LL054BT26L1

List

LL054BT26L1

4-Line SMD Low Capacitance ESD Protection Diodes Array 5.0V

Features

- Protects four I/O lines and one Vcc line
- Low capacitance: 0.3pF Typical(I/O - I/O)
- Working voltages: 5V
- Low leakage current
- Small package
- IEC 61000-4-2 (ESD) ±17 kV(contact), ±27 kV(air),
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 5.5A (8/20us)
- Suffix "-H" indicates Halogen-free parts, ex. LL054BT26L1-H.

Applications

- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks.
- MDDI Ports.
- USB 2.0/3.0 power and data line protection.
- Display Ports.
- High definition multi-media interface(HDMI)
- Digital visual interfaces(DVI)

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23-6
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.013 gram

Package outline

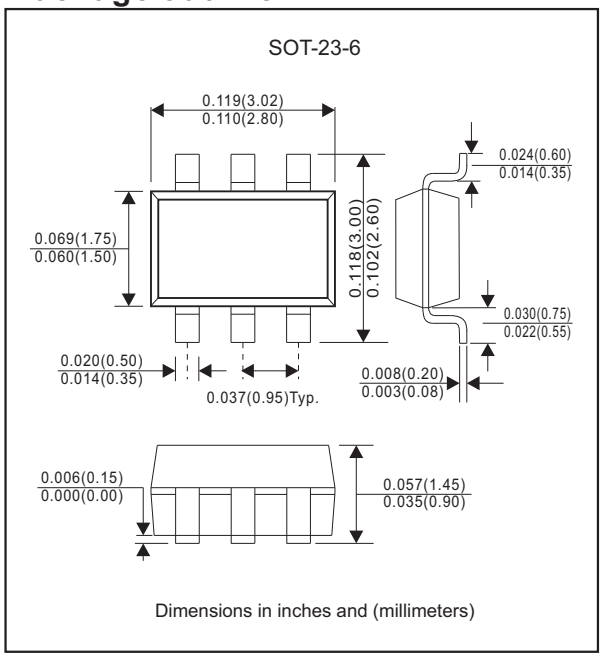


Fig. 1A

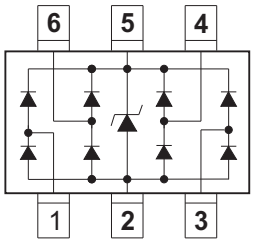
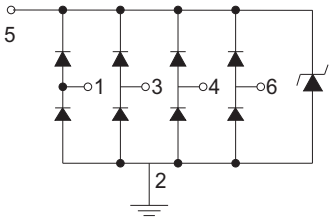


Fig. 1B



Maximum ratings

PARAMETER	SYMBOL	Value	UNIT
IEC 61000-4-2 (ESD) Air Contact	V_{ESD}	±27 ±17	kV
Peak pulse current (tp=8/20us)	I_{PP}	5.5	A
Peak pulse power (tp=8/20us)	P_{PP}	60.5	W
Operating Junction Temperature Range	T_J	-55to +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=1mA	V_{BR}	6.0		9.0	V
Reverse Leakage Current	V_{RWM}=5V, T = 25°C	I_R		0.1	1.0	μA
Junction Capacitance	V_R=0V, f=1MHz , I/O pin to GND	C_J		0.6	0.8	pF
	V_R=0V, f=1MHz , Between I/O pins			0.3	0.4	pF
Clamping Voltage	I_{PP}=5.5A, tp=8/20us,Any I/O pin to GND	V_C			11.0	V

Rating and characteristic curves (LL054BT26L1)

Fig.1 VOLTAGE SWEEPING OF I/O TO GND

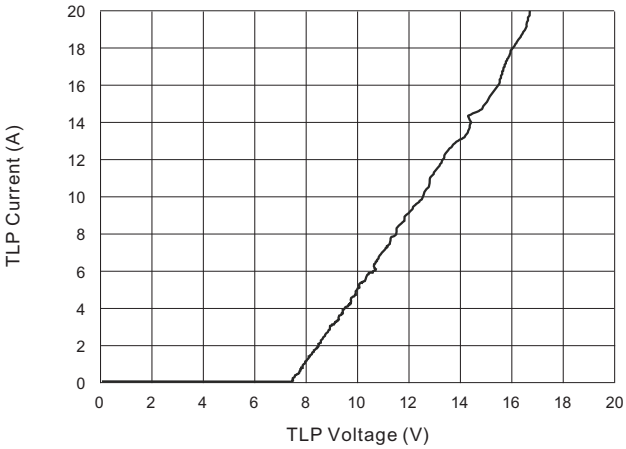


Fig.2 INSERTION LOSS S21 of I/O to GND

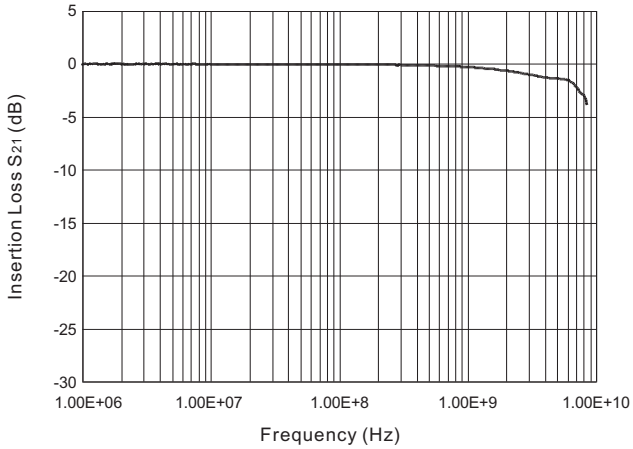


Fig.3 CAPACITANCE VS. REVERSE VOLTAGE

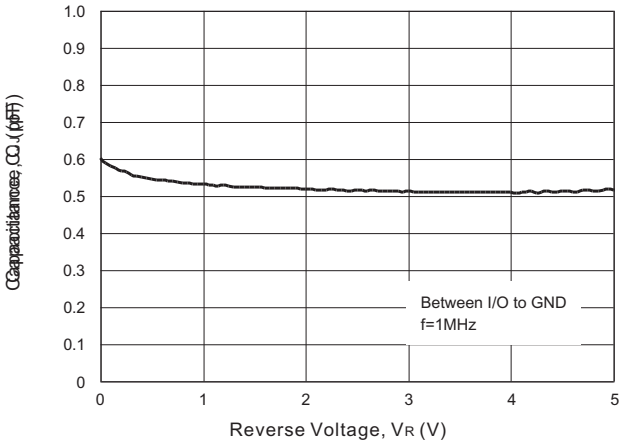


Fig.4 NORMALIZED CAPACITANCE VS. REVERSE VOLTAGE

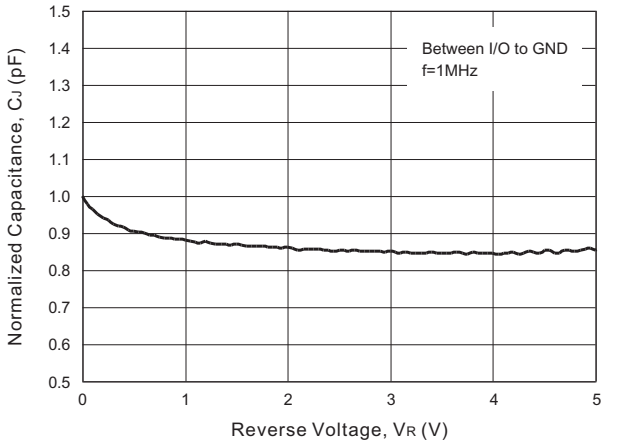


Fig.5 ESD CLAMPING OF I/O TO GND
(+8KV CONTACT PER IEC 61000-4-2)

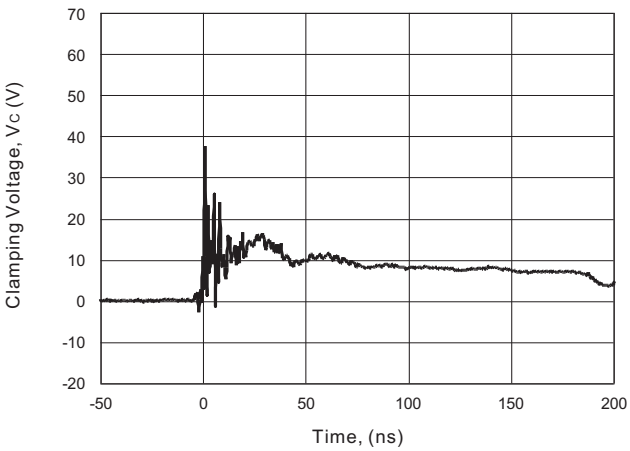
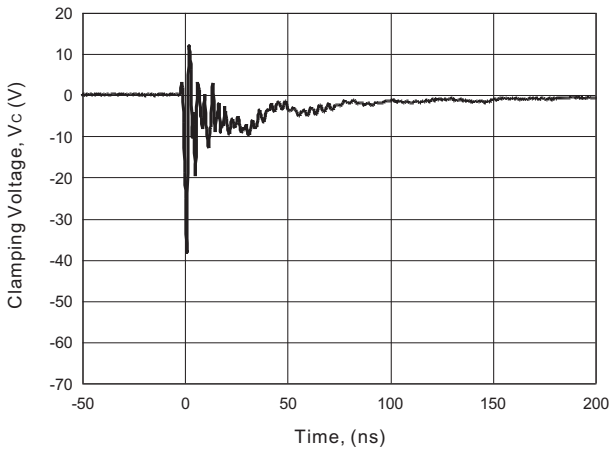


Fig.6 ESD CLAMPING OF I/O TO GND
(-8KV CONTACT PER IEC 61000-4-2)



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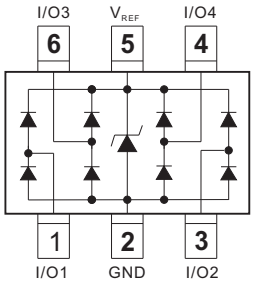
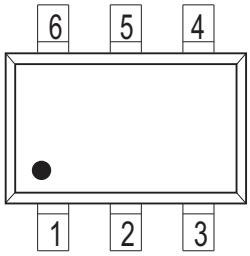
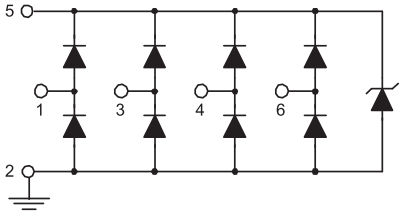
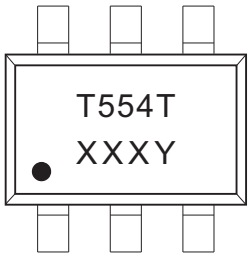
Pinning information

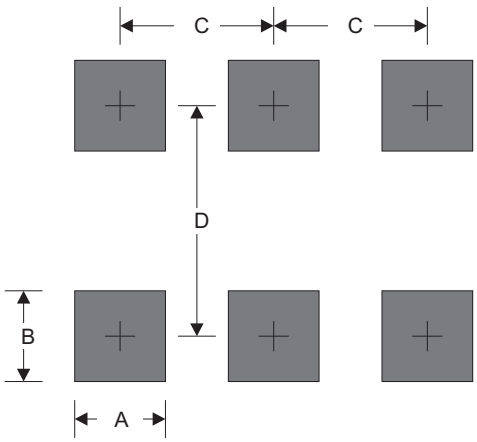
Pin Configuration	Simplified outline	Circuit Diagram
		

Marking

Type number	Marking code
LL054BT26L1	

Note:
1. "T554T" is the part number, fixed.
2. "XXX" is the last 3 characters of the wafer's Lot No., "Y" is the internal code.

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D
SOT-23-6	0.028 (0.70)	0.039 (1.00)	0.037(0.95)	0.094(2.40)

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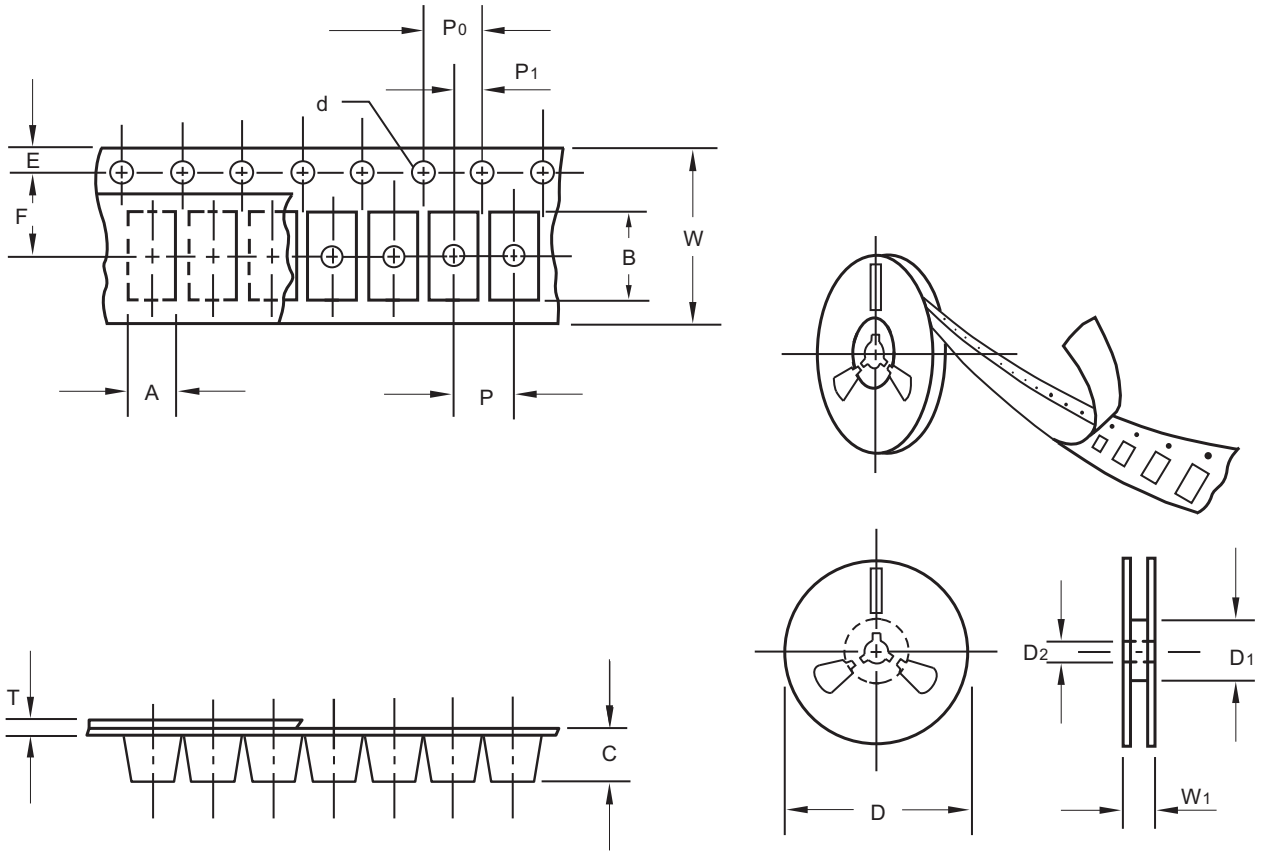
Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23-6
Carrier width	A	0.1	3.23
Carrier length	B	0.1	3.17
Carrier depth	C	0.1	1.37
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	60.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.05	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.05	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	8.00
Reel width	W_1	max	14.40

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

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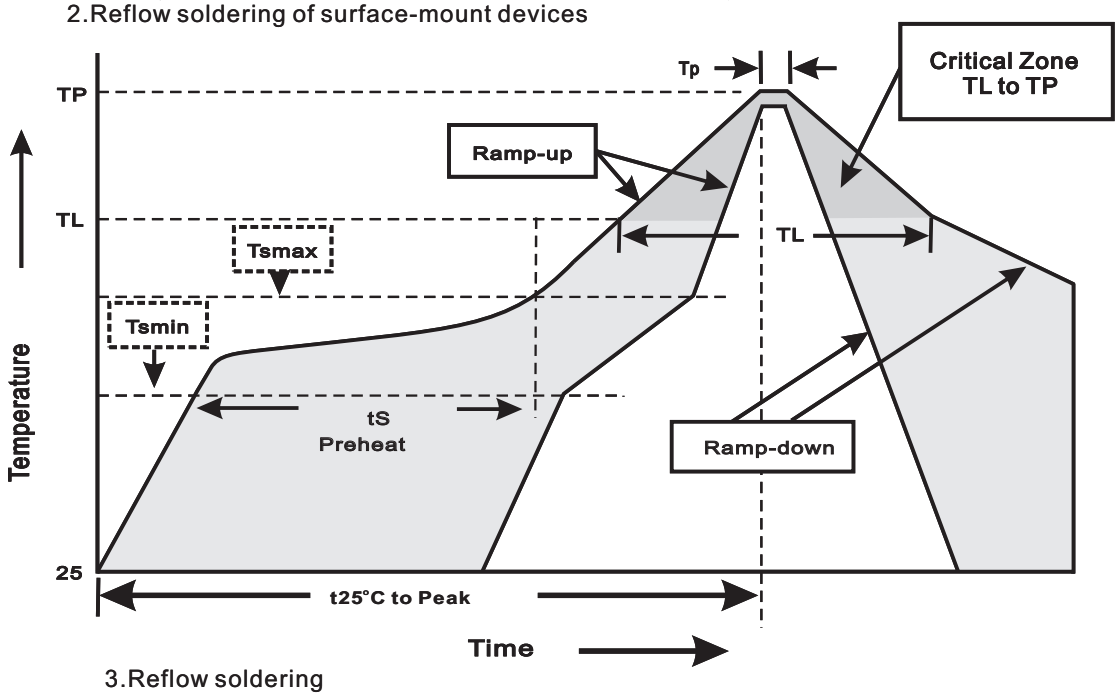
Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SOT-23-6	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.50

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_{RWM}=80% rate at T_J=85°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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031