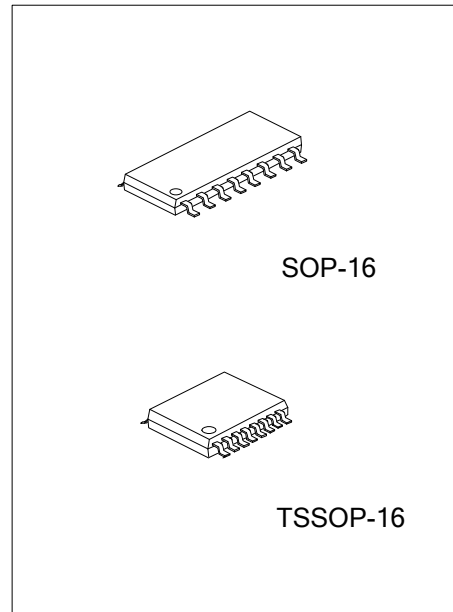




U74LVC157

CMOS IC

QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS



DESCRIPTION

The **U74LVC157** is designed for 1.65V to 3.6V V_{CC} operation.

The device features a common strobe (\bar{G}) input. When (\bar{G}) is high, all outputs are low. When \bar{G} is low, a 4-bit word is selected from one of two sources and is routed to the four outputs.

FEATURES

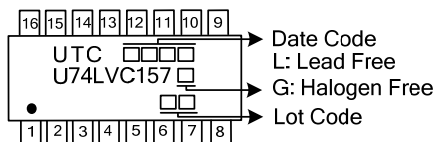
- * Operate From 1.65V to 3.6V
- * Inputs Accept Voltages to 5.5V
- * Max t_{pd} of 5.0ns at 3.3V
- * Typical V_{OLP} (Output Ground Bounce) < 0.8V at $V_{CC}=3.3V$, $T_A=25^\circ C$
- * Typical V_{OHV} (Output V_{OH} Undershoot) > 2.0V at $V_{CC}=3.3V$, $T_A=25^\circ C$

ORDERING INFORMATION

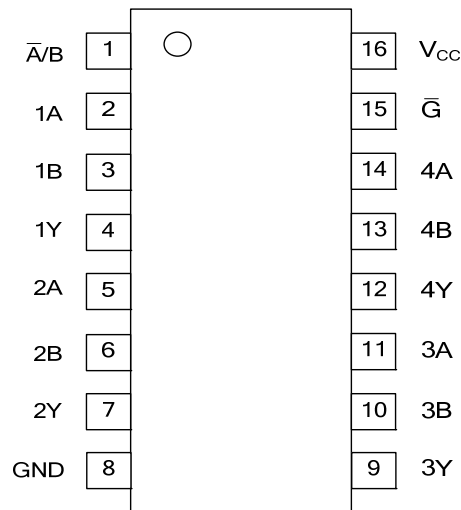
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC157L-S16-R	U74LVC157G-S16-R	SOP-16	Tape Reel
U74LVC157L-P16-R	U74LVC157G-P16-R	TSSOP-16	Tape Reel

<p>U74LVC157G-S16-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) S16: SOP-16, P16: TSSOP-16</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

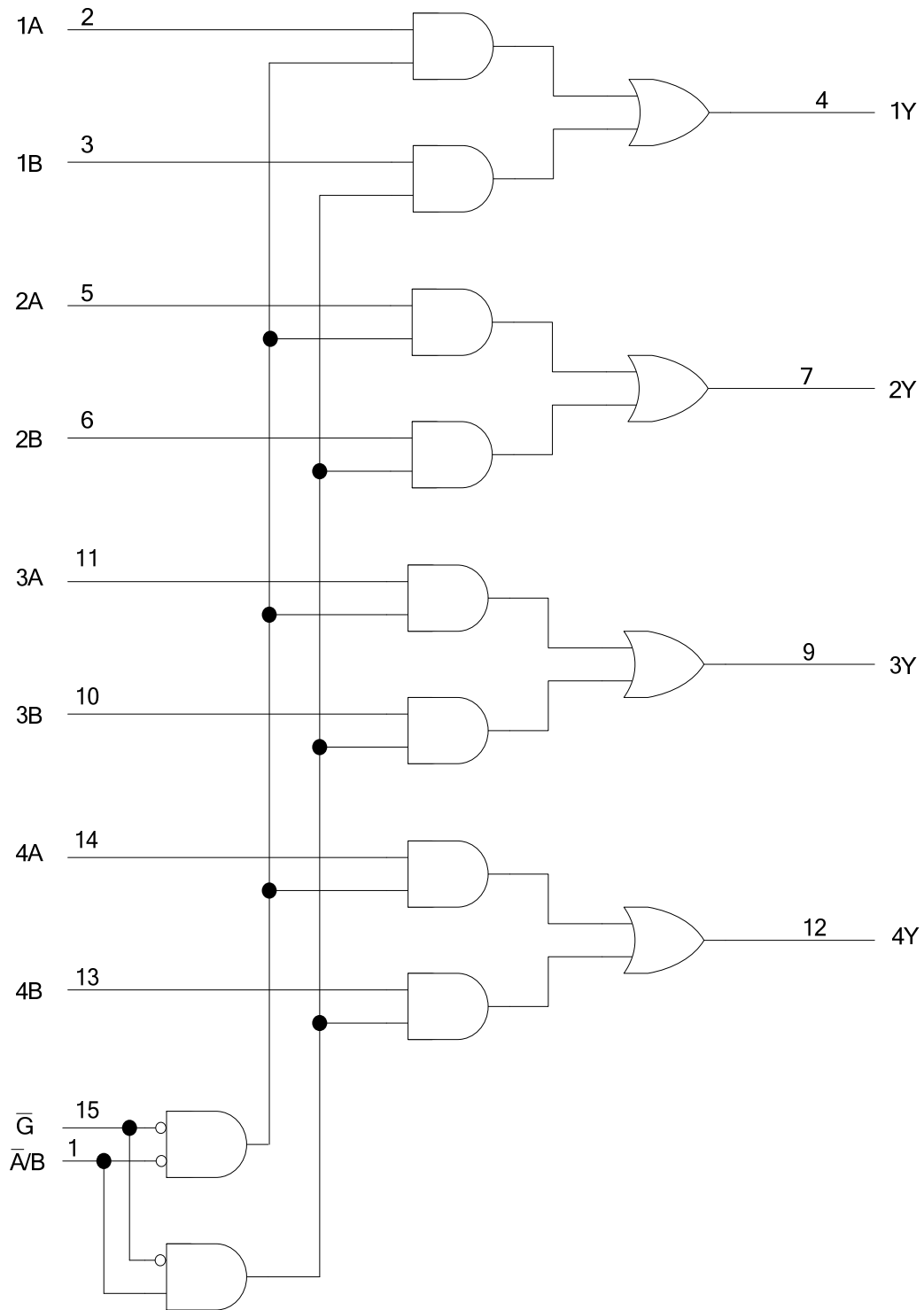


■ FUNCTION TABLE

INPUTS				OUTPUT Y
\bar{G}	\bar{A}/B	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

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	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 high or low state	-0.5 ~ $V_{CC} + 0.5$	V
		Output in the power-off state	-0.5 ~ +6.5	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 (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		3.6	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
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			
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	
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$				10	ns/V
Operating Temperature	T_A		-40		+125	°C

Note: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65 \sim 3.6V, I_{OH}=-100\mu A$	$V_{CC}-0.2$			V
		$V_{CC}=1.65V, I_{OH}=-4mA$	1.29			
		$V_{CC}=2.3V, I_{OH}=-8mA$	1.9			
		$V_{CC}=2.7V, I_{OH}=-12mA$	2.2			
		$V_{CC}=3.0V, I_{OH}=-12mA$	2.4			
		$V_{CC}=3V, I_{OH}=-24mA$	2.3			
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.6 \sim 3.6V, I_{OL}=100\mu A$			0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$			0.24	
		$V_{CC}=2.3V, I_{OL}=8mA$			0.30	
		$V_{CC}=2.7V, I_{OL}=12mA$			0.40	
		$V_{CC}=3V, I_{OL}=24mA$			0.55	

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=3.6V, V_{IN}=5.5V$ or GND			±1	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$			±10	μA
Quiescent Supply Current	I_{CC}	$V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$ $V_{CC}=3.6V$			1	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	$V_{CC}=2.7V\sim 3.6V$, One input at $V_{CC}-0.6V$, Other inputs at V_{CC} or GND			500	μA
Input Capacitance	C_I	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND		5		pF

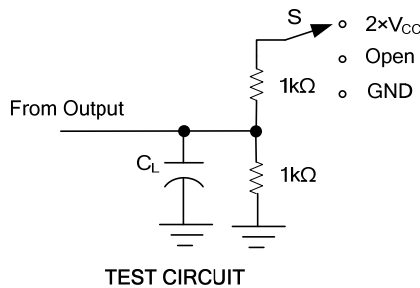
■ SWITCHING CHARACTERISTICS (Unless otherwise specified) (see Figure 1)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=1.8V\pm 0.15V, C_L=30pF$	1	5.5	13.5	ns
		$V_{CC}=2.5V\pm 0.2V, C_L=30pF$	1	3.2	7.4	ns
		$V_{CC}=2.7V, C_L=50pF$	1	3.6	5.7	ns
		$V_{CC}=3.3V\pm 0.3V, C_L=50pF$	1	3	5	ns
Propagation delay from input (\bar{A} / \bar{B}) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=1.8V\pm 0.15V, C_L=30pF$	1	6	15.5	ns
		$V_{CC}=2.5V\pm 0.2V, C_L=30pF$	1	3.7	9.6	ns
		$V_{CC}=2.7V, C_L=50pF$	1	4.1	7.9	ns
		$V_{CC}=3.3V\pm 0.3V, C_L=50pF$	1	3.4	6.6	ns
Propagation delay from input (\bar{G}) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=1.8V\pm 0.15V, C_L=30pF$	1	5.9	13.5	ns
		$V_{CC}=2.5V\pm 0.2V, C_L=30pF$	1	3.5	9.3	ns
		$V_{CC}=2.7V, C_L=50pF$	1	3.9	7.6	ns
		$V_{CC}=3.3V\pm 0.3V, C_L=50pF$	1	3.3	6.3	ns

■ OPERATING CHARACTERISTICS (f=10MHz, unless otherwise specified)

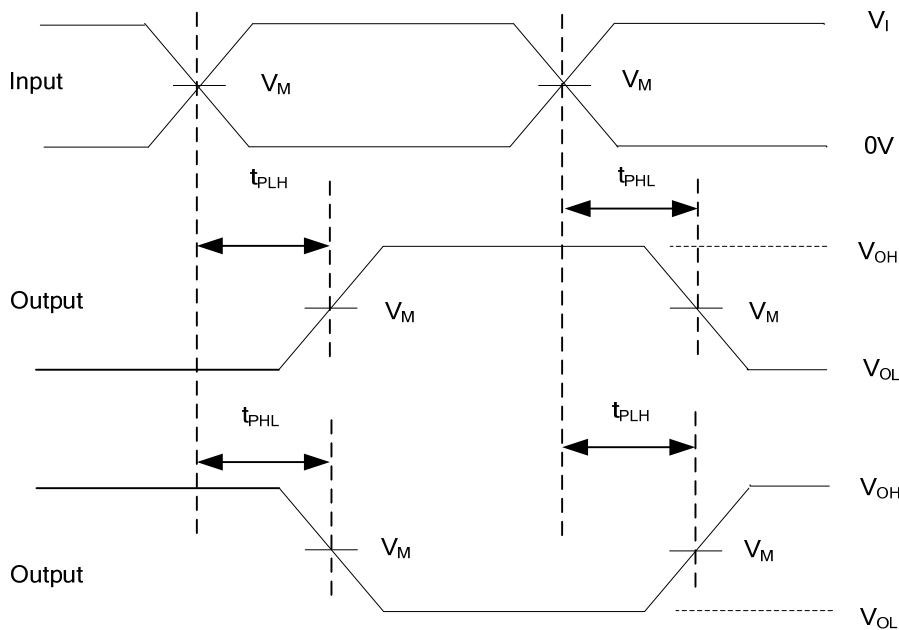
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=1.8V$		14		pF
		$V_{CC}=2.5V$		15		pF
		$V_{CC}=3.3V$		16		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	$2 \times V_{CC}$

V_{CC}	INPUTS		V_M	V_{LOAD}	C_L	R_L	V_{Δ}
	V_{IN}	t_R/t_F					
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	1KΩ	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	500Ω	0.15V
2.7V	2.7V	$\leq 2.5ns$	1.5V	6V	50pF	500Ω	0.3V
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	1.5V	6V	50pF	500Ω	0.3V



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 $\leq 10MHz$, $Z_o=50\Omega$.

Figure 1. Test Circuit and Voltage Waveforms

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