

LL054BT2510D

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

Features

- Up to 4 lines protects.
- Leadless flow-through package.
- Complies with following standards:
 - IEC 61000-4-2(ESD) $\pm 15\text{kV}$ (Air).
 - IEC 61000-4-2(ESD) $\pm 8\text{kV}$ (Contact).
 - IEC 61000-4-4(EFT) 40A (5/50ns).
 - IEC 61000-4-5 (Lighting) 4A (8/20 μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. LL054BT2510D-H.

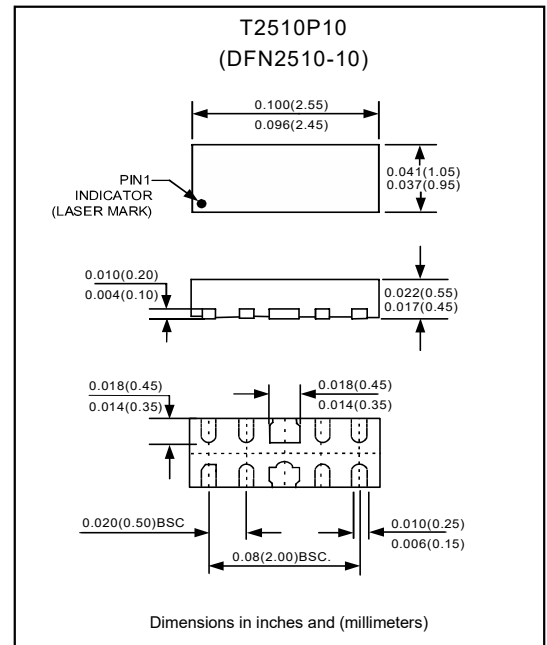
Applications

- HDMI 1.3 & 2.4, USB2.0 & 3.0 and MDDI ports.
- Monitors and flat panel displays.
- Set-top box and digital TV.
- Video graphics cards.
- Notebook computers.
- PCI express and serial SATA ports.

Mechanical data

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

Package outline



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

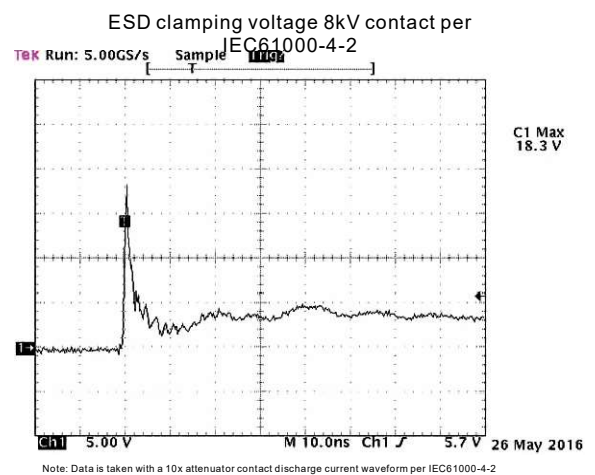
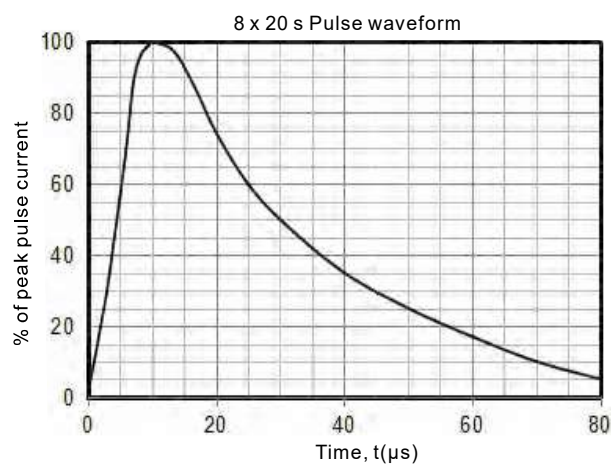
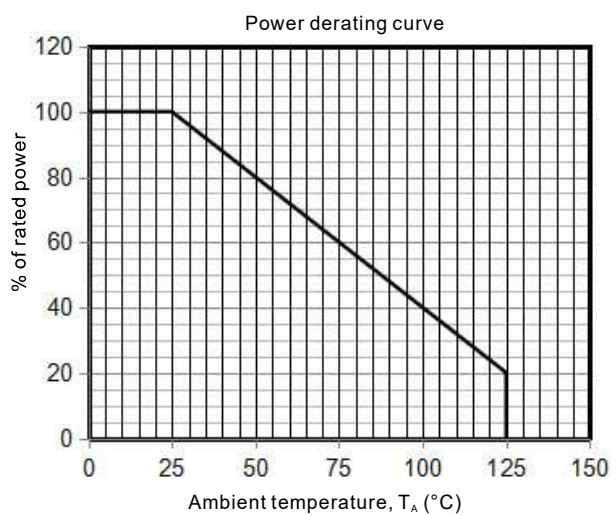
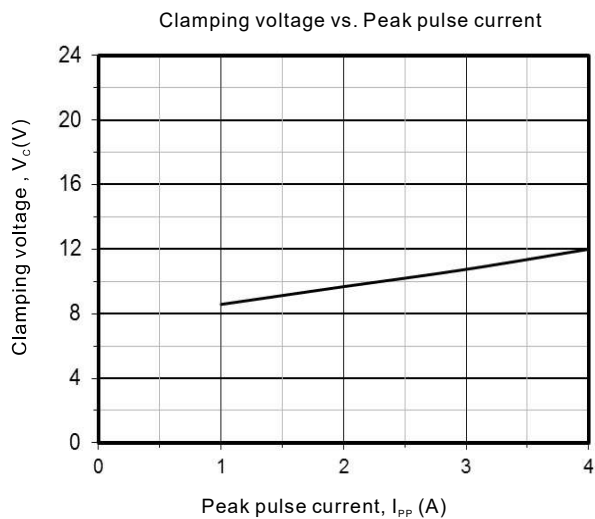
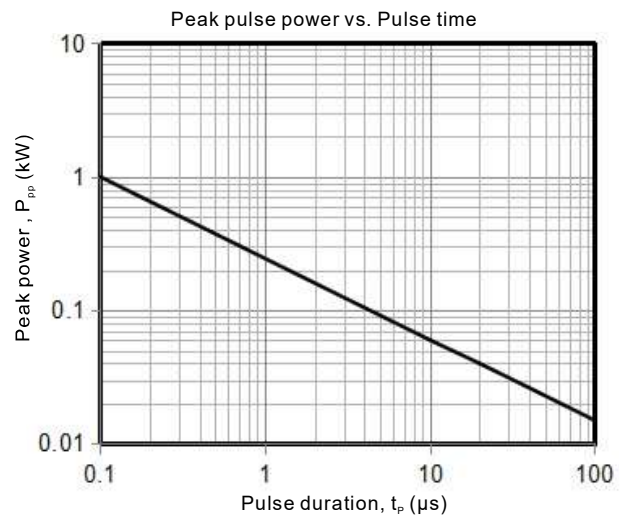
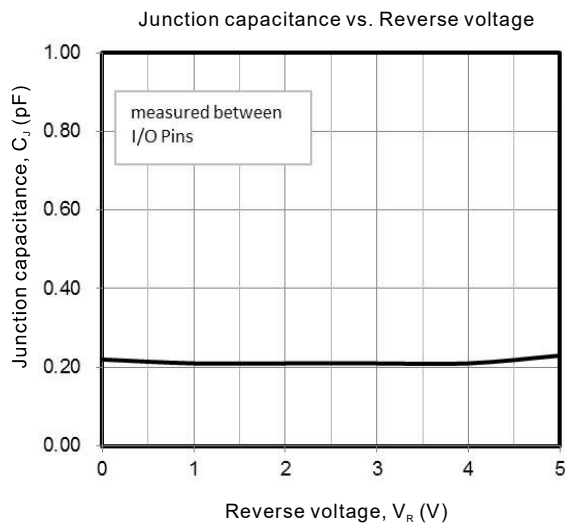
Parameter	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PK}	60	W
Peak pulse current (8/20 μs)	I_{PP}	4	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 15	kV
ESD per IEC61000-4-2 (Contact)		± 8	
Operating temperature range	T_J	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage	Any I/O pin to ground	V_{RWM}			5	V
Reverse leakage current	$V_{RWM}=5\text{V}$, any I/O pin to ground	I_R			0.5	μA
Reverse breakdown voltage	$I_T=1\text{mA}$, any I/O pin to ground	V_{BR}	6			V
Clamping voltage	$I_{PP} = 1\text{A}$ (8*20 μs pulse) any I/O pin to ground	V_C			10	V
	$I_{PP} = 4\text{A}$ (8*20 μs pulse) any I/O pin to ground				15	
Junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$, between I/O pins	C_J		0.2	0.3	pF
	$V_R=0\text{V}$, $f=1.0\text{MHz}$, any I/O pin to ground	C_J			0.5	

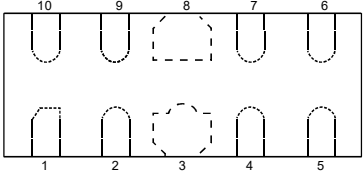
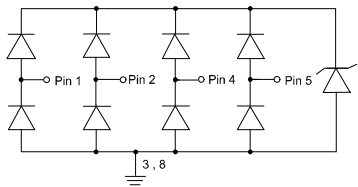
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Rating and characteristic curves



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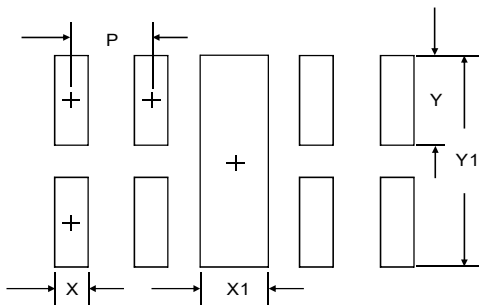
Pinning information

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

Marking

Type number	Marking code
LL054BT2510D	0524P

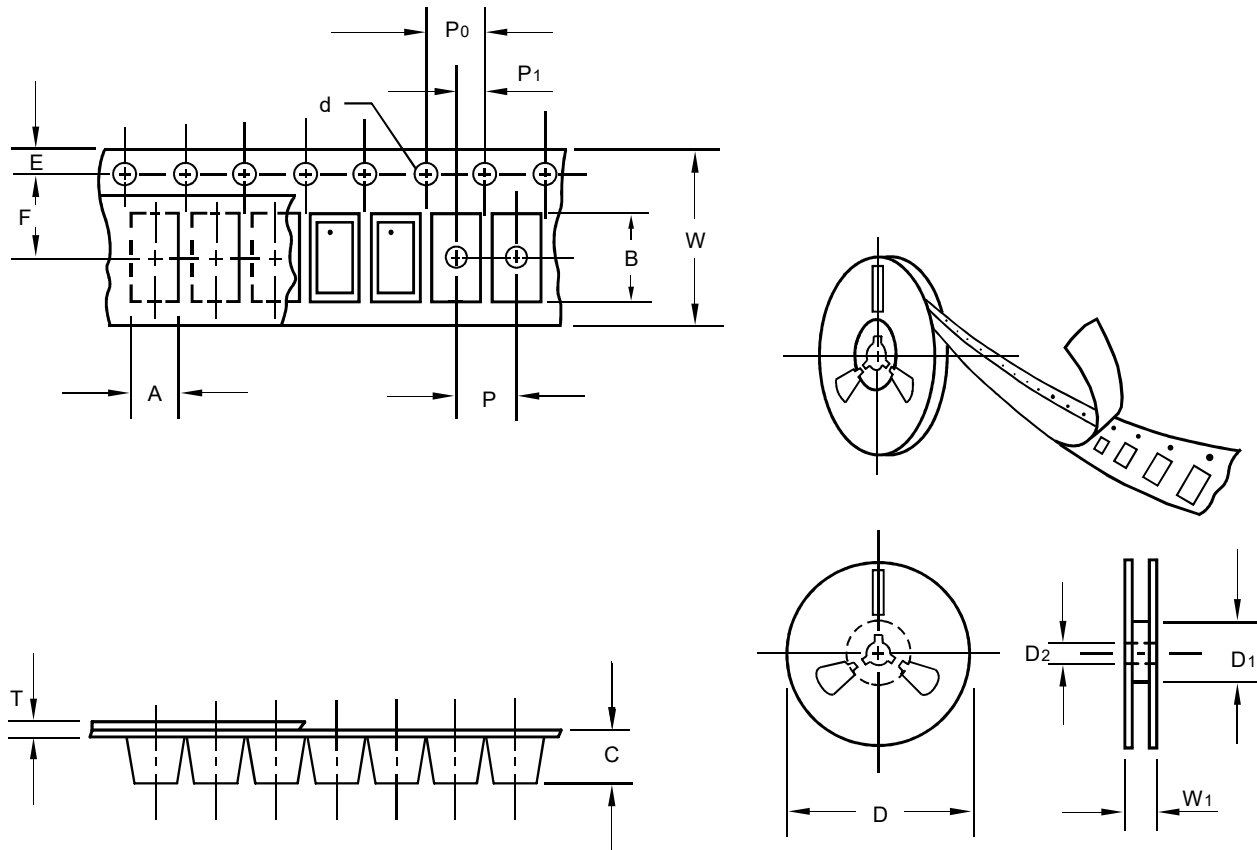
Suggested solder pad layout



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
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	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	0.2	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	P ₀	0.1	4.00
Embossment center	P ₁	0.05	2.00
Overall tape thickness	T	0.1	0.20
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	13.1

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

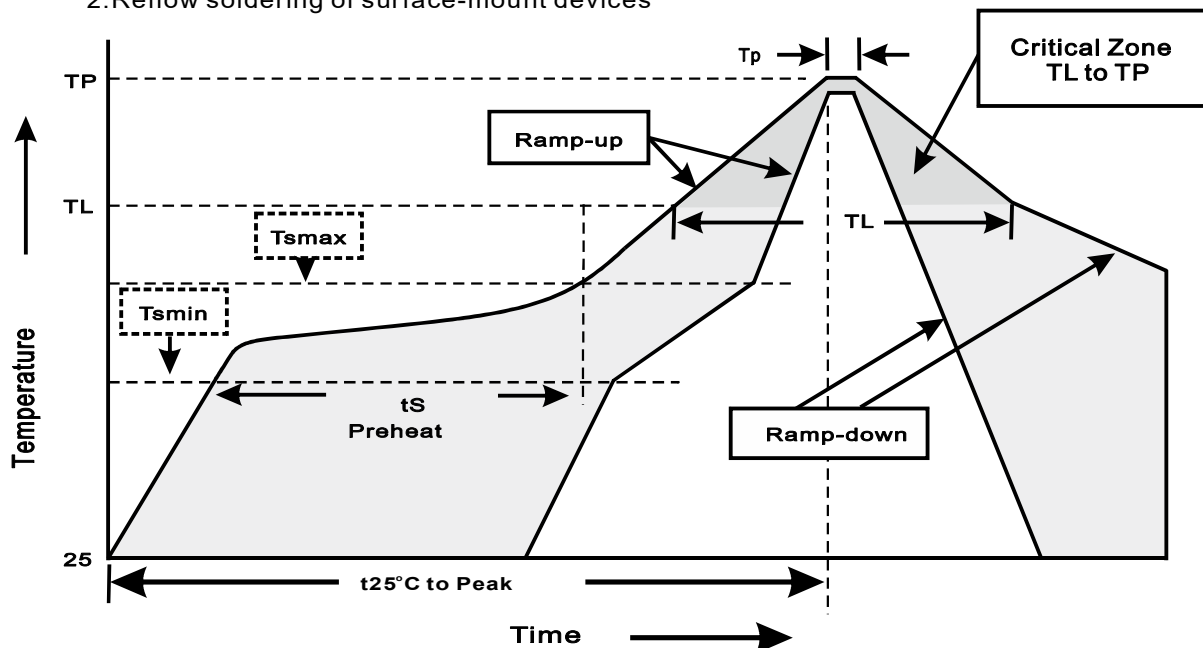
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Reel packing

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)
T2510P10	7"	3,000	4.0	30,000	183*123*183	178	382*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(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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