LL01V54AT2510

List

LL01V54AT2510

4-Channel Ultra Low Capacitance Uni-Directional TVS For ESD Protection 1.5V

Features

- Low capacitance: 0.38pF (typ.).
- Low leakage current: 0.01μA@V_{RWM} (Max.).
- Low clamping voltage.
- Protects four I/O lines.
- Transient protection for high-speed data lines
  IEC61000 -4-2 (ESD) ±10kV (Air), ±10kV (Contact).
  IEC 61000-4-5 (Lightning) 3.0A (8/20μs) .
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates halogen-free parts, ex.LL01V54AT2510-H

Applications

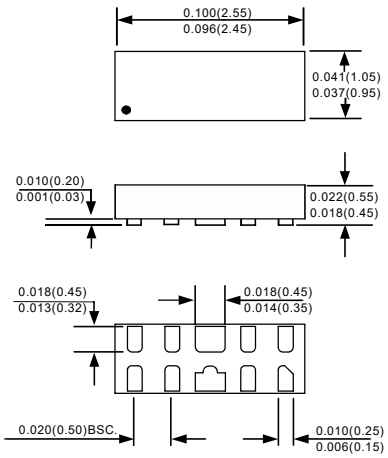
- Portable applications, communication systems.
- Computers and peripherals.
- USB 2.0/3.0 (Gen 1), HDMI 1.3/1.4 , eSATA and display port.

Mechanical data

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

Package outline

T2510P10
(DFN2510-10)



Dimensions in inches and (millimeters)

Maximum ratings (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Peak pulse current (8/20μs)	I_{PP}	3	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	±10	KV
ESD per IEC61000-4-2 (Contact)		±10	
Operating temperature	T_J	+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 working voltage		V_{RWM}			1.5	V
Reverse leakage current	V_{RWM}=1.5V, T_A=25°C (Between I/O and GND)	I_R		1	10	nA
Reverse breakdown voltage	I_T=1mA (Between I/O and GND)	V_{BR}	2.5	3.3		V
Clamping voltage	I_{PP} = 3A, t_P = 8/20μs (Between I/O and GND)	V_C		2.3		V
Clamping voltage	I_{PP} = 8.0A, t_P = 100ns (Note1)	V_C		3.45		V
	I_{PP} = 16.0A, t_P = 100ns (Note1)			5.70		
Inverse dynamic resistance	I_{PP}=12.0A, t_P=100ns (Note1)	R_{dyn}		0.28		Ω
Parasitic Capacitance	V_R=1V, f=1.0MHz (Between I/O and GND)	C_{ESD}		0.38	0.45	pF

Notes : 1. Measurements performed using a 100ns transmission line pulse(TLP) system, between I/O and GND.

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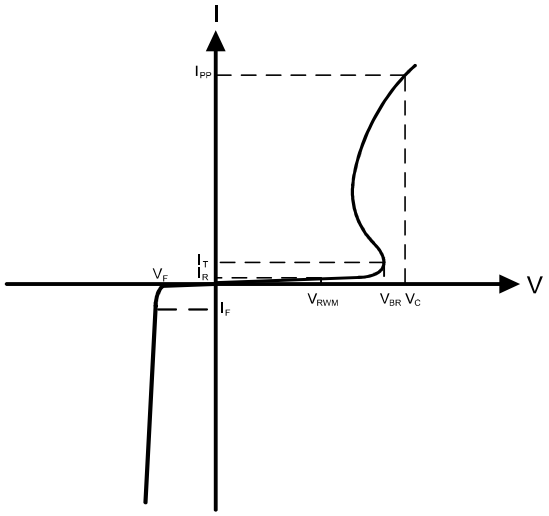
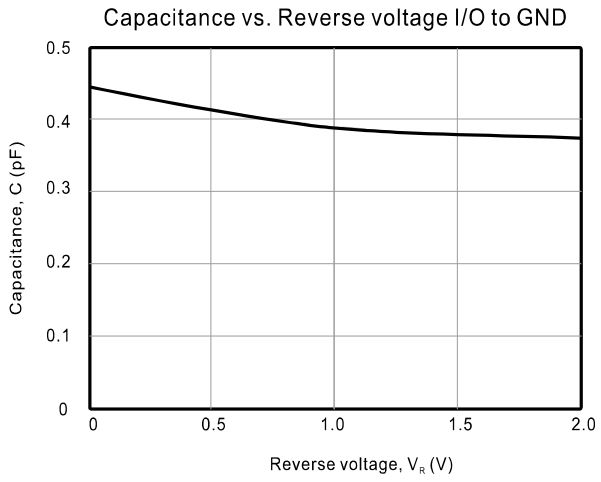
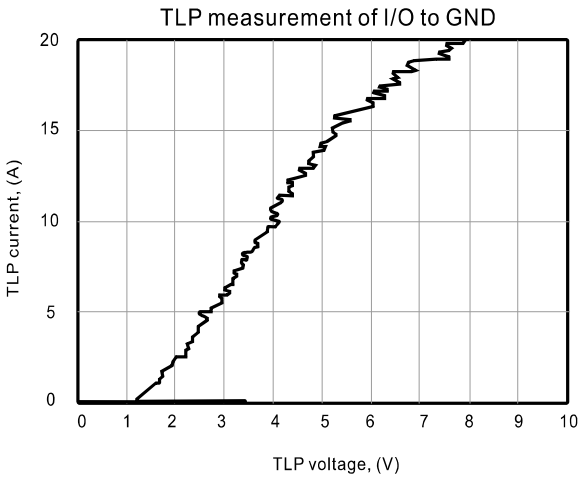
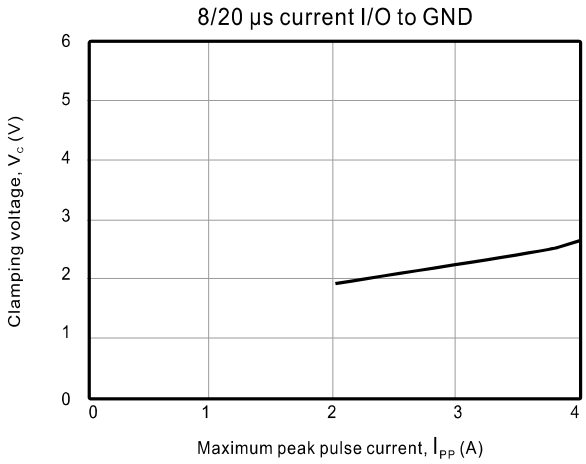
Rating and characteristic curves

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









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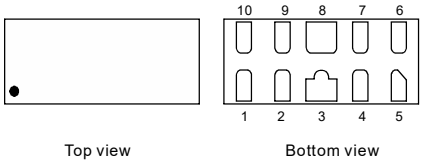
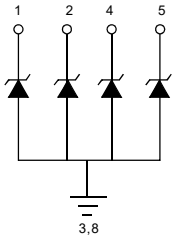
Pinning information

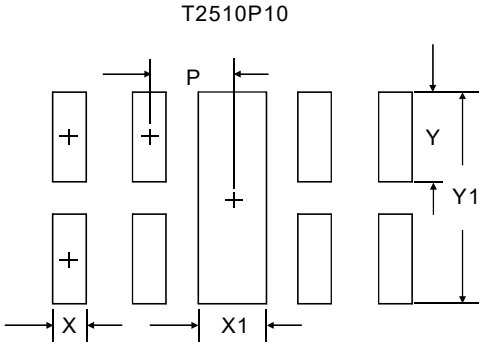
Pin	Simplified outline	Circuit diagram
Pin 1,2,4,5 I/O Pin 3,8 GND Pin 6,7,9,10 NC		

Marking

Type number	Marking code
LL01V54AT2510	11XXXX

* "11" is part number, fixed.
"XXXX" is ther wafer lot 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

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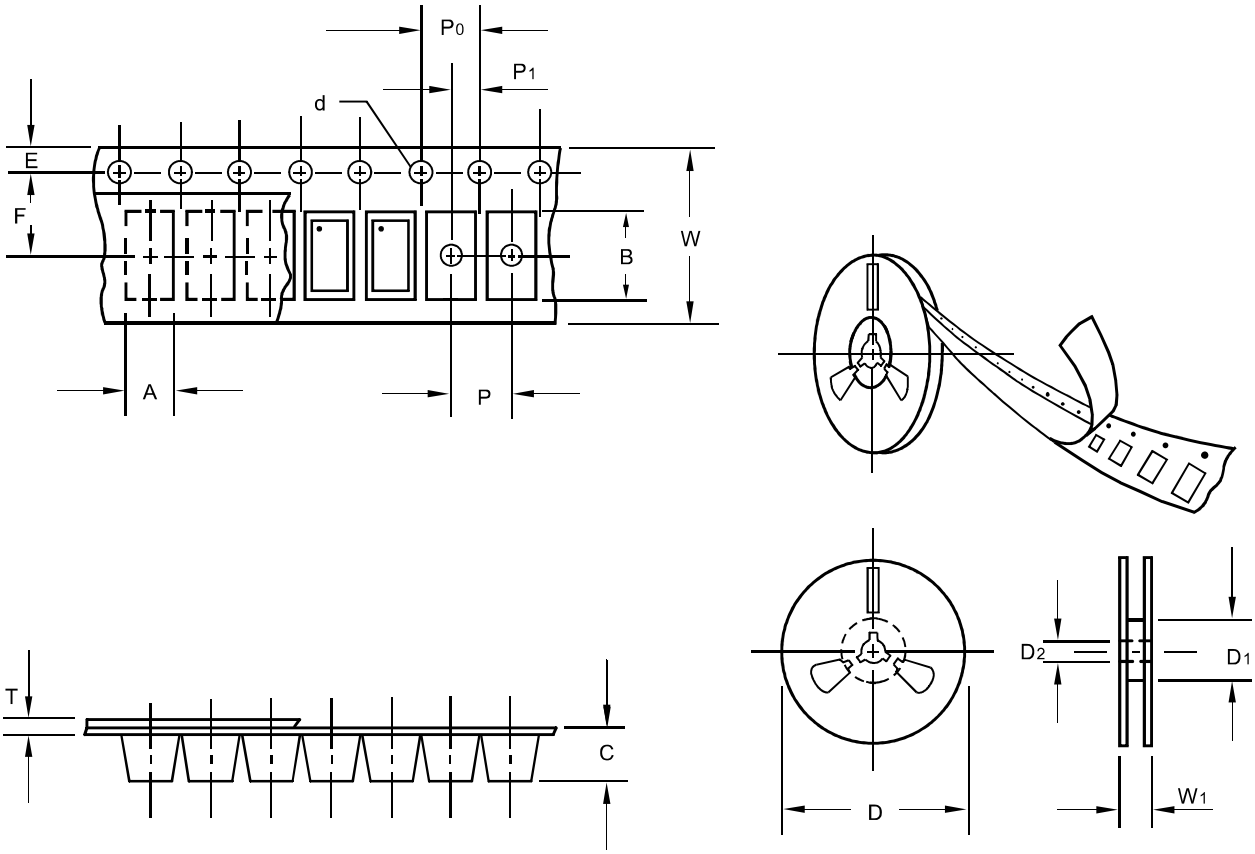
Packing information



unit:mm

Item	Symbol	Tolerance	T2510P10
Carrier width	A	0.1	1.23
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	D1	min	-
7" Reel outside diameter	D2	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	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	8.00

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

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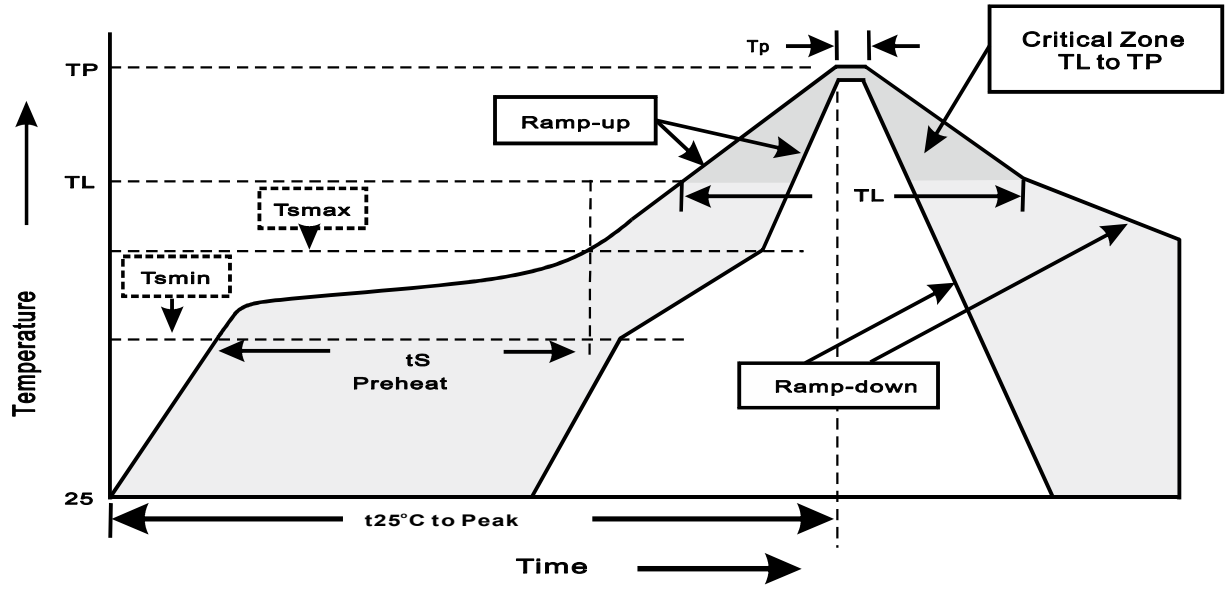
Reel packing

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)
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(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