

LL054BT2510F

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LL054BT2510F

60W 4-Channel Ultra Low Capacitance TVS For ESD Protection Array : 5.0V

Features

- 60 Watts peak pulse power ($t_p=8/20\mu s$).
- Uni-directional configurations.
- Solid-state silicon-avalanche technology.
- Complies with following standards:
 - IEC 61000-4-2(ESD) $\pm 25kV$ (Air).
 - IEC 61000-4-2(ESD) $\pm 20kV$ (Contact).
 - IEC 61000-4-4(EFT) 40A (5/50ns).
 - IEC 61000-4-5 (Lightning) 4A (8/20 μs) .
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. LL054BT2510F-H.

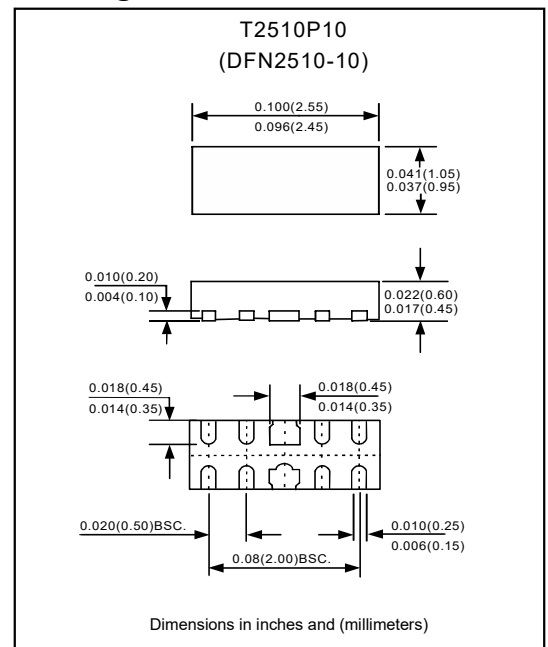
Applications

- HDMI 1.3 & 1.4, USB2.0 & 3.0 and MDDI ports.
- Set-top box, digital TV and digital video interface (DVI).
- Video graphics cards, PCI express and serial SATA ports.
- Notebook computers.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, T2510P10 (DFN2510-10) .

Package outline



Maximum ratings (at $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PK}	60	W
Peak pulse current (8/20 μs)	I_{PP}	4	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 25	kV
ESD per IEC61000-4-2 (Contact)		± 20	
Lead temperature for soldering during 10 seconds	T_L	260	$^\circ C$
Operating temperature range	T_J	+125	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

Electrical Characteristics (At $T_A=25^\circ C$ unless otherwise noted)

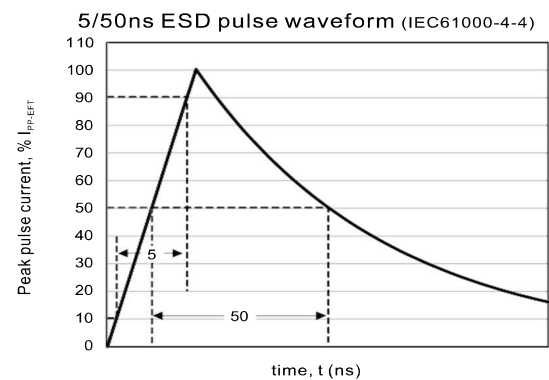
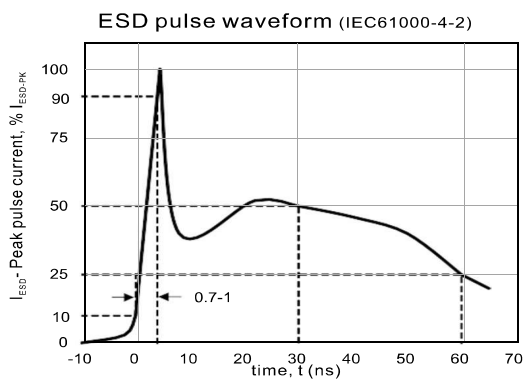
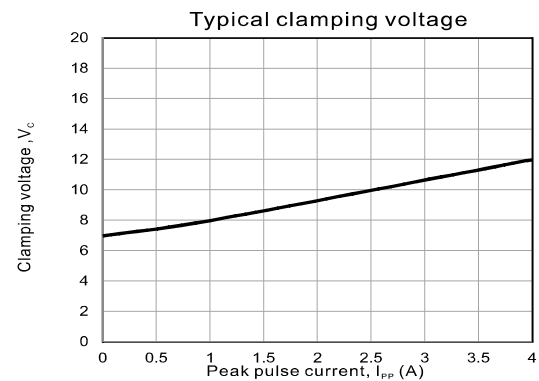
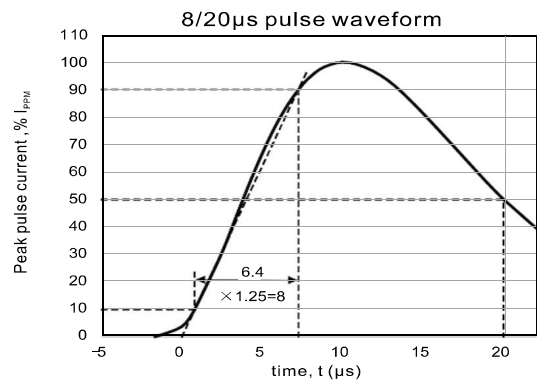
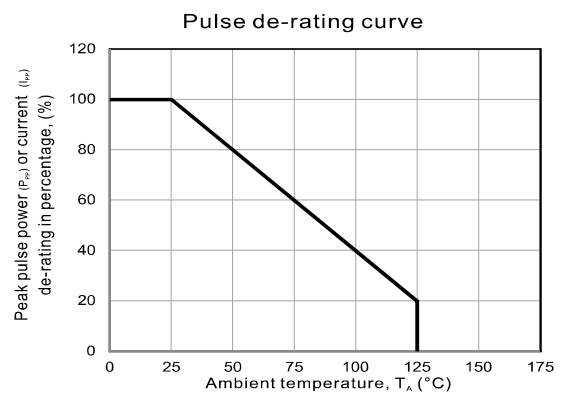
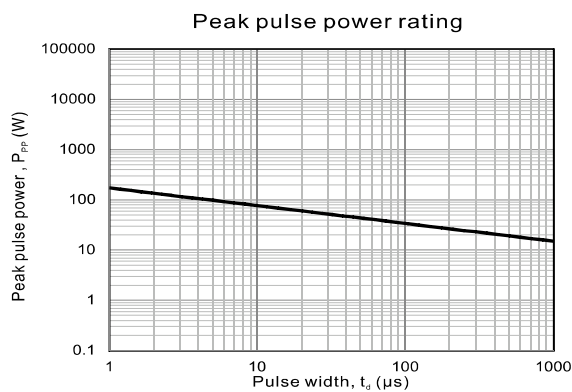
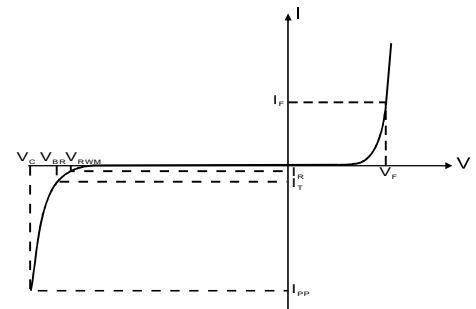
Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage		V_{RWM}			5	V
Reverse leakage current	$V_{RWM}=5V$	I_R		0.001	0.1	μA
Reverse breakdown voltage	$I_T=1mA$	V_{BR}	6	7		V
Clamping voltage	$I_{PP}=1A, t_p=8/20\mu s$	V_C		8		V
	$I_{PP}=4A, t_p=8/20\mu s$			12	14	
Junction capacitance	$V_R=0V, f=1.0MHz$	C_J		0.25	0.4	pF
	$V_R=0V, f=1.0MHz$	C_J		0.45	0.8	

Note: 1. The default test is I/O pin to ground.

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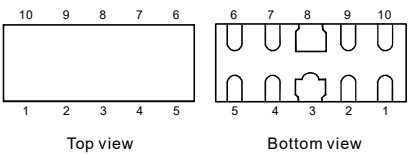
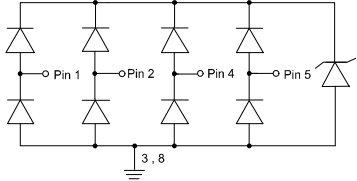
Rating and characteristic curves

Symbol	Parameter
V_{RWM}	Reverse working voltage
I_R	Reverse leakage current
V_{BR}	Reverse breakdown voltage
I_T	Test current for reverse breakdown
V_C	Clamping voltage
I_{PP}	Peak pulse current
V_F	Forward voltage
I_F	Forward current



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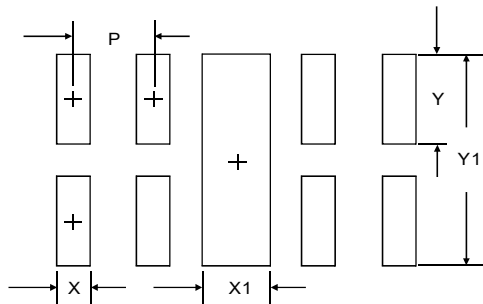
Pinning information

Pin Configuration	Simplified outline	Circuit Diagram
Pin 1,2,4,5 I/O Pin 3,8 GND Pin 6,7,9,10 NC	 Top view Bottom view	

Marking

Type number	Marking code
LL054BT2510F	0524P

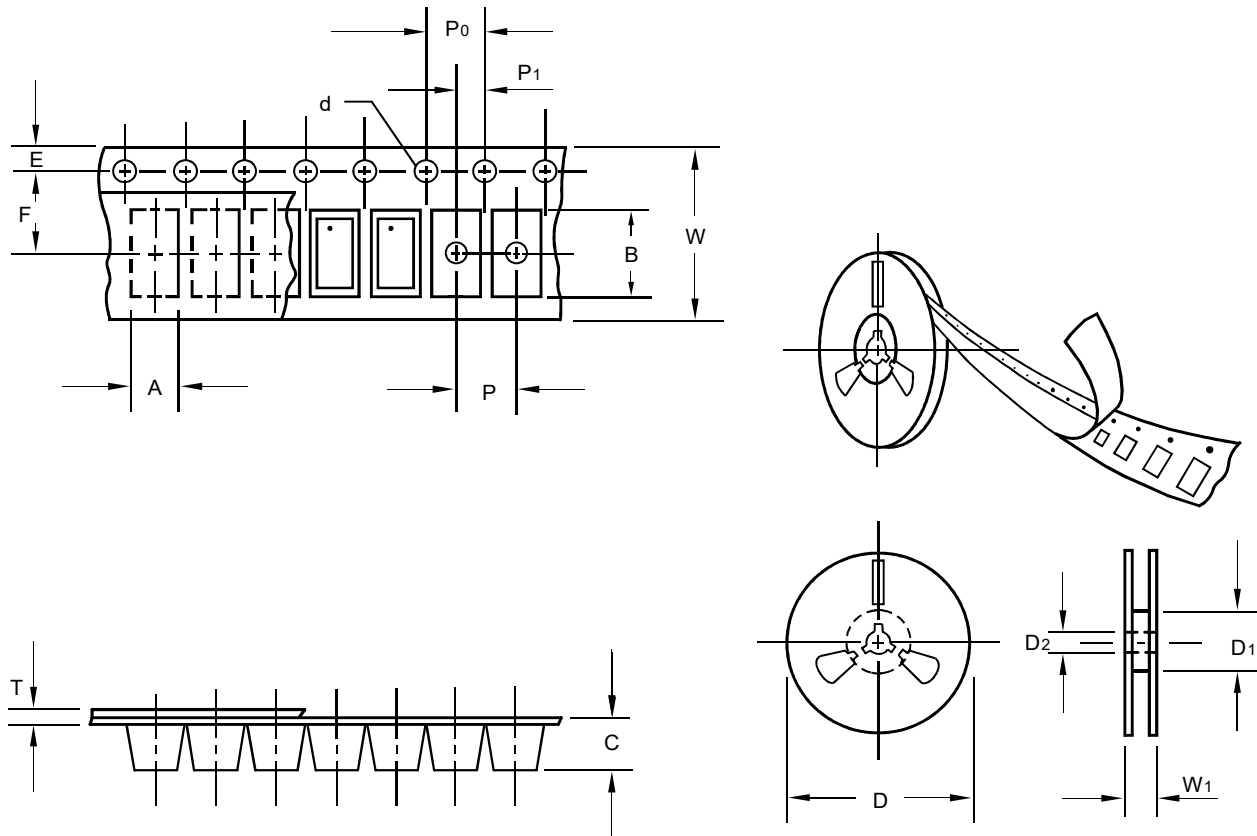
Suggested solder pad layout



DIMENSIONS		
DIM	INCHES	MILLIMETERS
P	0.020	0.5
X	0.008	0.2
X1	0.016	0.4
Y	0.024	0.6
Y1	0.056	1.4

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Packing information



unit:mm

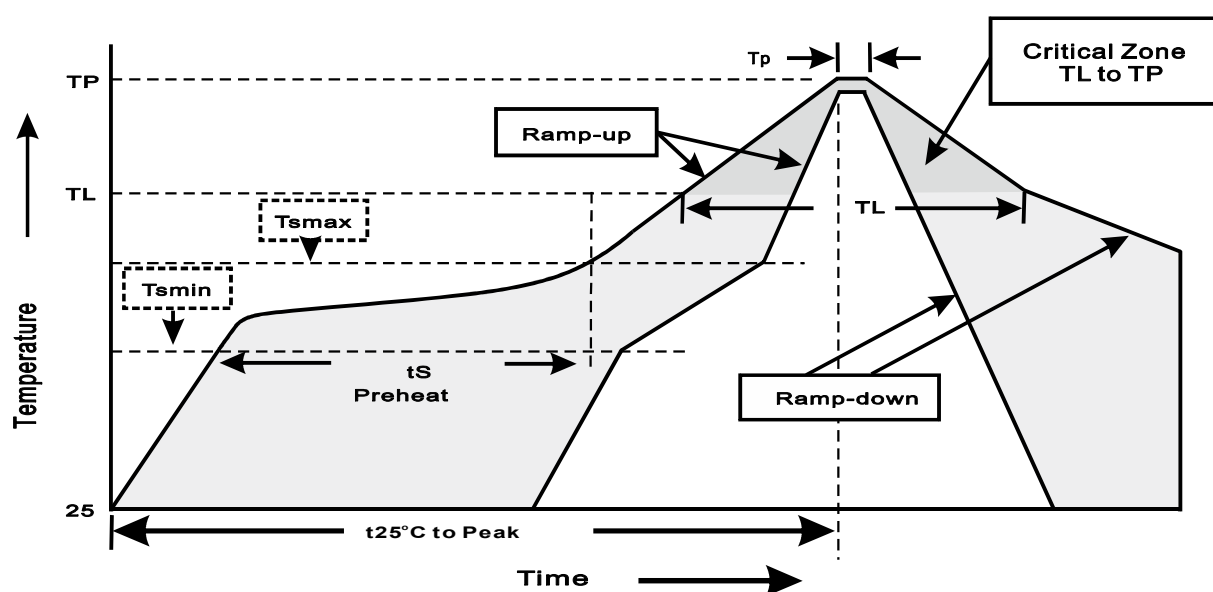
Item	Symbol	Tolerance	T2510P10 (DFN2510-10)
Carrier width	A	0.05	1.20
Carrier length	B	0.05	2.70
Carrier depth	C	0.05	0.70
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	60.00
Feed hole diameter	D2	0.2	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	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	0.20
Tape width	W	0.3	8.00
Reel width	W1	1.0	13.1

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

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	REEL DIA, (m/m)	CARTON (pcs)
T2510P10 (DFN2510-10)	7"	3,000	4.0	30,000	178	240,000

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



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