



U74LVC2G157

CMOS IC

SINGLE 2-LINE TO 1-LINE DATA SELECTOR OR MULTIPLEXER

DESCRIPTION

The **U74LVC2G157** is a single 2-line to 1-line data selector or multiplexer which is featured a common strobe (\bar{G}) input. When the strobe is high, the output Y is low and \bar{Y} is high regardless of the levels of other inputs. When the strobe is low, a single bit is selected from one of two sources and is transferred to the output with the true and complementary data.

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

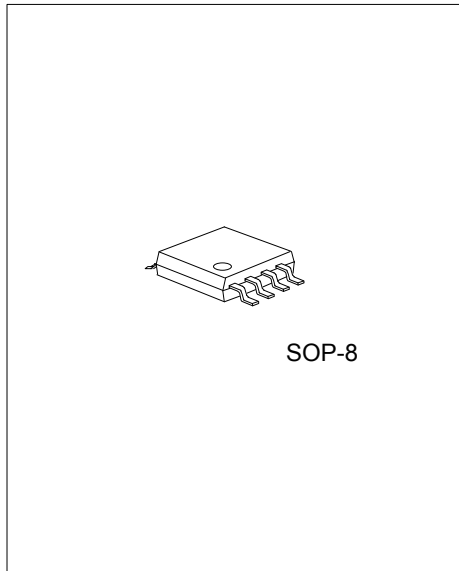
FEATURES

- * Operate from 1.65V to 5.5V
- * Inputs accept voltages to 5.5V
- * I_{off} supports partial-power-down mode
- * Low power dissipation: $I_{CC}=10\mu A(\text{Max.})$
- * $\pm 24\text{mA}$ output drive($V_{CC}=3.3\text{V}$)
- * Max tpd at 6ns of 3.3V

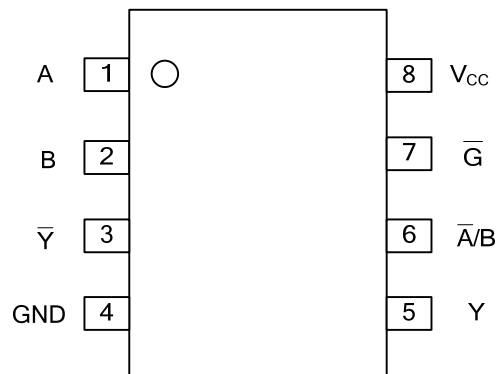
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC2G157L-S08-T	U74LVC2G157G-S08-T	SOP-8	Tube
U74LVC2G157L-S08-R	U74LVC2G157G-S08-R	SOP-8	Tape Reel

<p>U74LVC2G157L-S08-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) T: Tube, R: Tape Reel (2) S08: SOP-8 (3) L: Lead Free, G: Halogen Free</p>
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■ PIN CONFIGURATION

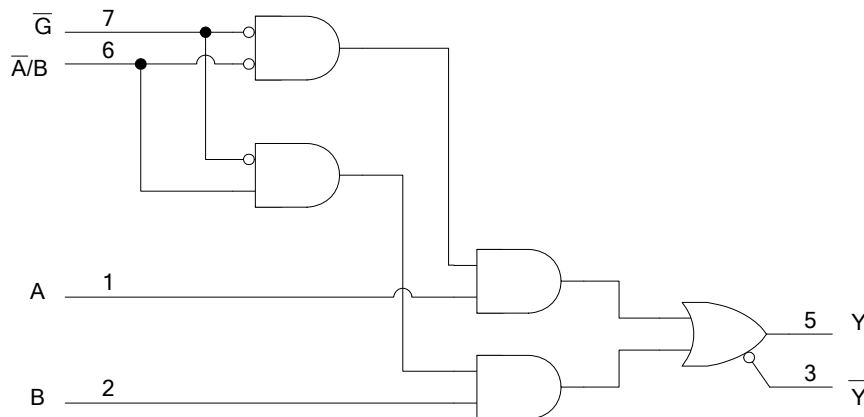


■ FUNCTION TABLE (EACH GATE)

INPUTS				OUTPUT	
\bar{G}	$\bar{A/B}$	A	B	Y	\bar{Y}
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	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 ($V_{OUT}<0$)		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}		0		V_{CC}	V
High-Level Input Voltage	V_{IH}	$V_{CC}=1.65V\sim 1.95V$	$0.65*V_{CC}$			V
		$V_{CC}=2.3V\sim 2.7V$	1.7			
		$V_{CC}=3.0V\sim 3.6V$	2			
		$V_{CC}=4.5V\sim 5.5V$	$0.7*V_{CC}$			
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.65V\sim 1.95V$			$0.35*V_{CC}$	V
		$V_{CC}=2.3V\sim 2.7V$			0.7	
		$V_{CC}=3.0V\sim 3.6V$			0.8	
		$V_{CC}=4.5V\sim 5.5V$			$0.3*V_{CC}$	
High-level Output Current	I_{OH}	$V_{CC}=1.65V$			-4	mA
		$V_{CC}=2.3V$			-8	mA
		$V_{CC}=3.0V$			-16	mA
		$V_{CC}=3.0V$			-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
		$V_{CC}=3.0V$			16	mA
		$V_{CC}=3.0V$			24	mA
		$V_{CC}=4.5V$			32	mA
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=1.65V\sim 1.95V, 2.3V\sim 2.7V$			20	ns/V
		$V_{CC}=3.0V\sim 3.6V$			10	ns/V
		$V_{CC}=4.5V\sim 5.5V$			5	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 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} =3.0V, I _{OH} =-16mA	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} =3.0V, I _{OH} =16mA			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} =5.5V 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 _Q	V _{CC} =1.65V~5.5V, V _{IN} =5.5V or GND, I _{OUT} =0			10	μA
Additional Quiescent Supply Current	ΔI _Q	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		5		pF

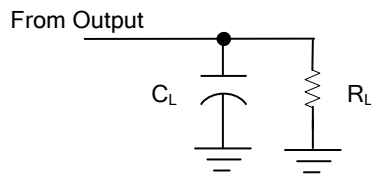
■ SWITCHING CHARACTERISTICS (T_A =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y or \bar{Y})	t _{PLH} /t _{PHL}	V _{CC} =1.65V~1.95V	4.4		14	ns
		V _{CC} =2.3V~2.7V	2.1		8	
		V _{CC} =3.0V~3.6V	2		6	
		V _{CC} =4.5V~5.5V	1.4		4	
Propagation delay from input (\bar{A} /B) to output(Y or \bar{Y})	t _{PLH} /t _{PHL}	V _{CC} =1.65V~1.95V	4.9		16	ns
		V _{CC} =2.3V~2.7V	2.5		9	
		V _{CC} =3.0V~3.6V	2.1		6	
		V _{CC} =4.5V~5.5V	1.6		4	
Propagation delay from input ($\bar{\bar{G}}$) to output(Y or \bar{Y})	t _{PLH} /t _{PHL}	V _{CC} =1.65V~1.95V	4.2		14	ns
		V _{CC} =2.3V~2.7V	2		8	
		V _{CC} =3.0V~3.6V	1.6		6	
		V _{CC} =4.5V~5.5V	1.3		4	

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

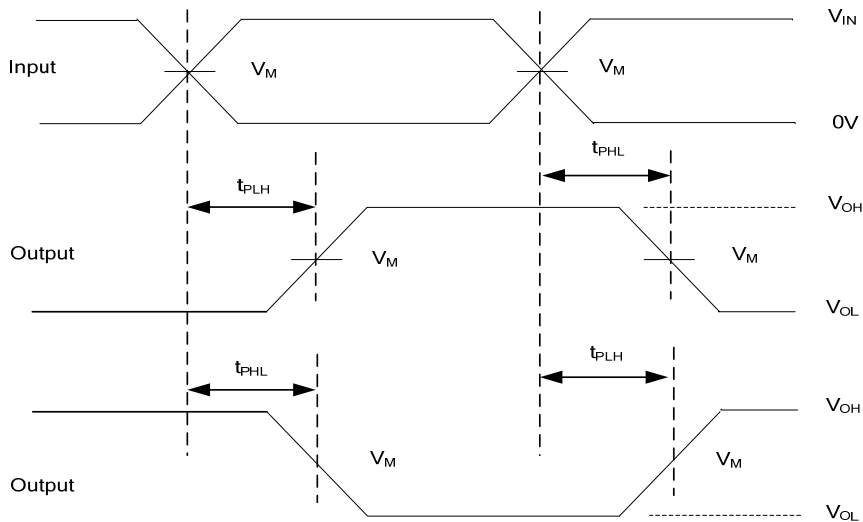
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{pd}	V _{CC} =1.8V, f=10MHz		35		pF
		V _{CC} =2.5V, f=10MHz		35		pF
		V _{CC} =3.3V, f=10MHz		37		pF
		V _{CC} =5V, f=10MHz		40		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V_{CC}	Inputs		V_M	C_L	R_L
	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
$V_{CC} = 3.0V \sim 3.6V$	3.0V	$\leq 2.5ns$	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

Note: 1. C_L includes probe and jig capacitance.

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

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