



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

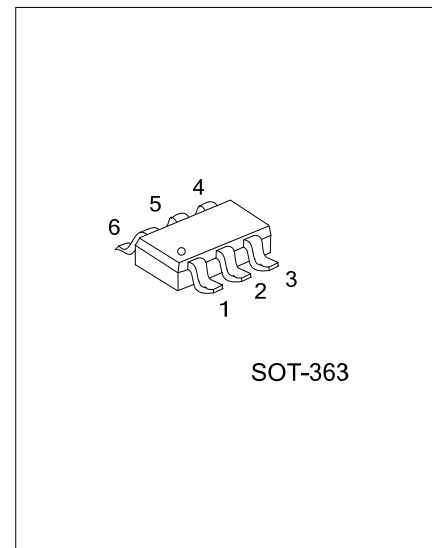
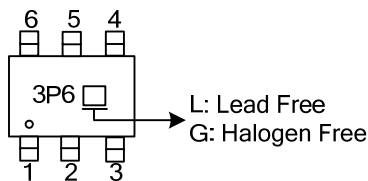
- * Operating voltage range from 1.65V to 5.5V.
- * Inputs accept voltages to 5.5V
- * I_{off} supports partial-power-down mode
- * Low power dissipation: I_{CC}=10μA(Max.)
- * ±24mA output drive(V_{CC}=3.0V)
- * High noise immunity

ORDERING INFORMATION

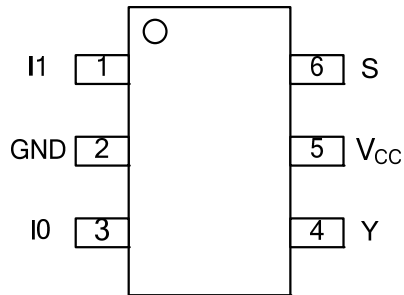
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G158L-AL6-R	U74LVC1G158G-AL6-R	SOT-363	Tape Reel

<p>U74LVC1G158L-AL6-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) AL6: SOT-363</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

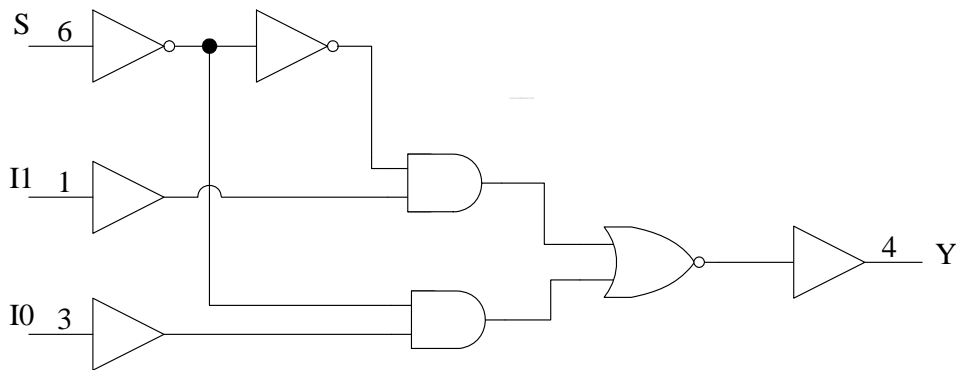


■ FUNCTION TABLE (EACH GATE)

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

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	V_{OUT}	-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

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		85	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V~1.95V	0.65*V _C			V
		V _{CC} =2.3V~2.7V	1.7			
		V _{CC} =2.7V~3.6V	2			
		V _{CC} =4.5V~5.5V	0.7*V _{CC}			
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V~1.95V			0.35*V _{CC}	V
		V _{CC} =2.3V~2.7V			0.7	
		V _{CC} =2.7V~3.6V			0.8	
		V _{CC} =4.5V~5.5V			0.3*V _{CC}	
High-Level Output Voltage	V _{OH}	V _{CC} =1.65V~5.5V, I _{OH} =-100μA	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~5.5V, I _{OH} =-100μA			0.1	V
		V _{CC} =1.65V, I _{OH} =4mA			0.45	
		V _{CC} =2.3V, I _{OH} =8mA			0.3	
		V _{CC} =2.7V, I _{OH} =12mA			0.4	
		V _{CC} =3.0V, I _{OH} =24mA			0.55	
		V _{CC} =4.5V, I _{OH} =32mA			0.55	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0V~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~5.5V, V _{IN} =5.5V or GND, I _{OUT} =0			10	μA
Additional Quiescent Supply Current	ΔI _{CC}	V _{CC} =3V~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

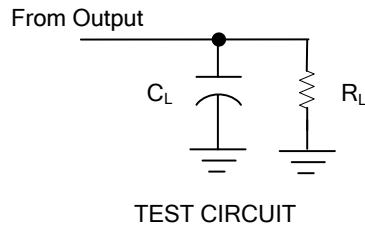
■ SWITCHING CHARACTERISTICS (T_A =25°C , unless otherwise specified)

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~1.95V	1.5	4.3	11.0	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 _{PLH} /t _{PHL}	V _{CC} =1.65V~1.95V	1.5	4.3	11.0	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	

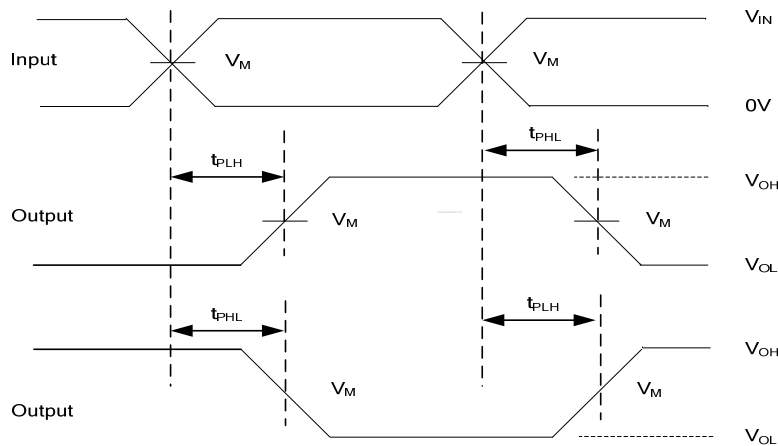
■ OPERATING CHARACTERISTICS (T_A =25°C , unless otherwise specified)

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



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



PROPAGATION DELAY TIMES

Note: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR ≤10MHz, Zo = 50Ω.

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