

Features

- Operation Voltage Range: 1.65~5.5V
- I_{OFF} supports partial-power-down mode
- Low static power consumption; I_{CC}=10μA (Max.)
- ±24mA output drive (V_{CC}=3.0V)
- 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 **TP74LVC1G157** is a single 2-input multiplexer.

The data select input(S) determines the two data

input I0 or I1 which of them is connect to the output

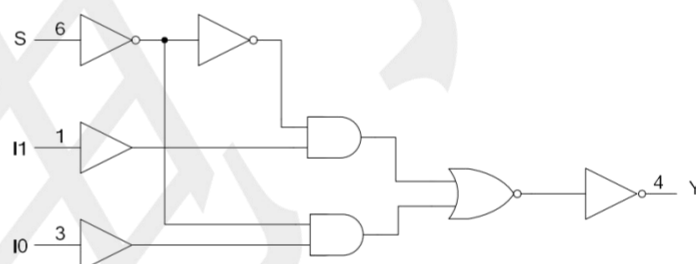
with the true and complementary data.

This device has power-down protective circuit,
preventing device destruction when it is powered down.

Applications

- router
- PLC
- sensor input
- Automated equipment
- In switches or base stations

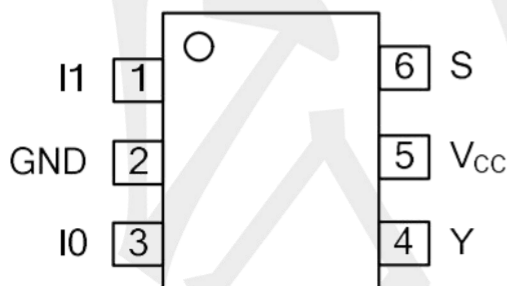
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	Marking
TP74LVC1G157S6	SOT23-6	Tape and Reel,3000	S157
TP74LVC1G157C6	SOT363	Tape and Reel,3000	C157

Pin Configuratio



SOT23-6
SOT363

Function Table(each gate)

INPUTS			OUTPUT
S	I1	I0	Y
L	X	L	L
L	X	H	H
H	L	X	L
H	H	X	H

Note: H: High voltage level; L: Low voltage level; X: Don't care

Absolute Maximum Ratings

($T_A=25^{\circ}\text{C}$, unless otherwise specified)

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	V_{OUT}	Output in the power-off state	-0.5 ~ +6.5	V
		Output in the high or low state	-0.5 ~ $V_{CC}+0.5$	V
Continuous V_{CC} or GND Current	I_{CC}		± 100	mA
Continuous Output Current	I_{OUT}	$V_{OUT}=0\text{V} \sim V_{CC}$	± 50	mA
Input Clamp Current	I_{IK}	$V_{IN}<0\text{V}$	-50	mA
Output Clamp Current	I_{OK}	$V_{OUT}>V_{CC}$ or $V_{OUT}<0\text{V}$	± 50	mA
Storage Temperature Range	T_{STG}		-65 ~ +150	$^{\circ}\text{C}$

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

($T_A=25^{\circ}\text{C}$, unless otherwise specified)

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}	High or low state	--	--	V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=1.65\text{V} \sim 2.7\text{V}$	--	--	20	ns/V
		$V_{CC}=2.7\text{V} \sim 5.5\text{V}$	--	--	10	ns/V
Operating Temperature	T_A		-40	--	+125	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+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} =2.7V ~ 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} =2.7V ~ 3.6V	--	--	0.8	--	--	0.8	V
		V _{CC} =4.5V ~ 5.5V	--	--	0.3× V _{CC}	--	--	0.3× V _{CC}	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65V ~ 5.5V, I _{OH} =-100μA	V _{CC} -0.1	--	--	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OH} =-4mA	1.2	1.54	--	0.95	--	--	V
		V _{CC} =2.3V, I _{OH} =-8mA	1.9	2.15	--	1.7	--	--	V
		V _{CC} =2.7V, I _{OH} =-12mA	2.2	2.5	--	1.9	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	2.62	--	2	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	4.11	--	3.4	--	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65V ~ 5.5V, I _{OL} =100μA	--	--	0.1	--	--	0.1	V
		V _{CC} =1.65V, I _{OL} =4mA	--	0.07	0.45	--	--	0.7	V
		V _{CC} =2.3V, I _{OL} =8mA	--	0.12	0.3	--	--	0.45	V
		V _{CC} =2.7V, I _{OL} =12mA	--	0.17	0.4	--	--	0.6	V
		V _{CC} =3.0V, I _{OL} =24mA	--	0.33	0.55	--	--	0.8	V
		V _{CC} =4.5V, I _{OL} =32mA	--	0.39	0.55	--	--	0.8	V

ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	±0.1	±5	--	--	±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	±0.1	±10	--	--	±10	μA
Quiescent Supply Current	I _{CC}	V _{CC} =1.65V~5.5V, V _{IN} =5.5V or GND, I _{OUT} =0A	--	0.1	10	--	--	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI _{CC}	V _{CC} =2.3V~5.5V, One input at 0.6V, Other inputs at V _{CC} or GND	--	5	500	--	--	500	μA

SWITCHING CHARACTERISTICS (Unless otherwise specified)

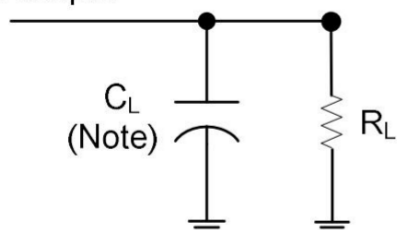
PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (I0 or I1) to output(Y)	t _{PD}	V _{CC} =1.65V ~ 1.95V	1.5	--	12.5	1.5	--	14.5	ns
		V _{CC} =2.3V ~ 2.7V	1.0	--	7.1	1	--	8.6	ns
		V _{CC} =2.7V	1.0	--	6.6	1	--	7.5	ns
		V _{CC} =2.7V ~ 3.6V	1.0	--	5.5	1	--	6.5	ns
		V _{CC} =4.5V ~ 5.5V	0.5	--	4.5	0.5	--	5.5	ns
Propagation delay from input (S) to output(Y)	t _{PD}	V _{CC} =1.65V ~ 1.95V	1.5	--	12.5	1.5	--	14.5	ns
		V _{CC} =2.3V ~ 2.7V	1.0	--	7.9	1	--	9.4	ns
		V _{CC} =2.7V	1.0	--	6.9	1	--	8.4	ns
		V _{CC} =2.7V ~ 3.6V	1.0	--	5.5	1	--	6.5	ns
		V _{CC} =4.5V ~ 5.5V	0.5	--	4.5	0.5	--	5.5	ns

OPERATING CHARACTERISTICS (T_A=25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C _{IN}	V _{CC} =3.3V, V _{IN} = GND to V _{CC}	--	2.5	--	pF
Power Dissipation Capacitance	C _{PD}	V _{CC} =3.3V, f=10MHz	--	18	--	pF

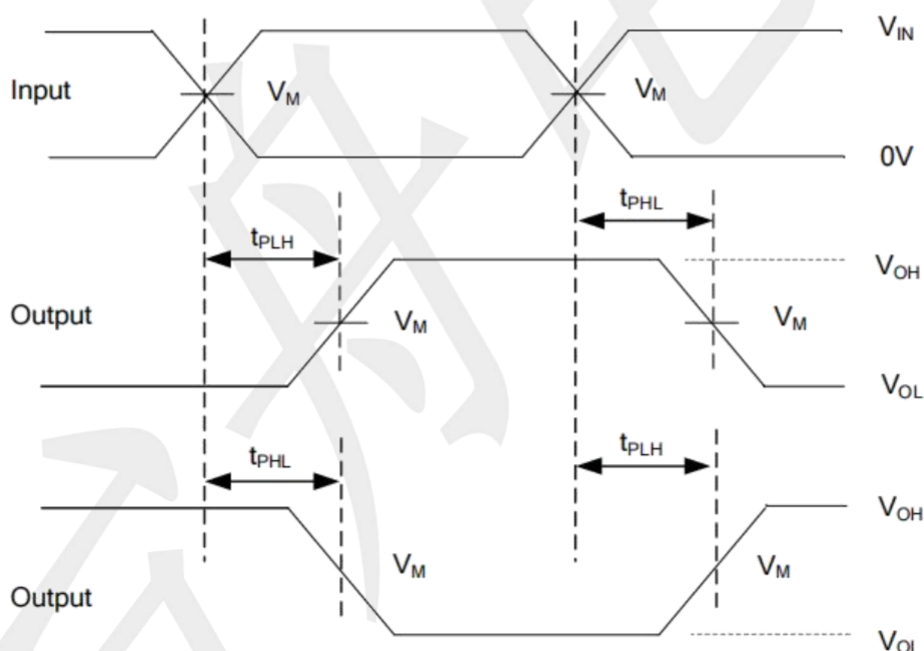
TEST CIRCUIT AND WAVEFORMS

From Output



Note: C_L includes probe and jig capacitance.

V_{CC}	Inputs		C_L	R_L
	V_{IN}	t_R, t_F		
$V_{CC} = 1.65V \sim 1.95V$	V_{CC}	$\leq 2ns$	30pF	1K Ω
$V_{CC} = 2.3V \sim 2.7V$	V_{CC}	$\leq 2ns$	30pF	500 Ω
$V_{CC} = 2.7V$	2.7V	$\leq 2.5ns$	50pF	500 Ω
$V_{CC} = 2.7V \sim 3.6V$	2.7V	$\leq 2.5ns$	50pF	500 Ω
$V_{CC} = 4.5V \sim 5.5V$	V_{CC}	$\leq 2.5ns$	50pF	500 Ω



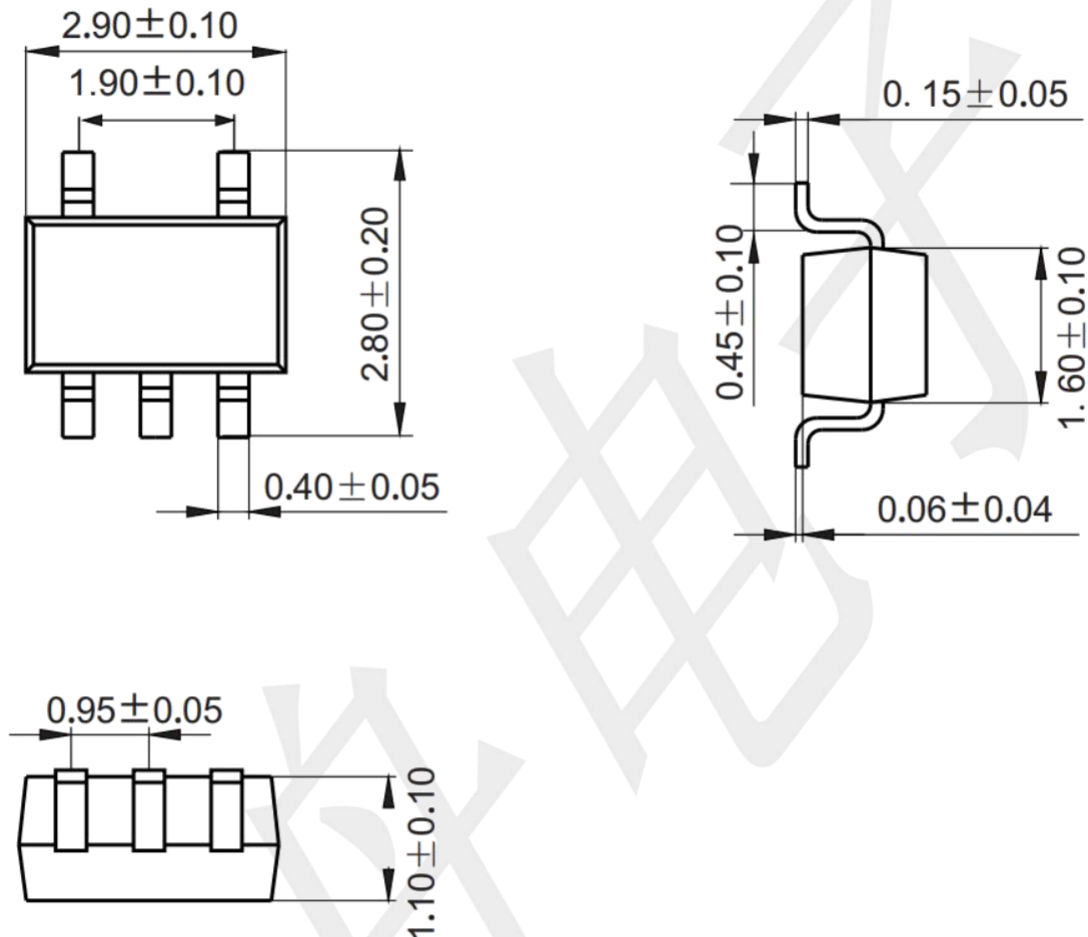
PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.

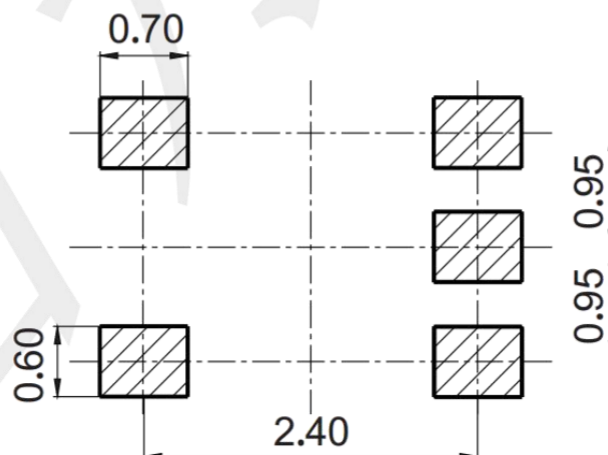
2. All input pulses are supplied by generators having the following characteristics: PRR $\leq 10MHz$, $Z_O = 50\Omega$.

Package information

SOT23-5 (Unit: mm)

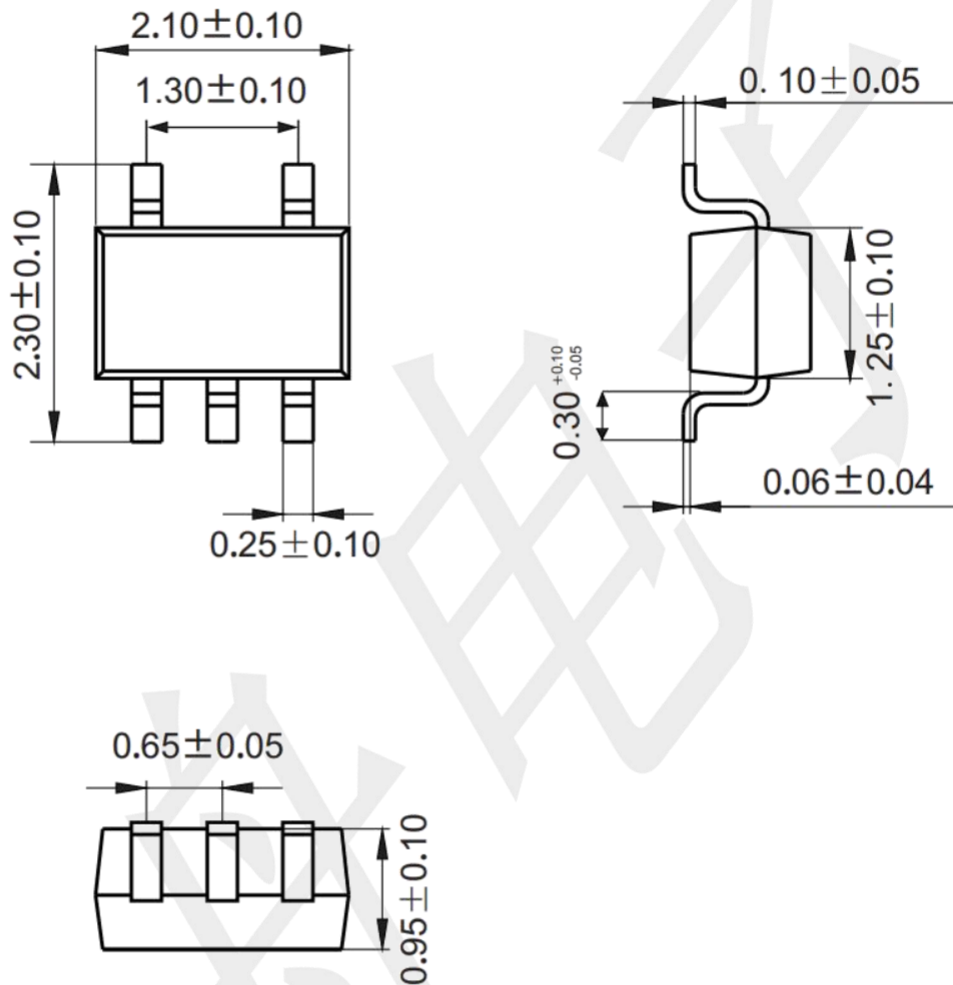


Mounting Pad Layout (Unit: mm)



Package information

SOT353 (Unit: mm)



Mounting Pad Layout (Unit: mm)

