

L054BT26L3

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4-Line SMD Low Capacitance TVS for ESD Protection 5.0V

Features

- low operating and clamping voltage
- Low leakage current
- Small package
- IEC 61000-4-2 (ESD) ± 30 kV (contact), ± 30 kV (air),
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 24A (8/20us)
- Suffix "-H" indicates Halogen-free parts, ex. L054BT26L3-H.

Applications

- Ethernet 10/100/1000
- Wireless data (WAN/LAN) system
- PC/Notebooks, USB2.0/IEEE 1394 ports
- Portable Instrumentation
- Video/Graphics Card

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

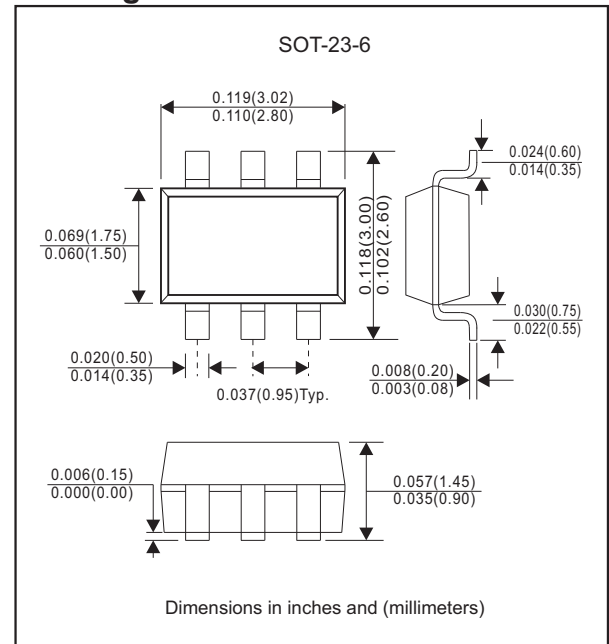


Fig. 1A

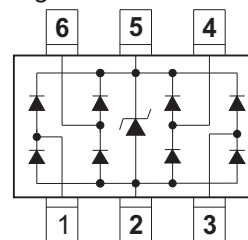
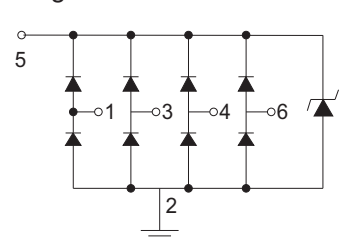


Fig. 1B



Maximum ratings

PARAMETER	SYMBOL	Value	UNIT
IEC 61000-4-2 (ESD) Air Contact	V_{ESD}	± 30 ± 30	kV
Peak pulse current ($t_p=8/20\mu s$)	I_{PP}	24	A
Peak pulse power ($t_p=8/20\mu s$)	P_{PP}	480	W
Operating Junction Temperature Range	T_J	-55to +125	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$

Electrical Characteristics (AT $T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Reverse Stand-Off Voltage		V_{RWM}			5	V
Reverse Breakdown Voltage	$I=1mA$	V_{BR}	6			V
Reverse Leakage Current	$V_{RWM}=5V$, $T = 25^{\circ}C$	I_R			500	nA
Junction Capacitance	$V_R=0V$, $f=1MHz$, I/O pin to GND	C_J		3	4	pF
	$V_R=0V$, $f=1MHz$, Between I/O pins			1.5	2	pF
Clamping Voltage	$I_{PP}=24A$, $t_p=8/20\mu s$, Any I/O pin to GND	V_C		17	20	V

Rating and characteristic curves (L054BT26L3)

Figure 1. Peak Pulse Power vs. Pulse Time

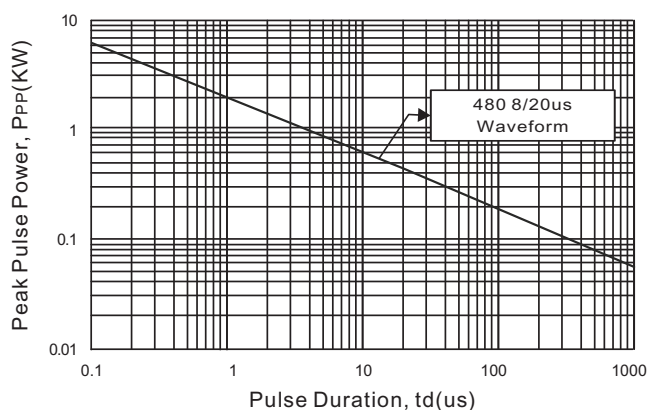


Figure 2. Power Derating Curve

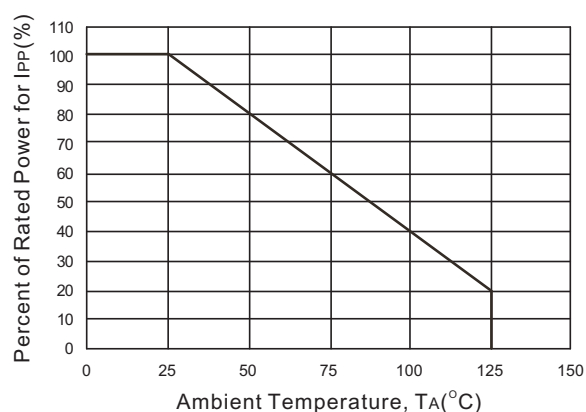


Figure 3. Clamping Voltage vs. Peak Pulse Current

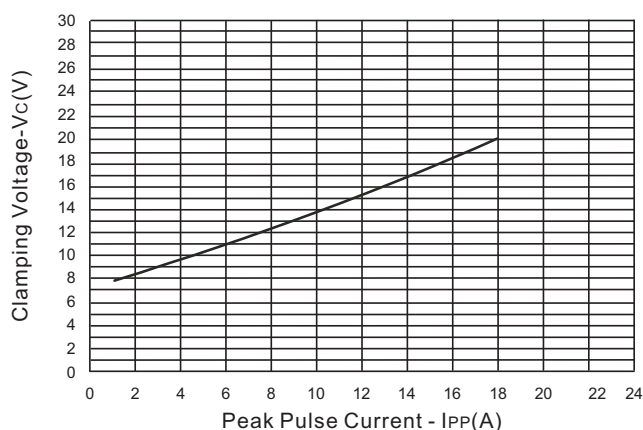


Figure 4. Normalized Junction Capacitance vs. Reverse Voltage(I/O-GND)

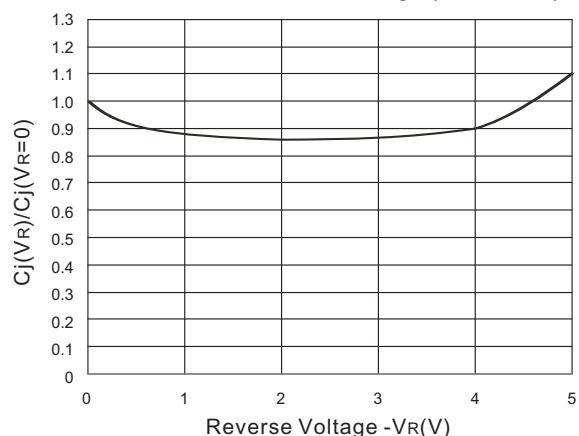
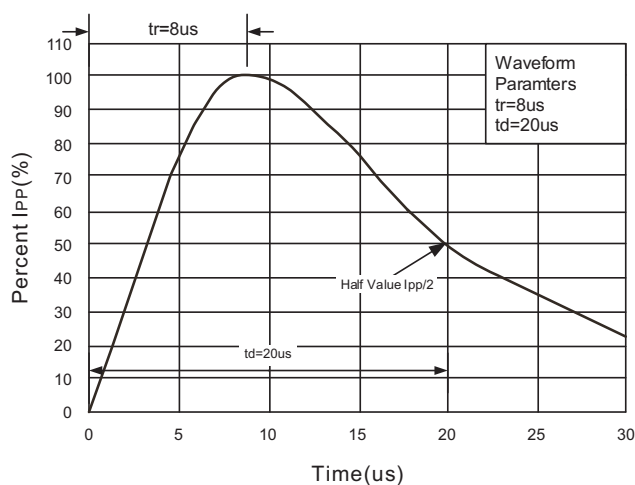
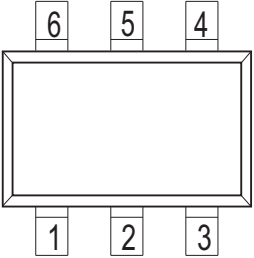
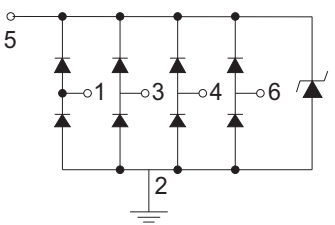


Figure 5. 8/20us Pulse Waveform



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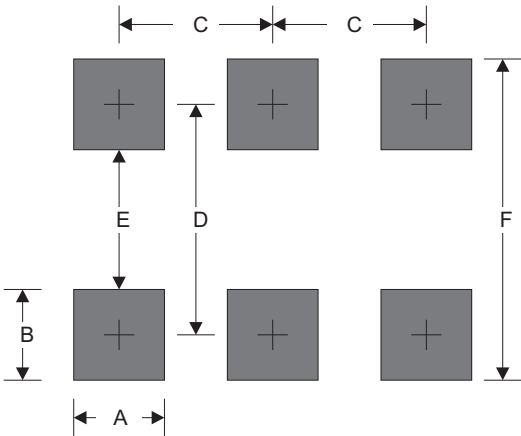
Pinning information

Pin Configuration	Simplified outline	Circuit Diagram
1, 3, 4, 6 I/O 5 VRWM 2 GND		

Marking

Type number	Marking code
L054BT26L3	05U

Suggested solder pad layout

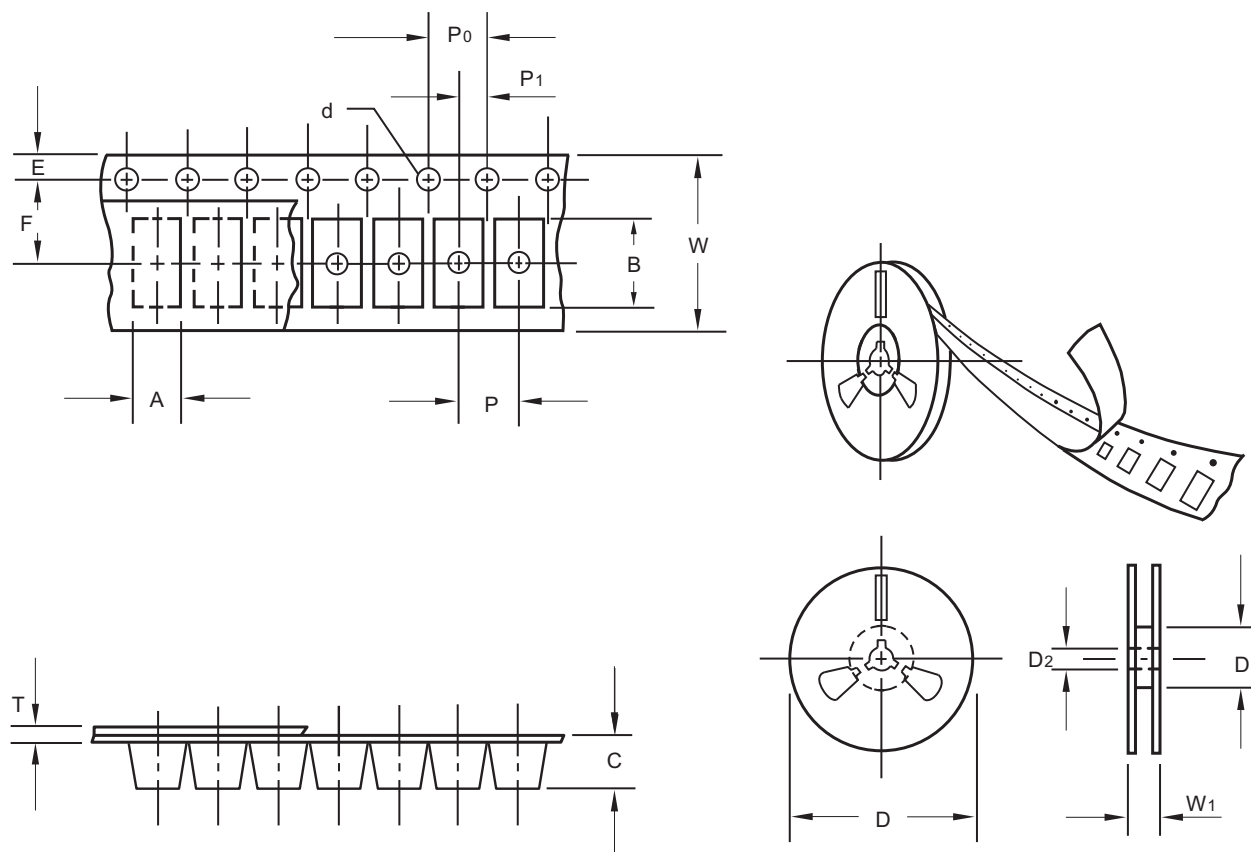


Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D	E	F
SOT-23-6	0.024 (0.60)	0.043 (1.10)	0.037(0.95)	0.098(2.50)	0.055(1.40)	0.142(3.60)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23-6
Carrier width	A	0.1	3.35
Carrier length	B	0.1	3.35
Carrier depth	C	0.1	1.25
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.05	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	max	14.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

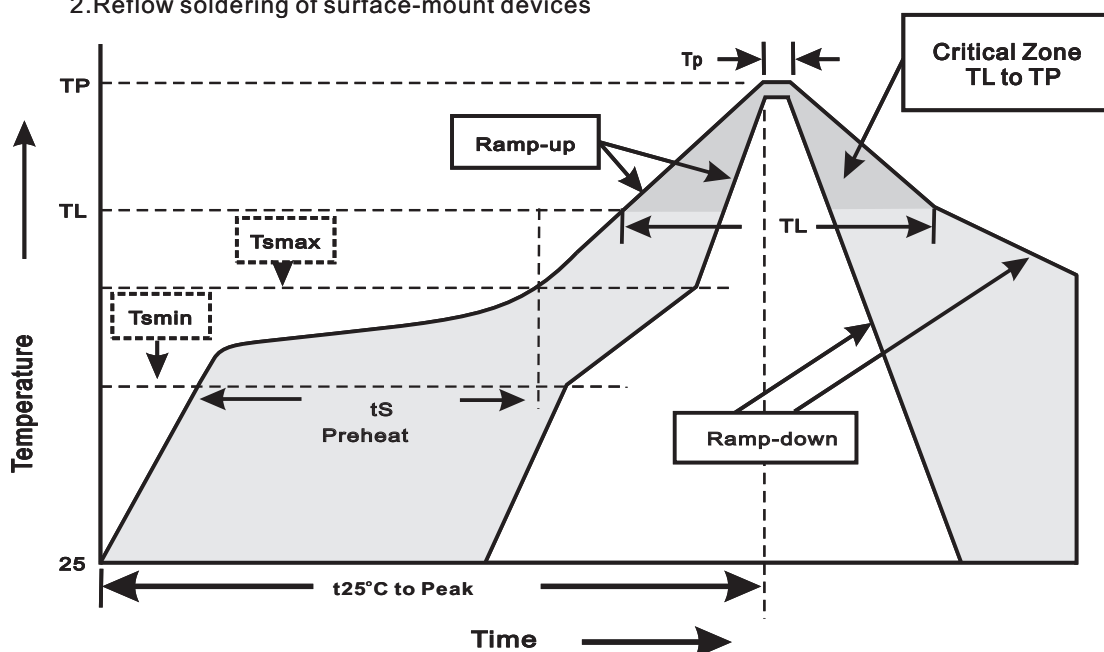
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Reel packing

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(T _{Smin}) -Temperature Max(T _{Smax}) -Time(min to max)(t _S)	150°C 200°C 60~120sec
T _{Smax} 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 $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_{\text{RWM}}=80\%$ rate at $T_{\text{J}}=85^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ at $T_{\text{A}}=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at $T_{\text{A}}=85^{\circ}\text{C}$, 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