LL05AT723

List

LL05AT723

Surface Mount Ultra Low Capacitance For ESD Protection Diode 5V

Features

- IEC61000-4-2 (ESD) ±25kV (air), ±17kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Working voltages : 5V
- Low capacitance
- Low clamping voltage
- Low leakage current
- Lead-free parts meet RoHS requirments
- Suffix "-H" indicates Halogen-free part, ex.LL05AT723-H.

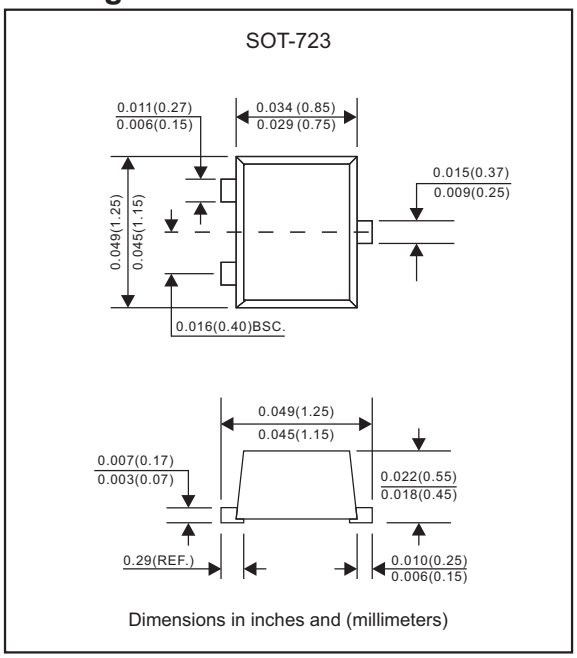
Applications

- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks
- MDDI Ports
- USB2.0 Power and Data Line Protection
- Display Ports
- Digital Visual Interfaces(DVI)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-723
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.001 gram

Package outline



Dimensions in inches and (millimeters)

Maximum ratings (at T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	Limit	UNIT
Peak pulse power (According to IEC 61000-4-5)	P_{PP}	50	Watt
Peak pulse current (According to IEC 61000-4-5)	I_{PP}	5	A
IEC 61000-4-2 ESD air model contact model	V_{ESD}	±25 ±17	kV
Operating junction temperature range	T_J	-55 to +125	°C
Storage temperature range	T_{STG}	-55 to +150	°C

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand off voltage		V_{RWM}			5.0	V
Reverse breakdown voltage	I_T = 1mA,	V_{BR}	6.0		10.0	V
Reverse leakage current	V_{RWM} =5V	I_R			0.1	μA
Clamping voltage (Note 1)	I_{PP}=1A, tp=8/20us, Between I/O and GND I_{PP}=5A, tp=8/20us,Between I/O and GND	V_C			9.0 11.0	V
Junction capacitance	V_R=0V, f=1MHz, Between I/O and GND V_R=0V, f=1MHz, Between I/O and I/O	C_J		0.7 0.35	0.8 0.4	pF

Note:
1. Non-repetitive current pulse 8/20 us exponential decay waveform according to IEC61000-4-5.

Rating and characteristic curves(LL05AT723)

Fig.1 VOLTAGE SWEEPING OF I/O TO GND

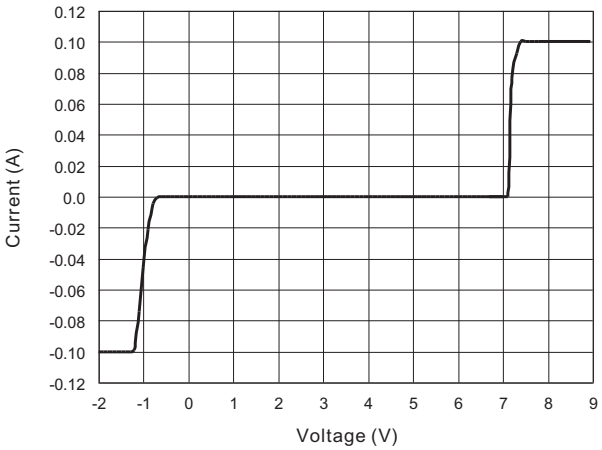


Fig.2 INSERTION LOSS S21 of I/O to GND

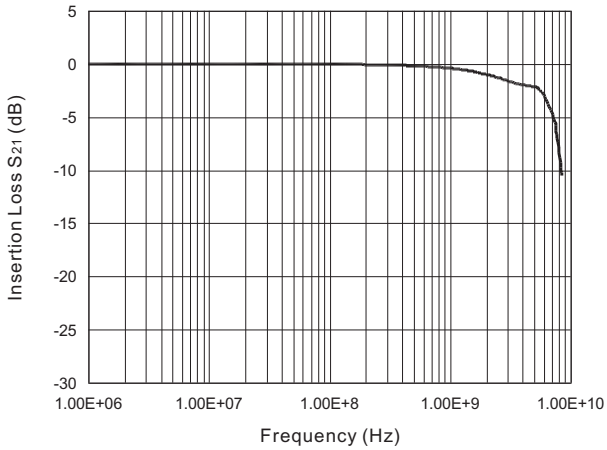


Fig.3 CAPACITANCE VS. REVERSE VOLTAGE

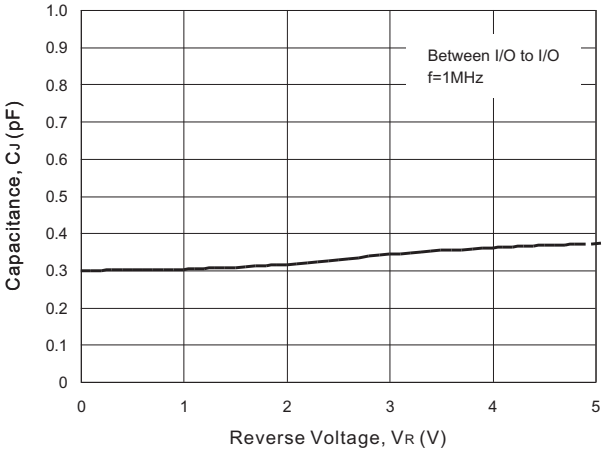


Fig.4 NORMALIZED CAPACITANCE VS. REVERSE VOLTAGE

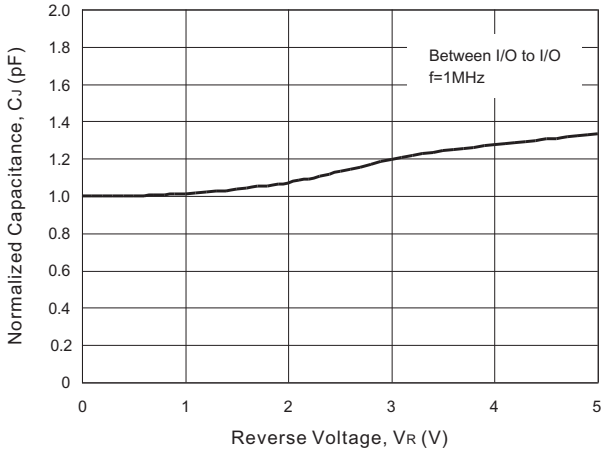


Fig.5 ESD CLAMPING OF I/O TO GND
(+8KV CONTACT PER IEC 61000-4-2)

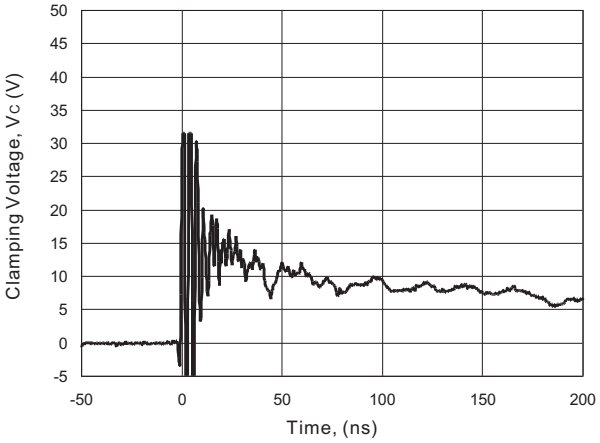
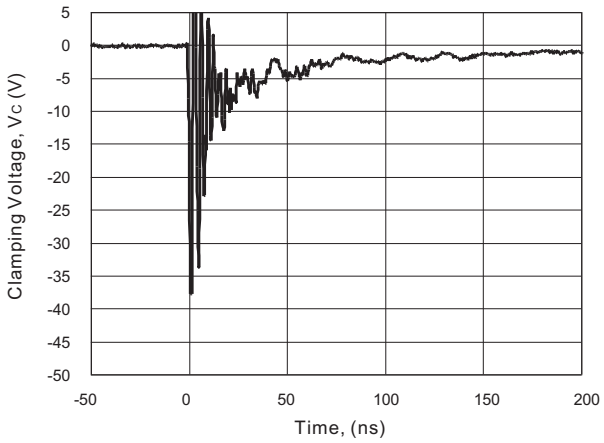


Fig.6 ESD CLAMPING OF I/O TO GND
(-8KV CONTACT PER IEC 61000-4-2)



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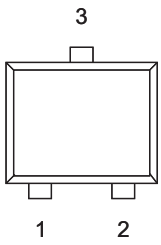
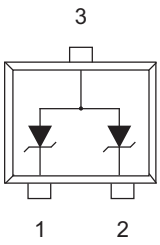
Pinning information

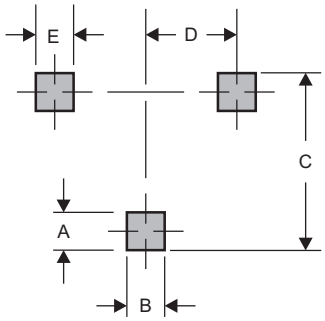
Pin Configuration	Circuit Diagram
	

Marking

Type number	Marking code
LL05AT723	5T

Suggested solder pad layout

SOT-723



PACKAGE	A	B	C	D	E
SOT-723	0.021 (0.52)	0.014 (0.36)	0.059 (1.50)	0.016 (0.40)	0.011 (0.27)

Dimensions in inches and (millimeters)

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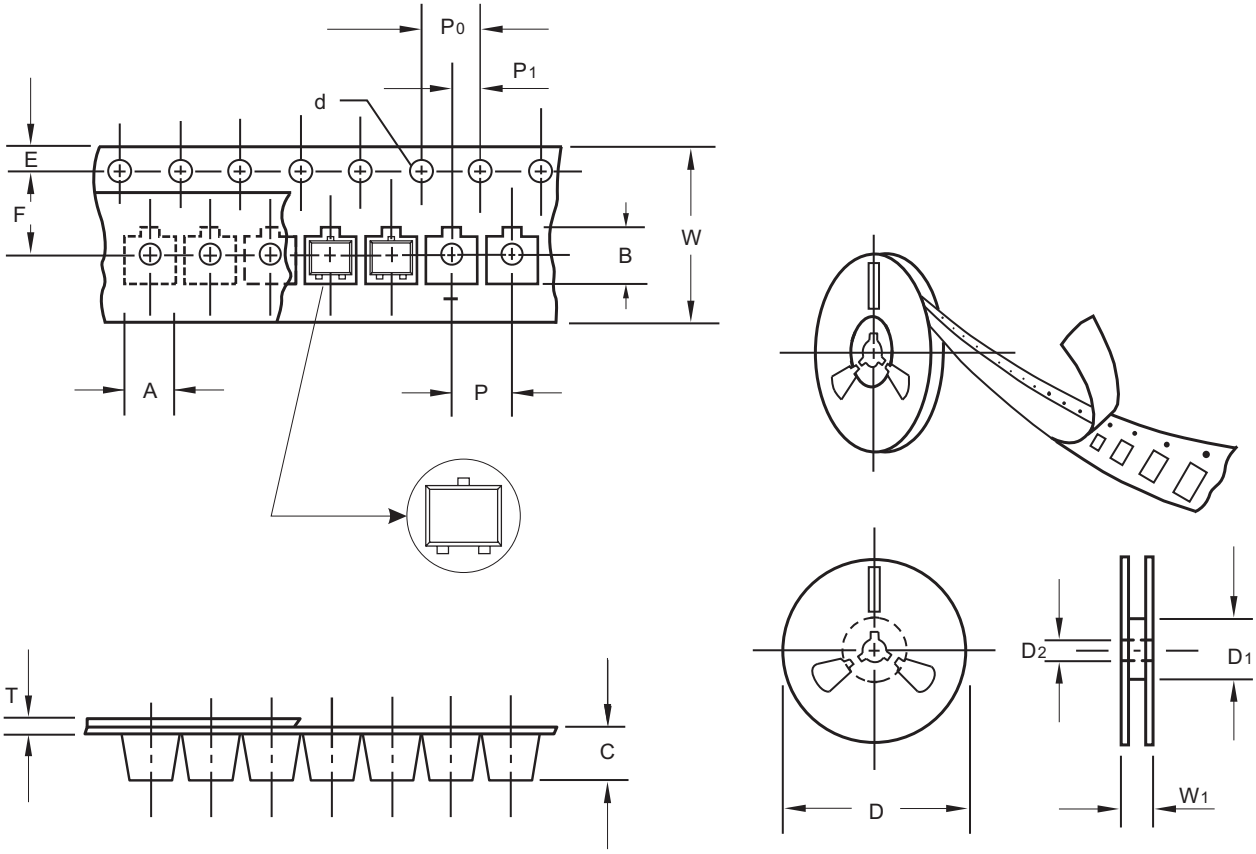
Packing information



unit:mm

Item	Symbol	Tolerance	SOT-723
Carrier width	A	0.1	1.31
Carrier length	B	0.1	1.45
Carrier depth	C	0.1	0.61
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	54.40
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.20
Tape width	W	+0.3/-0.1	8.00
Reel width	W_1	1.0	9.5

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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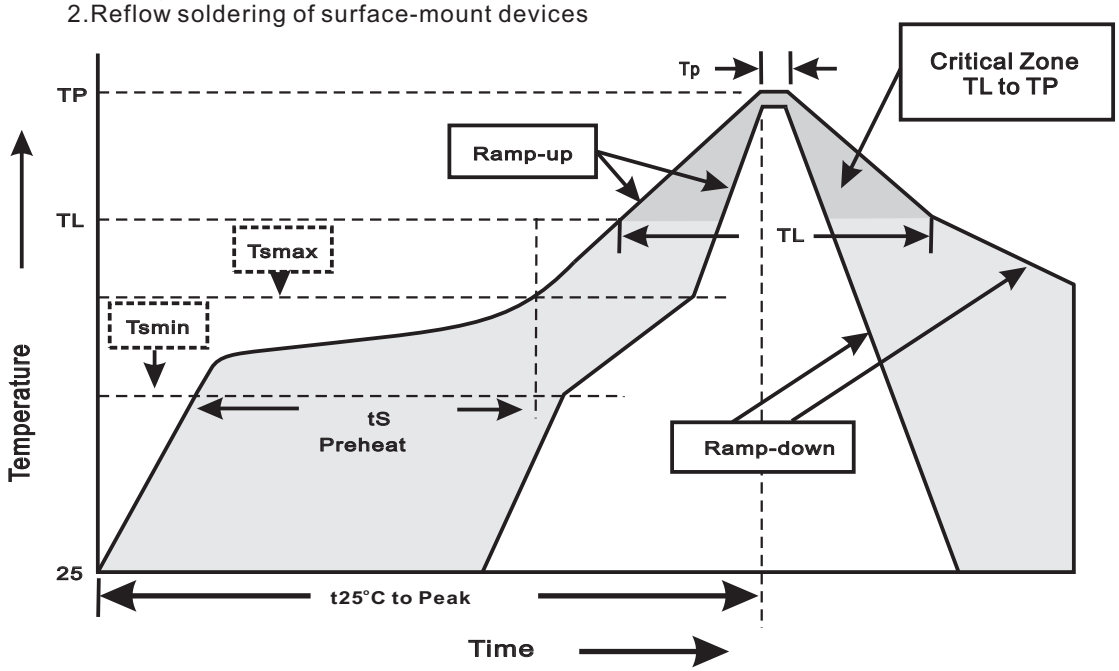
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOT-723	7"	3,000	4.0	30,000	183*123*183	178	383*257*387	240,000

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%

2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_{BR}= V_{BR} Min * 80% at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031