



U74LVC1G157

CMOS IC

SINGLE 2-INPUT MULTIPLEXER

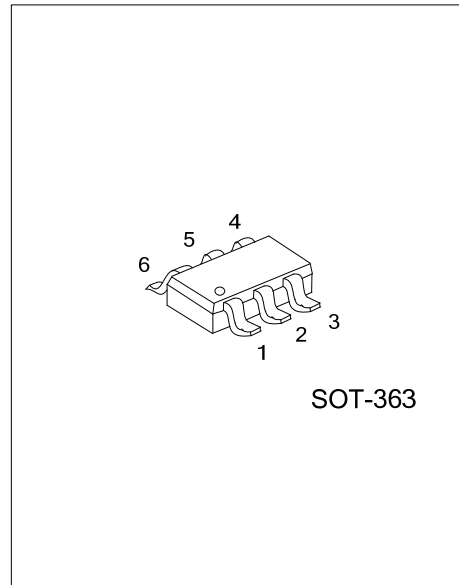
DESCRIPTION

The **U74LVC1G157** 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.

FEATURES

- * Wide supply voltage range from 1.65V to 5.5V
- * Inputs accept voltages up to 5.0V
- * I_{OFF} supports partial-power-down mode
- * Low static power consumption; I_{CC}=10μA (Max.)
- * ±24mA output drive (V_{CC}=3.0V)

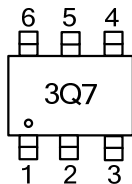


ORDERING INFORMATION

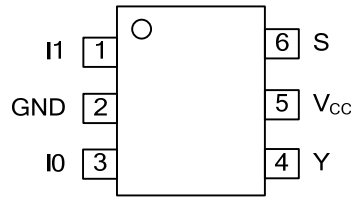
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G157L-AL6-R	U74LVC1G157G-AL6-R	SOT-363	Tape Reel

<p>U74LVC1G157G-AL6-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



■ PIN CONFIGURATION

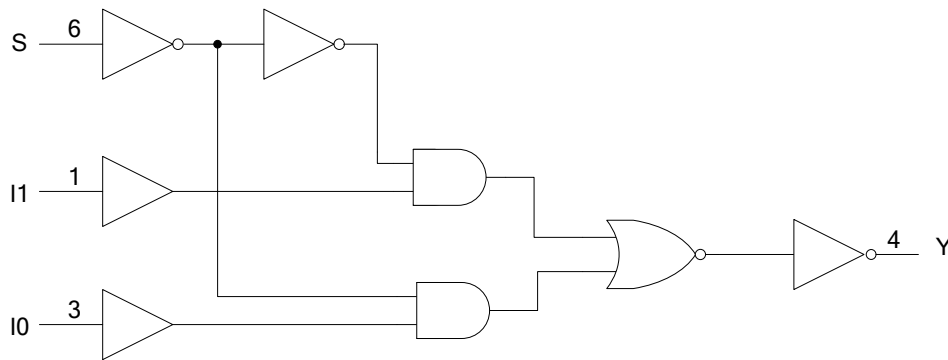


■ FUNCTION TABLE

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

■ LOGIC DIAGRAM



Logic symbol

■ ABSOLUTE MAXIMUM RATING

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}	$V_{OUT}=0V \sim V_{CC}$	±50	mA
Input Clamp Current	I_{IK}	$V_{IN}<0V$	-50	mA
Output Clamp Current	I_{OK}	$V_{OUT}>V_{CC}$ or $V_{OUT}<0V$	±50	mA
Storage Temperature Range	T_{STG}		-65 ~ +150	°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

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	$\Delta t/\Delta v$	$V_{CC}=1.65V \sim 2.7V$			20	ns/V
		$V_{CC}=2.7V \sim 5.5V$			10	ns/V
Operating Temperature	T_A		-40		+85	°C

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=1.65V \sim 1.95V$	$0.65 \times V_{CC}$			V
		$V_{CC}=2.3V \sim 2.7V$	1.7			V
		$V_{CC}=2.7V \sim 3.6V$	2			V
		$V_{CC}=4.5V \sim 5.5V$	$0.7 \times V_{CC}$			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.65V \sim 1.95V$			$0.35 \times V_{CC}$	V
		$V_{CC}=2.3V \sim 2.7V$			0.7	V
		$V_{CC}=2.7V \sim 3.6V$			0.8	V
		$V_{CC}=4.5V \sim 5.5V$			$0.3 \times V_{CC}$	V
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65V \sim 5.5V, I_{OH}=-100\mu A$	$V_{CC}-0.1$			V
		$V_{CC}=1.65V, I_{OH}=-4mA$	1.2	1.54		V
		$V_{CC}=2.3V, I_{OH}=-8mA$	1.9	2.15		V
		$V_{CC}=2.7V, I_{OH}=-12mA$	2.2	2.5		V
		$V_{CC}=3.0V, I_{OH}=-24mA$	2.3	2.62		V
		$V_{CC}=4.5V, I_{OH}=-32mA$	3.8	4.11		V
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.65V \sim 5.5V, I_{OL}=100\mu A$			0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$		0.07	0.45	V
		$V_{CC}=2.3V, I_{OL}=8mA$		0.12	0.3	V
		$V_{CC}=2.7V, I_{OL}=12mA$		0.17	0.4	V
		$V_{CC}=3.0V, I_{OL}=24mA$		0.33	0.55	V
		$V_{CC}=4.5V, I_{OL}=32mA$		0.39	0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0 \sim 5.5V, V_{IN}=5.5V$ or GND		±0.1	±5	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$		±0.1	±10	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=1.65V \sim 5.5V, V_{IN}=5.5V$ or GND, $I_{OUT}=0A$		0.1	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	$V_{CC}=2.3V \sim 5.5V$, One input at 0.6V, Other inputs at V_{CC} or GND		5	500	μA
Input Capacitance	C_i	$V_{CC}=3.3V, V_{IN}=GND$ to V_{CC}		2.5		pF

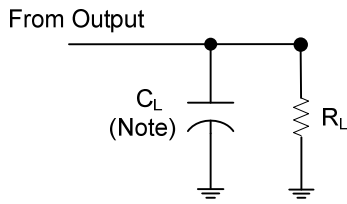
■ SWITCHING CHARACTERISTICS (T_A =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (I0 or I1) to output(Y)	t _{PD}	V _{CC} =1.65V ~ 1.95V	1.5	4.3	11	ns
		V _{CC} =2.3V ~ 2.7V	1.0	2.9	6.1	
		V _{CC} =2.7V	1.0	3.1	5.6	
		V _{CC} =2.7V ~ 3.6V	1.0	2.7	5.0	
		V _{CC} =4.5V ~ 5.5V	0.5	2.2	4.0	
Propagation delay from input (S) to output(Y)	t _{PD}	V _{CC} =1.65V ~ 1.95V	1.5	4.3	11	ns
		V _{CC} =2.3V ~ 2.7V	1.0	2.9	6.9	
		V _{CC} =2.7V	1.0	3.3	5.9	
		V _{CC} =2.7V ~ 3.6V	1.0	2.9	5.0	
		V _{CC} =4.5V ~ 5.5V	0.5	2.3	4.0	

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

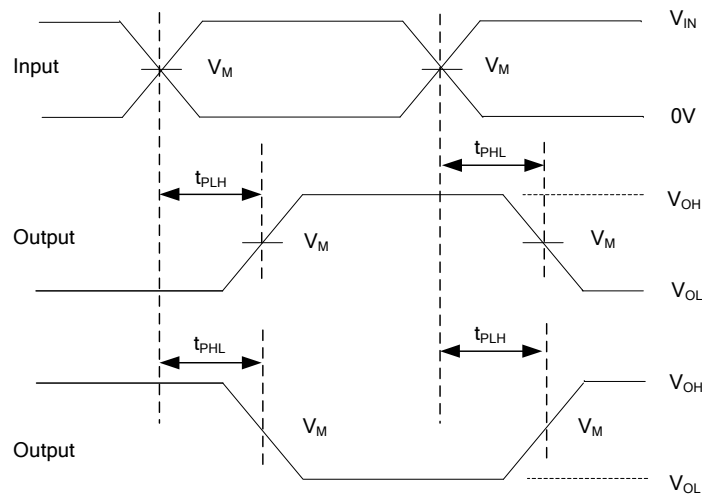
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =3.3V, f=10MHz		18		pF

TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

V_{CC}	Inputs		C_L	R_L	V_{Δ}
	V_{IN}	t_R, t_F			
$V_{CC} = 1.65V \sim 1.95V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	1K Ω
$V_{CC} = 2.3V \sim 2.7V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	500 Ω
$V_{CC} = 2.7V$	2.7V	$\leq 2.5ns$	1.5V	50pF	500 Ω
$V_{CC} = 2.7V \sim 3.6V$	2.7V	$\leq 2.5ns$	1.5V	50pF	500 Ω
$V_{CC} = 4.5V \sim 5.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	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 $\leq 10MHz$, $Z_O = 50\Omega$.

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