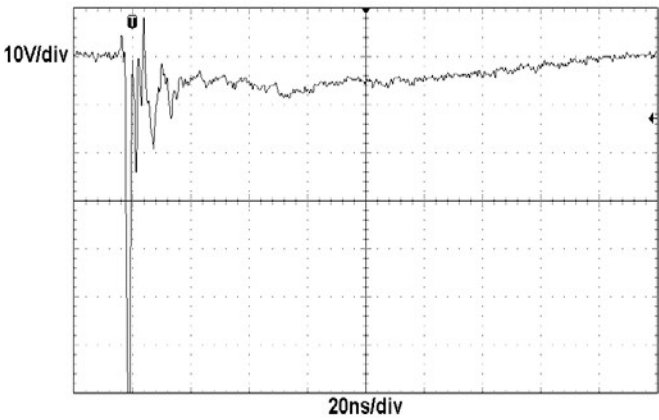
Power derating vs. Ambient temperature

ESD5425AT



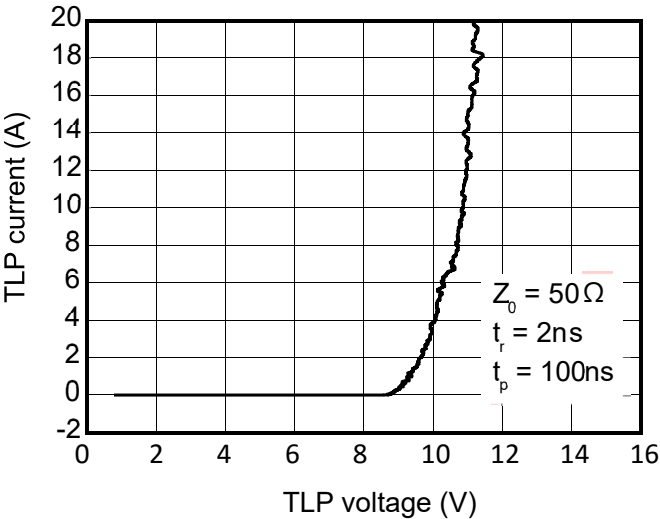
ESD clamping

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



ESD clamping

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

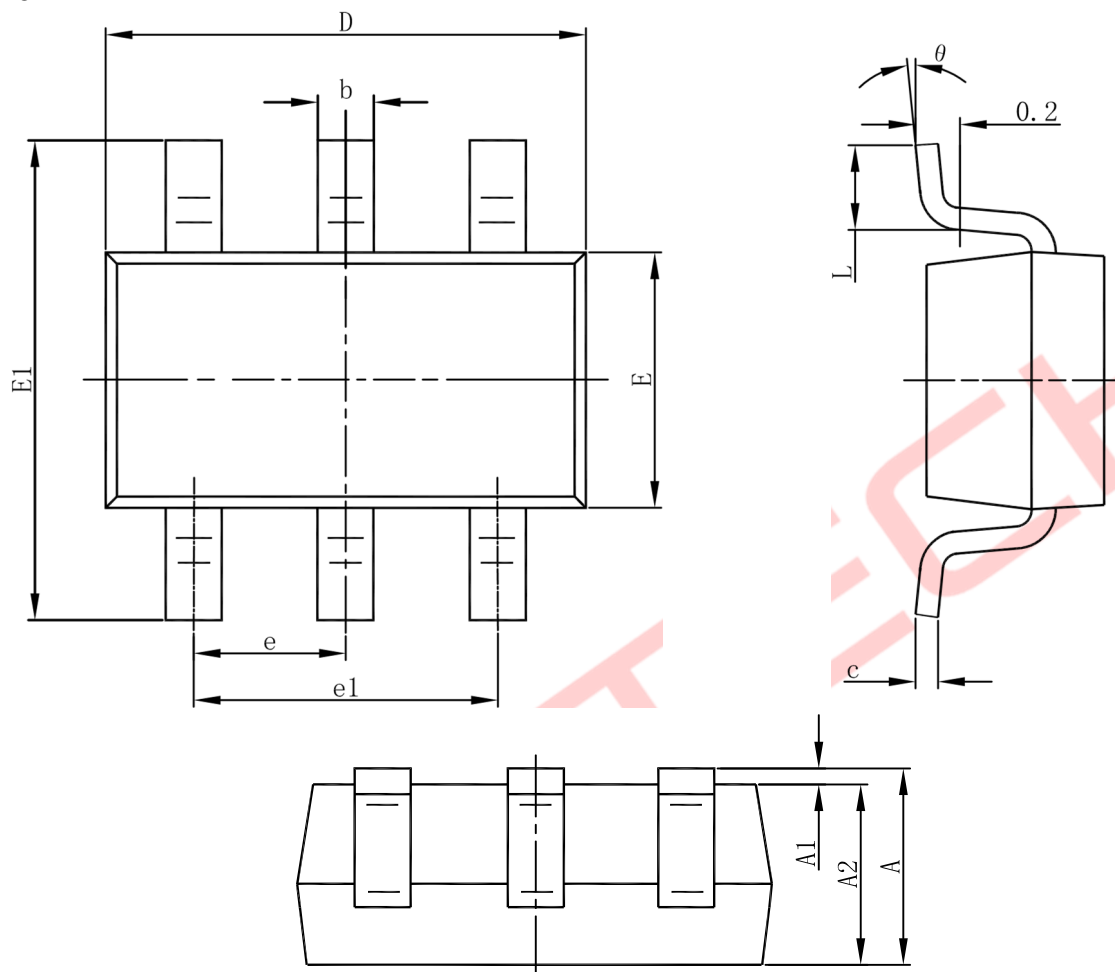


TLP Measurement

ESD5425AT

PACKAGE OUTLINE

SOT23-6L



Symbol	Dimensions in Millimeters		Symbol	Dimensions in Millimeters	
	Min.	Max.		Min.	Max.
A	1.050	1.250	E	1.500	1.700
A1	0.000	0.100	E1	2.650	2.950
A2	1.050	1.150	e	0.950(BSC)	
b	0.300	0.500	e1	1.800	2.000
c	0.100	0.200	L	0.300	0.600
D	2.820	3.020	θ	0°	8°

ORDERING INFORMATION

Device	Package	Shipping
ESD5425AT	SOT23-6L	3,000/Tape & Reel

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