74LVC1G125 Series

BUS BUFFER/LINE DRIVER 3-STATE

Features

- Operate from 1.65V to 5.5V
- Inputs Accept Voltages to 5.5V
- High Noise Immunity
- Low Power Dissipation
- ESD Protection Exceeds JESD 22
  -2000-V Human-Body Model (A114-A)
  -200-V Machine Model (A115-A)
  -1000-V Charged-Device Model (C101)

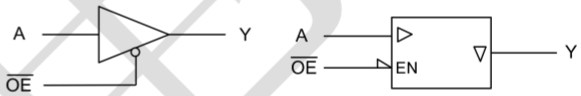
General Description

The 74LVC1G125 is a single bus buffer/line driver with 3-state output. When the output enable ($\overline{OE}$) is high the output will be disabled. In contrast, when the $\overline{OE}$ is low, true data will pass from A input to the Y output. This device has power-down protective circuit to prevent the device from destruction when it is powered down.

Applications

- AV Receiver
- Audio Dock:Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power:Telecom/Server AC/DC Supply:Single Controller:Analog and Digital
- Solid State Drive(SSD):Client and Enterprise
- Wireless Headset,Keyboard,and Mouse

Logic Diagram

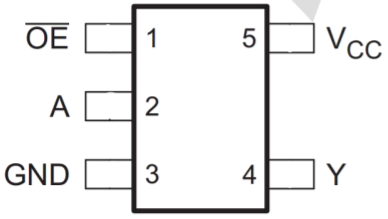


Logic Symbol　　IEC Logic Symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74LVC1G125W5-TP	SOT23-5	Tape and Reel,3000
74LVC1G125SE-TP	SOT353	Tape and Reel,3000

Pin Configuratio



SOT23-5 / SOT353

Function Table

INPUT($\overline{OE}$)	INPUT(A)	OUTPUT(Y)
L	L	L
L	H	H
H	X	Z

Note: H: HIGH voltage level; L: LOW voltage level; X=don't care; Z=high-impedance OFF-state.

Absolute Maximum Ratings

PARAMETER		SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage		V_{CC}		-0.5 ~ +6.5	V
Input Voltage		V_{IN}		-0.5 ~ +6.5	V
Output Voltage	Enable mode	V_{OUT}		-0.5 ~ V_{CC} + 0.5	V
	Disable mode			-0.5 ~ +6.5	V
	Power-down mode			-0.5 ~ +6.5	V
VCC or GND Current		I_{CC}	Output in the Power-off state	±100	mA
Continuous Output Current		I_{OUT}	VOUT=0~VCC	±50	mA
Input Clamp Current		I_{IK}	VIN<0	-50	mA
Output Clamp Current		I_{OK}	VOUT<0	-50	mA
Storage Temperature Range		T_{STG}		-65 ~ +150	℃
Junction to Ambient		θ_{JA}	SOT-23-5	230	℃/W
			SOT353	280	℃/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Recommended Operating Conditions

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65	--	5.5	V
Input Voltage	V_{IN}		0	--	5.5	V
Output Voltage	V_{OUT}	VCC=1.65V ~ 5.5V; Enable mode	0	--	VCC	V
		VCC=1.65V ~ 5.5V; Disable mode	0	--	5.5	V
		VCC=0V; Power-down mode	0	--	5.5	V
Input Transition Rise or Fall Rate	t_R/t_F	VCC=1.65V ~ 2.7V	--	--	20	ns/V
		VCC=2.7V ~ 5.5V	--	--	10	ns/V
Operating Temperature	T_A		-40	--	125	℃

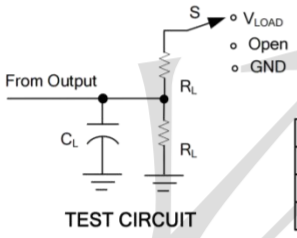
Electrical Characteristics (unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	TA=25°C			TA=-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V_{IH}	V_{CC}=1.65V ~ 1.95V	0.65×V_{CC}	--	--	0.65×V_{CC}	--	--	V
		V_{CC}=2.3V ~ 2.7V	1.7	--	--	1.7	--	--	V
		V_{CC}=3V ~ 3.6V	2	--	--	2	--	--	V
		V_{CC}=4.5V ~ 5.5V	0.7×V_{CC}	--	--	0.7×V_{CC}	--	--	V
Low-Level Input Voltage	V_{IL}	V_{CC}=1.65V ~ 1.95V	--	--	0.35×V_{CC}	--	--	0.35×V_{CC}	V
		V_{CC}=2.3V ~ 2.7V	--	--	0.7	--	--	0.7	V
		V_{CC}=3V ~ 3.6V	--	--	0.8	--	--	0.8	V
		V_{CC}=4.5V ~ 5.5V	--	--	0.35×V_{CC}	--	--	0.35×V_{CC}	V
High-Level Output Voltage	V_{OH}	V_{CC}=1.65 ~ 5.5V, I_{OH}=-100μA	V_{CC} -0.1	--	--	V_{CC} -0.1	--	--	V
		V_{CC}=1.65V, I_{OH}=-4mA	1.2	--	--	0.95	--	--	V
		V_{CC}=2.3V, I_{OH}=-8mA	1.9	--	--	1.7	--	--	V
		V_{CC}=2.7V, I_{OH}=-12mA	2.2	--	--	1.9	--	--	V
		V_{CC}=3.0V, I_{OH}=-24mA	2.3	--	--	2	--	--	V
		V_{CC}=4.5V, I_{OH}=-32mA	3.8	--	--	3.4	--	--	V
Low-Level Output Voltage	V_{OL}	V_{CC}=1.65 ~ 5.5V, I_{OL}=100μA	--	--	0.1	--	--	0.1	V
		V_{CC}=1.65V, I_{OL}=4mA	--	--	0.45	--	--	0.7	V
		V_{CC}=2.3V, I_{OL}=8mA	--	--	0.3	--	--	0.45	V
		V_{CC}=3.0V,I_{OH}=16mA	--	--	0.4	--	--	0.6	V
		V_{CC}=3.0V,I_{OH}=24mA	--	--	0.55	--	--	0.8	V
		V_{CC}=4.5V, I_{OH}=32mA	--	--	0.55	--	--	0.8	V
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=0 ~ 5.5V, V_{IN}=5.5V or GND	--	±0.1	±5	--	--	±5	uA
Power OFF Leakage Current	I_{OFF}	V_{CC}=0V, V_{IN} or V_{OUT}=5.5V	--	±0.1	±10	--	--	±10	uA
Quiescent Supply Current	I_Q	V_{CC}=1.65 ~ 5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0A	--	±0.1	10	--	--	±10	uA
Additional Quiescent Supply ent Per Input Pin	ΔI_Q	V_{CC}=3 ~ 5.5V, One input at V_{CC}-0.6V, Other inputs at V_{CC} or GND	--	5	500	--	--	500	uA

SWITCHING CHARACTERISTICS (unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions		TA=25°C			TA=-40°C~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input A to Output Y	t_{PLH} / t_{PHL}	C_L=30pF	V_{CC}=1.8±0.15V,R_L=1KΩ	1	12	19	--	--	21	nS
			V_{CC}=2.5±0.2V, R_L=500Ω	0.5	8	15	--	--	17	nS
		CL=50pF RL=500Ω	V_{CC}=2.7V	0.5	6	12	--	--	14	nS
			V_{CC}=3.3±0.3V	0.5	5	9	--	--	11	nS
			V_{CC}=5±0.5V	0.5	3	7	--	--	9	nS
3-State Output Enable Time From Input OE to Output Y	t_{PZH} / t_{PZL}	C_L=30pF	V_{CC}=1.8±0.15V,R_L=1KΩ	1	10	19	--	--	21	nS
			V_{CC}=2.5±0.2V, R_L=500Ω	0.5	7	15	--	--	17	nS
		CL=50pF RL=500Ω	V_{CC}=2.7V	0.5	6	12	--	--	14	nS
			V_{CC}=3.3±0.3V	0.5	5	9	--	--	11	nS
			V_{CC}=5±0.5V	0.5	4	7	--	--	9	nS
3-State Output Disable Time From Input OE to Output Y	t_{PLZ} / t_{PHZ}	C_L=30pF	V_{CC}=1.8±0.15V,R_L=1KΩ	1	5	10	--	--	12	nS
			V_{CC}=2.5±0.2V, R_L=500Ω	0.5	4	8	--	--	10	nS
		CL=50pF RL=500Ω	V_{CC}=2.7V	0.5	4	7	--	--	9	nS
			V_{CC}=3.3±0.3V	0.5	3	6	--	--	8	nS
			V_{CC}=5±0.5V	0.5	3	5	--	--	7	nS

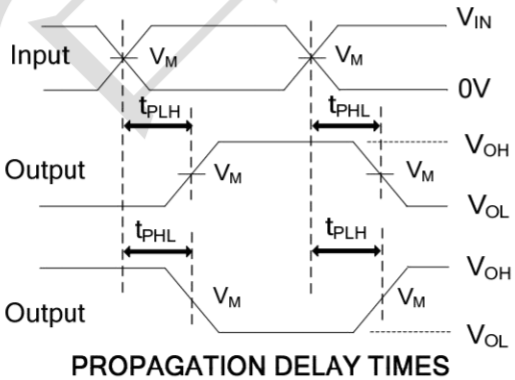
TEST CIRCUIT AND WAVEFORMS



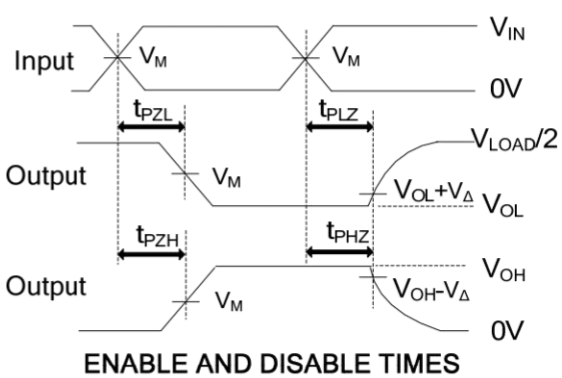
TEST CIRCUIT

TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{LOAD}

V_{CC}	INPUTS		V_M	V_{LOAD}	V_Δ	C_L	R_L
	V_{IN}	t_R, t_F					
1.8V±0.15V	V_{CC}	≤2ns	V_{CC}/2	2 x V_{CC}	0.15V	30pF	1KΩ
2.5V±0.2V	V_{CC}	≤2ns	V_{CC}/2	2 x V_{CC}	0.15V	30pF	500Ω
2.7V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
5V±0.5V	V_{CC}	≤2.5ns	V_{CC}/2	2 x V_{CC}	0.3V	50pF	500Ω



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: C_L includes probe and jig capacitance.

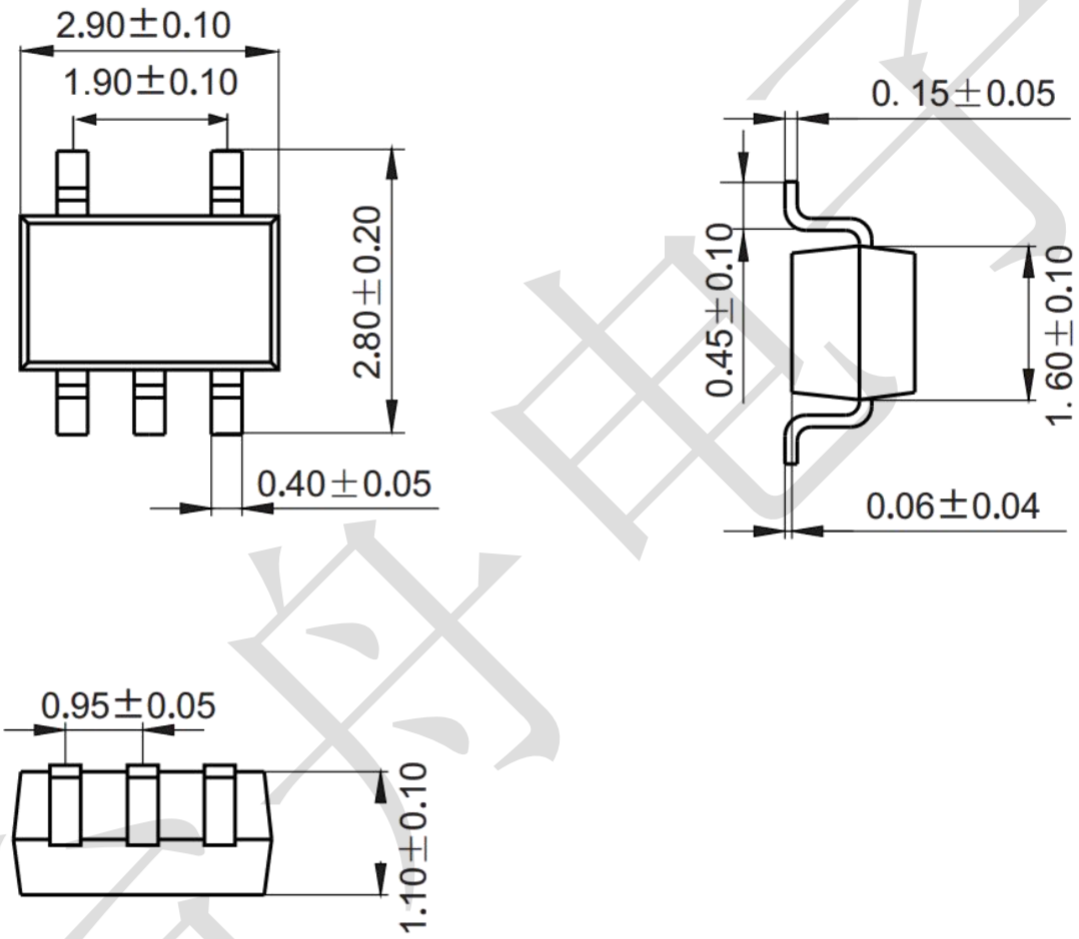
All input pulses are supplied by generators having the following characteristics: P_{RR} ≤10MHz, Z_O = 50Ω.

Notes: 1. C_L includes probe and jig capacitance.

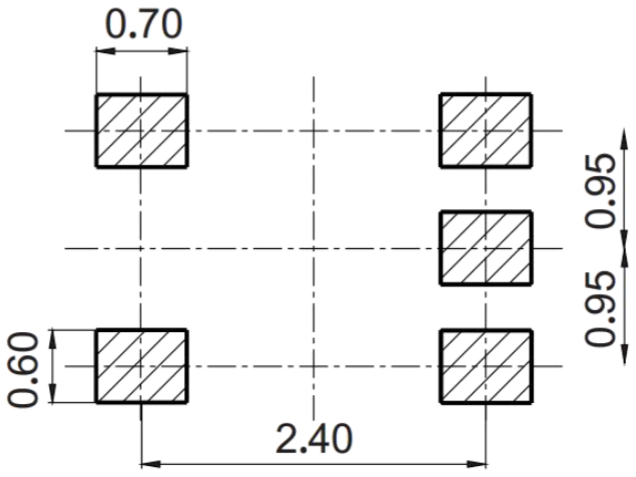
2. All input pulses are supplied by generators having the following characteristics: P_{RR} ≤10MHz, Z_O = 50Ω.

Package information

SOT23-5 (Unit: mm)

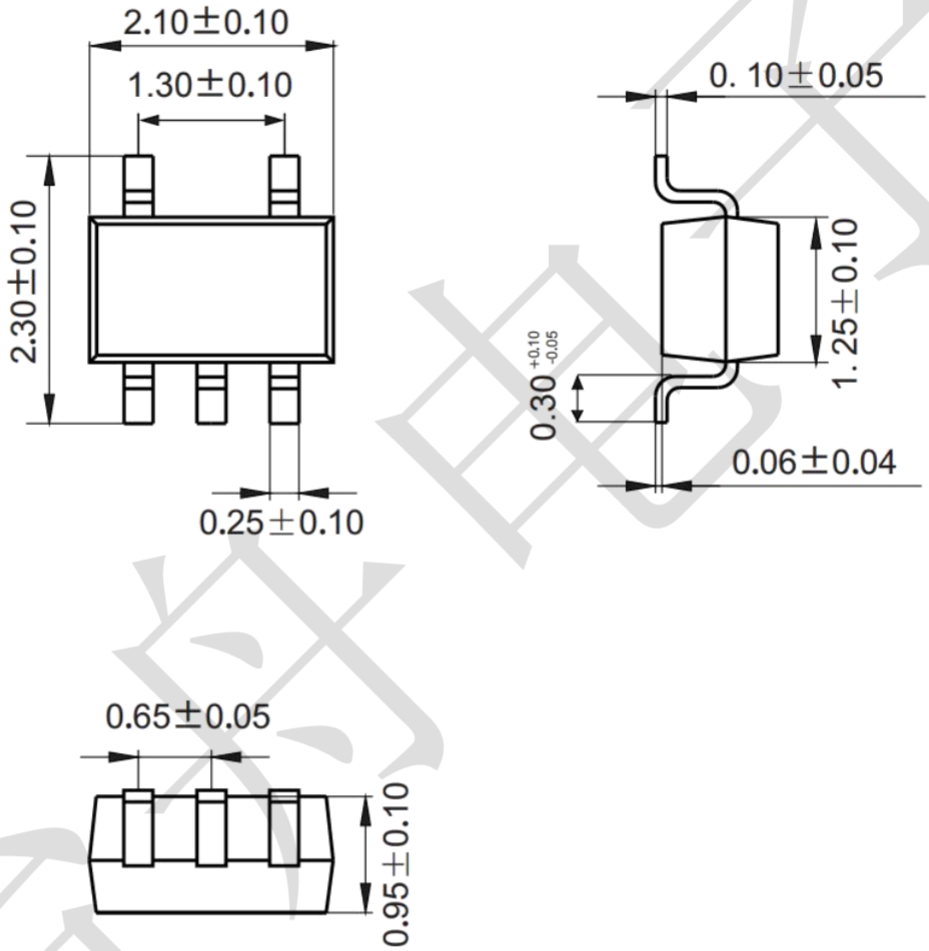


Mounting Pad Layout (unit: mm)



Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

