

LL034BT2510D

List

List.....	1
Package outline.....	2
Features.....	2
Applications.....	2
Mechanical data.....	2
Maximum ratings.....	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel Packing.....	6
Suggested thermal profiles for soldering processes.....	6

LL034BT2510D

4-Channel Ultra Low Capacitance TVS For ESD Protection Array : 3.3V

Features

- Protects four I/O lines.
- Each I/O pin can withstand over 1K ESD strikes for $\pm 15\text{kV}$ (Contact).
- Complies with following standards:
 - IEC 61000-4-2(ESD) $\pm 15\text{kV}$ (Air).
 - IEC 61000-4-2(ESD) $\pm 15\text{kV}$ (Contact).
 - IEC 61000-4-5(Lighting) 6A (8/20 μs) .
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.LL034BT2510D-H.

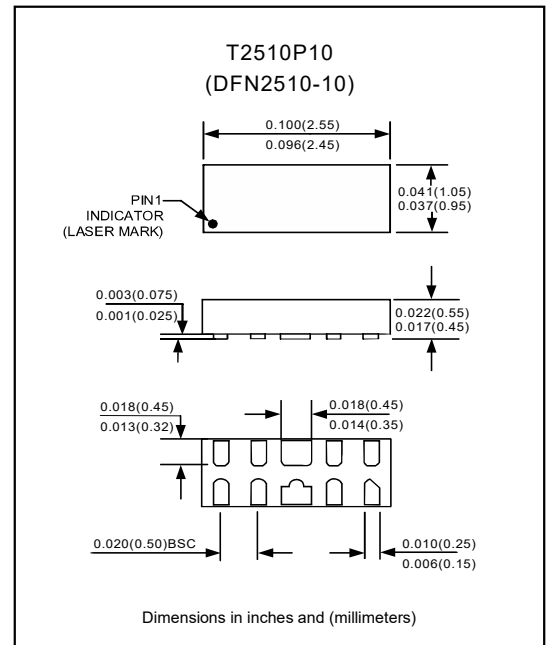
Applications

- Portable applications.
- Communication systems.
- Computers and peripherals.
- USB 2.0/3.0/3.1 (Gen1), HDMI 1.3/1.4, eSATA, displayport.

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 current (8/20 μs)	I_{PP}	6	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 15	kV
ESD per IEC61000-4-2 (Contact)			
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)

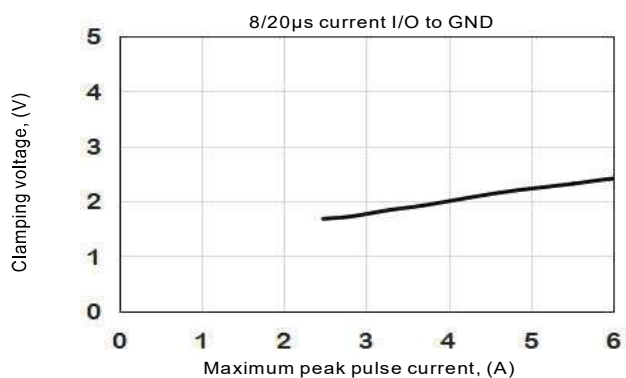
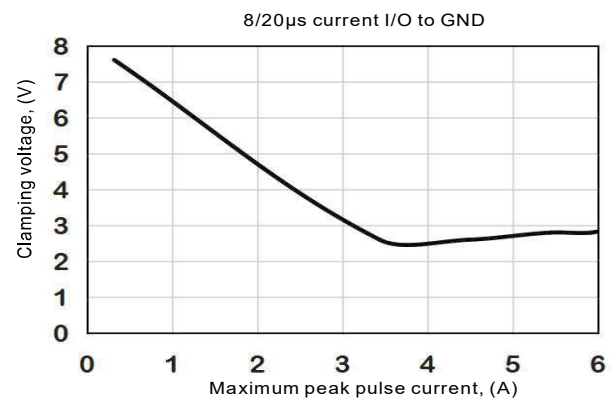
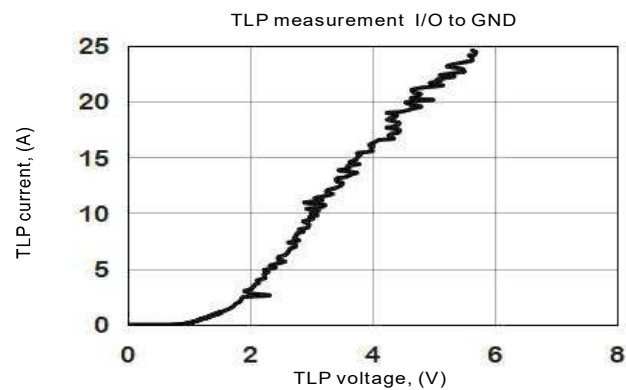
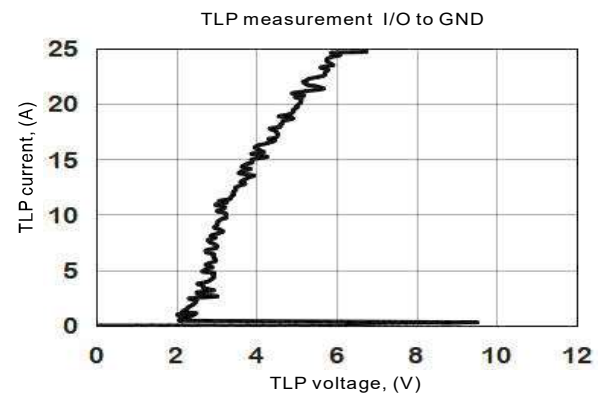
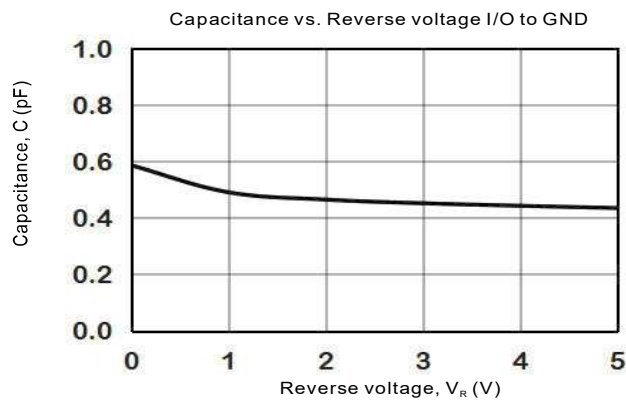
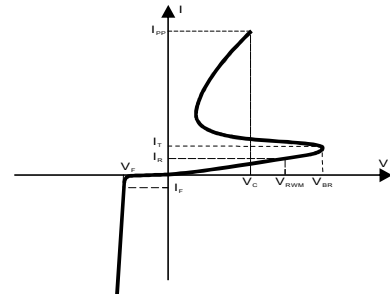
Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage		V_{RWM}			3.3	V
Reverse leakage current	$V_{RWM}=3.3\text{V}$, $T=25^\circ\text{C}$ between I/O and GND	I_R		1	10	nA
Reverse breakdown voltage	$I_T=1\text{mA}$, between I/O and GND	V_{BR}	5.5	6.2		V
Clamping voltage	$I_{PP}=6\text{A}$, $t_p=8/20\mu\text{s}$, between I/O and GND	V_C		3.2		V
	$I_{PP}=8\text{A}$, $t_p=100\text{ns}$ (note1)			3		
	$I_{PP}=16\text{A}$, $t_p=100\text{ns}$ (note1)			4		
Dynamic resistance	$I_{PP}=12\text{A}$, $t_p=100\text{ns}$ (note1)	R_{dyn}		0.15		Ω
Parasitic capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$, between I/O and GND	C_{ESD}		0.6	0.65	pF
	$V_R=3.3\text{V}$, $f=1.0\text{MHz}$, , between I/O and GND			0.48		

Notes: 1. Measurements performed using a 100ns Transmission Line Pulse (TLP) system, between I/O and GND.

LL034BT2510D

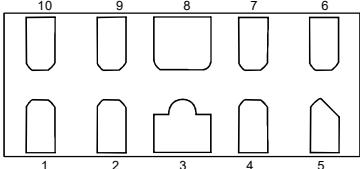
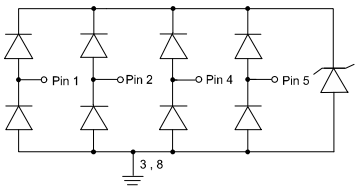
Rating and characteristic curves

Symbol	Parameter
V_{RWM}	Nominal reverse working voltage
I_R	Reverse leakage current @ V_{RWM}
V_{BR}	Reverse breakdown voltage @ I_T
I_T	Test current for reverse breakdown
V_C	Clamping voltage @ I_{PP}
I_{PP}	Maximum peak pulse current
C_{ESD}	Parasitic capacitance
I_F	Forward current
V_F	Forward voltage @ I_F



LL034BT2510D

Pinning information

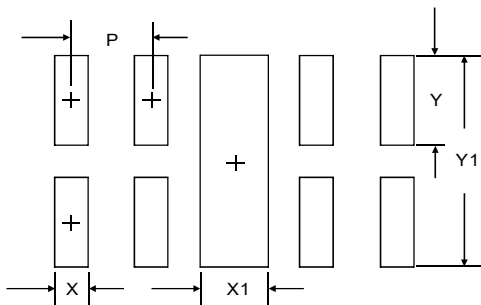
Pin	Simplified outline	Circuit Diagram
Pin 1,2,4,5 I/O Pin 3,8 GND Pin 6,7,9,10 NC		

Marking

Type number	Marking code
LL034BT2510D	33YWWX

* YYWW: Wafer lot code
Y: Year
WW: Week
X: Assy.code

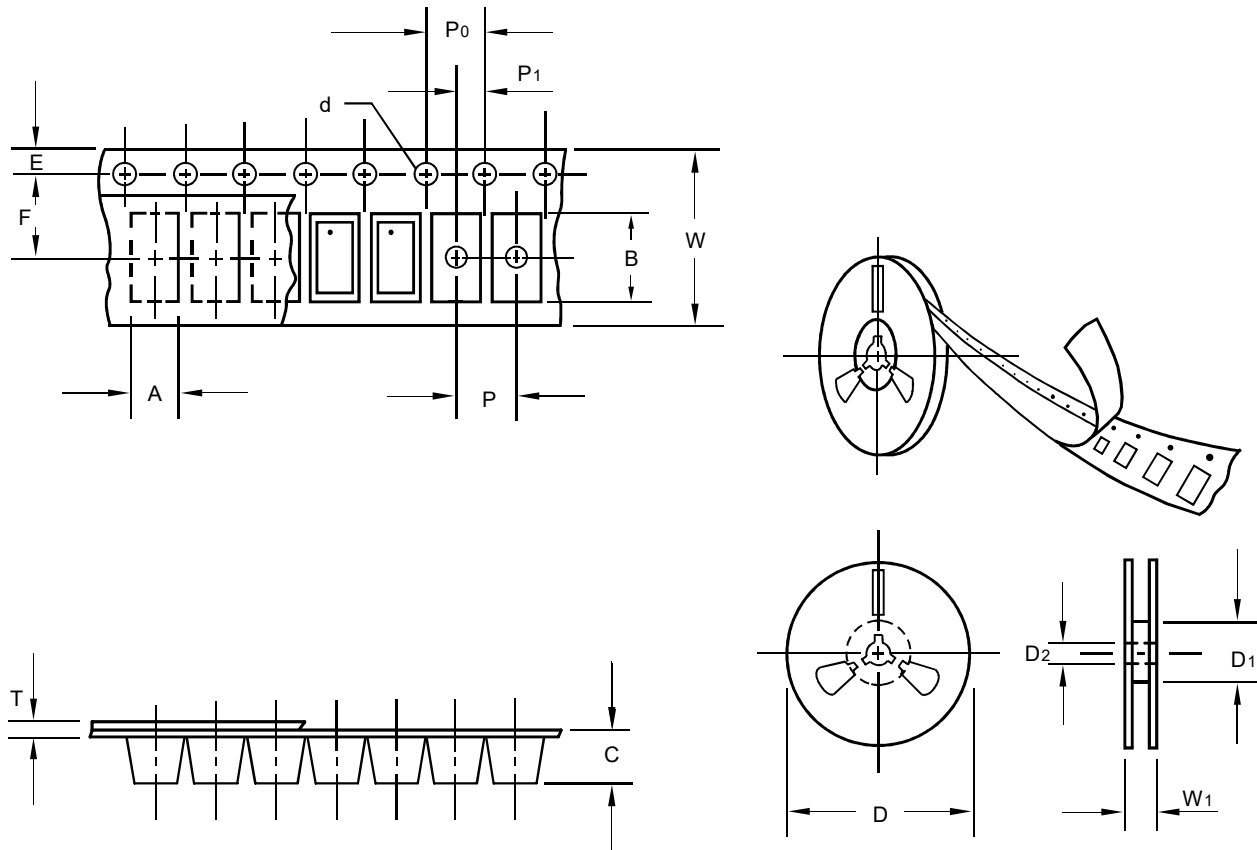
Suggested solder pad layout



DIMENSIONS		
DIM	INCHES	MILLIMETERS
P	0.020	0.50
X	0.012	0.30
X1	0.016	0.40
Y	0.019	0.48
Y1	0.047	1.20

LL034BT2510D

Packing information



unit:mm

Item	Symbol	Tolerance	T2510P10
Carrier width	A	0.1	1.20
Carrier length	B	0.1	2.70
Carrier depth	C	0.1	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.

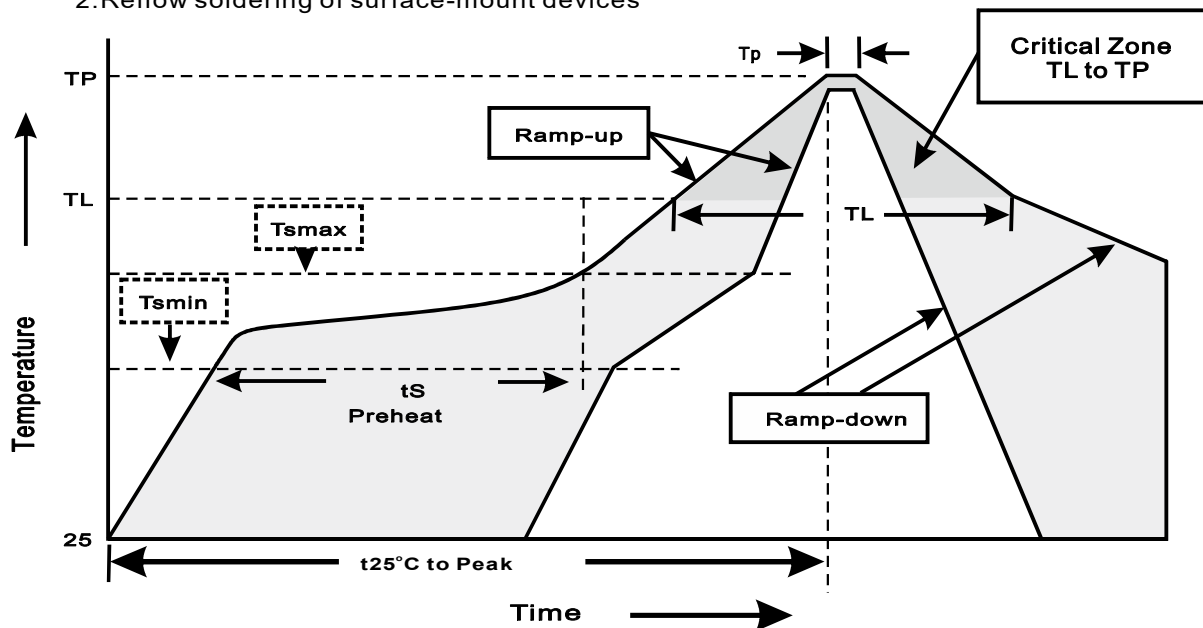
LL034BT2510D

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 _{sm}) -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