



U74LVC1G158

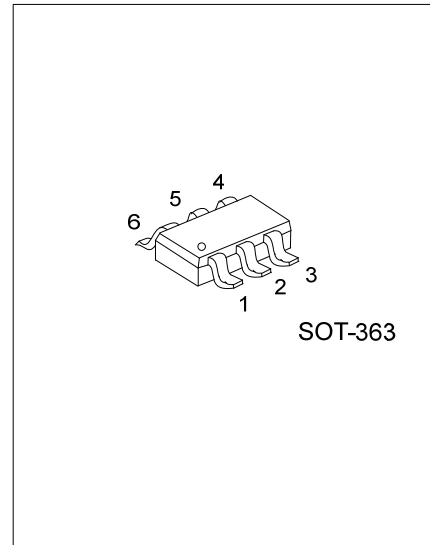
CMOS IC

SINGLE 2-INPUT MULTIPLEXER

DESCRIPTION

The **U74LVC1G158** 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 function of invert.

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



FEATURES

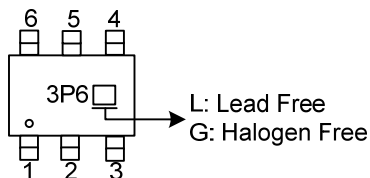
- * Operating voltage range from 1.65V to 5.5V.
- * Inputs accept voltages to 5.5V
- * I_{off} supports partial-power-down mode
- * Low power dissipation: I_{CC}=10μA(Max.)
- * ±24mA output drive(V_{CC}=3.0V)
- * High noise immunity

ORDERING INFORMATION

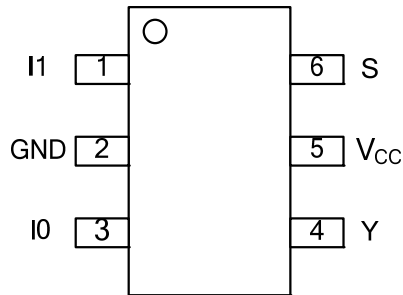
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G158L-AL6-R	U74LVC1G158G-AL6-R	SOT-363	Tape Reel

<p>U74LVC1G158G-AL6-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AL6: SOT-363</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

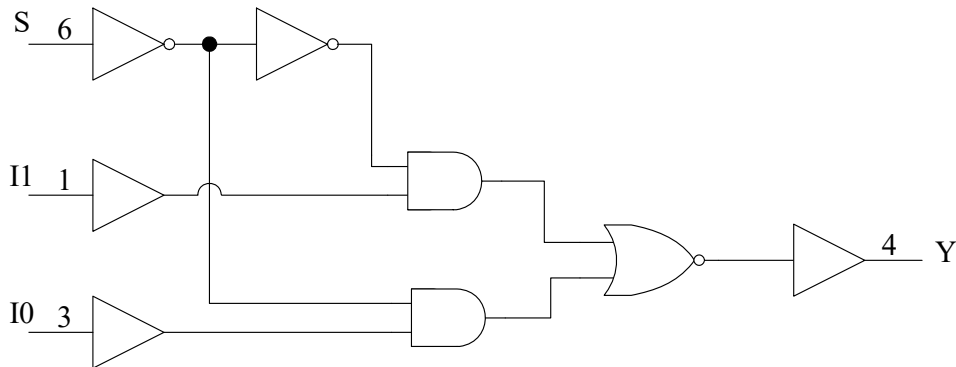


■ FUNCTION TABLE (EACH GATE)

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

Note: H: HIGH voltage level; L: LOW voltage level; X: Don't care

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ +6.5	V
Input Voltage	V_{IN}	-0.5 ~ +6.5	V
Output Voltage	Output in the high or low state	-0.5 ~ $V_{CC}+0.5$	V
	Output in the high-impedance or power-off state	-0.5 ~ +6.5	V
V_{CC} or GND Current	I_{CC}	±100	mA
Continuous Output Current ($V_{OUT}=0$ to V_{CC})	I_{OUT}	±50	mA
Input Clamp Current ($V_{IN}<0$)	I_{IK}	-50	mA
Output Clamp Current ($V_{OUT}<0$ or $V_{OUT} > V_{CC}$)	I_{OK}	±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 (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
		power-off state	0		5.5	
High-level Output Current	I_{OH}	$V_{CC}=1.65V$			-4	mA
		$V_{CC}=2.3V$			-8	mA
		$V_{CC}=2.7V$			-12	mA
		$V_{CC}=3V$			-24	mA
		$V_{CC}=4.5V$			-32	mA
Low-level Output Current	I_{OL}	$V_{CC}=1.65V$			4	mA
		$V_{CC}=2.3V$			8	mA
		$V_{CC}=2.7V$			12	mA
		$V_{CC}=3V$			24	mA
		$V_{CC}=4.5V$			32	mA
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		+125	°C

■ ELECTRICAL CHARACTERISTICS (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			
		$V_{CC}=2.7V\sim 3.6V$	2			
		$V_{CC}=4.5V\sim 5.5V$	$0.7 \times V_{CC}$			
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	
		$V_{CC}=2.7V\sim 3.6V$			0.8	
		$V_{CC}=4.5V\sim 5.5V$			$0.3 \times V_{CC}$	
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			
		$V_{CC}=2.3V, I_{OH}=-8mA$	1.9			
		$V_{CC}=2.7V, I_{OH}=-12mA$	2.2			
		$V_{CC}=3.0V, I_{OH}=-24mA$	2.3			
		$V_{CC}=4.5V, I_{OH}=-32mA$	3.8			
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.65V\sim 5.5V, I_{OL}=-100\mu A$			0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$			0.45	
		$V_{CC}=2.3V, I_{OL}=8mA$			0.3	
		$V_{CC}=2.7V, I_{OL}=12mA$			0.4	
		$V_{CC}=3.0V, I_{OL}=24mA$			0.55	
		$V_{CC}=4.5V, I_{OL}=32mA$			0.55	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V\sim 5.5V, V_{IN}=V_{CC}$ or GND			± 5	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$			± 10	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=1.65V\sim 5.5V, V_{IN}=5.5V$ or GND, $I_{OUT}=0$			10	μA
Additional Quiescent Supply Current	ΔI_{CC}	$V_{CC}=3V\sim 5.5V$, One input at $V_{CC}-0.6V$, other inputs at V_{CC} or GND			500	μA
Input Capacitance	C_{IN}	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND		2.5		pF

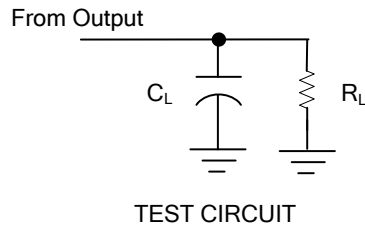
■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (I1 or I0) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=1.65V\sim 1.95V$	1.5	4.3	11.0	ns
		$V_{CC}=2.3V\sim 2.7V$	1.0	2.9	6.1	
		$V_{CC}=2.7V$	1.0	3.1	5.6	
		$V_{CC}=2.7V\sim 3.6V$	1.0	2.7	5.0	
		$V_{CC}=4.5V\sim 5.5V$	0.5	2.2	4.0	
Propagation delay from input (S) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=1.65V\sim 1.95V$	1.5	4.3	11.0	ns
		$V_{CC}=2.3V\sim 2.7V$	1.0	2.9	6.9	
		$V_{CC}=2.7V$	1.0	3.3	5.9	
		$V_{CC}=2.7V\sim 3.6V$	1.0	2.9	5.0	
		$V_{CC}=4.5V\sim 5.5V$	0.5	2.3	4.0	

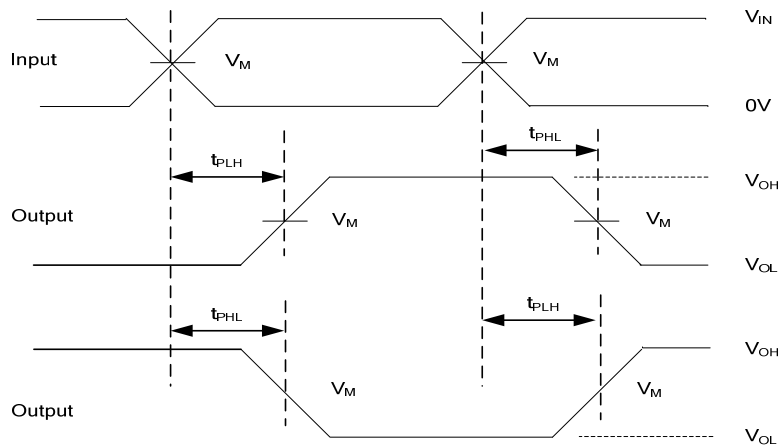
■ OPERATING CHARACTERISTICS (Unless otherwise specified)

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



V _{CC}	Inputs		V _M	C _L	R _L
	V _{IN}	t _R , t _F			
V _{CC} =1.65V~1.95V	V _{CC}	≤2ns	V _{CC} /2	30pF	1KΩ
V _{CC} =2.3V~2.7V	V _{CC}	≤2ns	V _{CC} /2	30pF	500Ω
V _{CC} =2.7V	2.7V	≤2.5ns	1.5V	50pF	500Ω
V _{CC} =2.7V~3.6V	2.7V	≤2.5ns	1.5V	50pF	500Ω
V _{CC} =4.5V~5.5V	V _{CC}	≤2.5ns	V _{CC} /2	50pF	500Ω



- Note: 1. C_L includes probe and jig capacitance.
 2. All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Z_o = 50Ω.

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