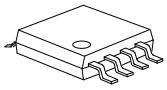
U74LVC2G157

CMOS IC

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



SOP-8

■ DESCRIPTION

The **U74LVC2G157** is a single 2-line to 1-line data selector or multiplexer which is featured a common strobe ($\overline{G}$) input. When the strobe is high, the output Y is low and $\overline{Y}$ 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}=10μA(Max.)
* ±24mA output drive(V_{CC}=3.3V)

■ ORDERING INFORMATION

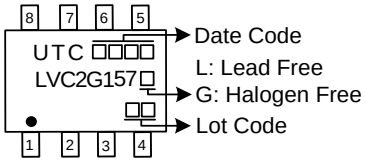
Ordering Number		Package	Packing
Free Plating	Halogen Free		
U74LVC2G157L-S08-R	U74LVC2G157G-S08-R	SOP-8	Tape Reel

U74LVC2G157G-S08-R

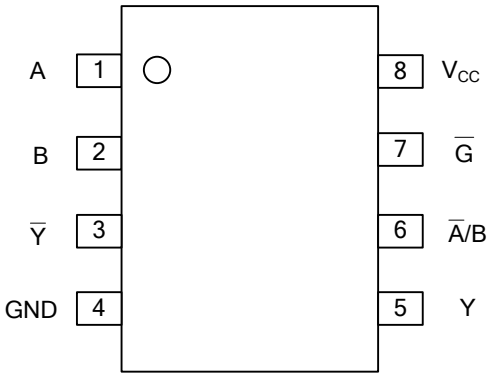
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

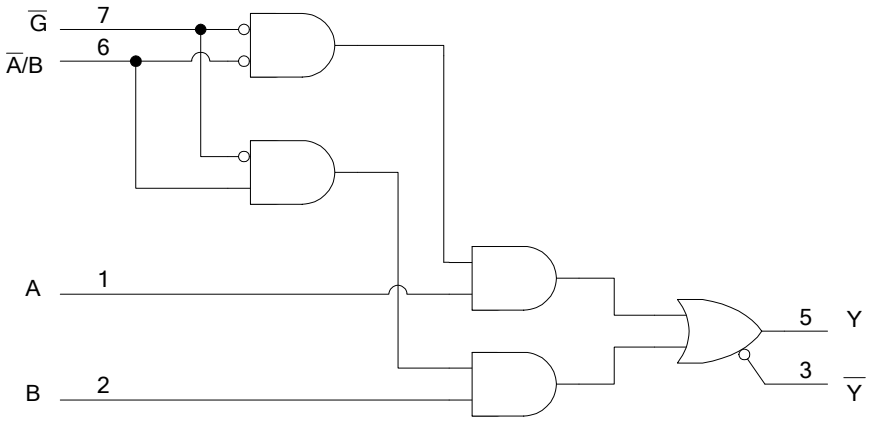


■ FUNCTION TABLE (EACH GATE)

INPUTS				OUTPUT	
$\overline{G}$	$\overline{A}$/B	A	B	Y	$\overline{Y}$
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~1.95V	0.65*V_{CC}			V
		V_{CC} =2.3V~2.7V	1.7			
		V_{CC} =3.0V~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} =3.0V~3.6V			0.8	
		V_{CC} =4.5V~5.5V			0.3*V_{CC}	
Input Transition Rise or Fall Rate	Δt/Δv	V_{CC}=1.65V~1.95V, 2.3V~2.7V			20	ns/V
		V_{CC}=3.0V~3.6V			10	ns/V
		V_{CC}=4.5V~5.5V			5	ns/V
Operating Temperature	T_A		-40		+125	°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_{OL}=100μA			0.1	V
		V_{CC}=1.65V, I_{OL}=4mA			0.45	
		V_{CC}=2.3V, I_{OL}=8mA			0.3	
		V_{CC}=3.0V, I_{OL}=16mA			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~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

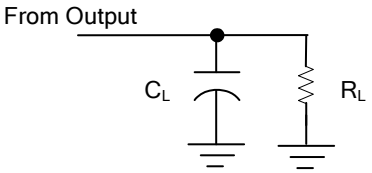
■ SWITCHING CHARACTERISTICS (T_A =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y or $\overline{Y}$)	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 ($\overline{A}$/B) to output(Y or $\overline{Y}$)	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 ($\overline{G}$) to output(Y or $\overline{Y}$)	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)

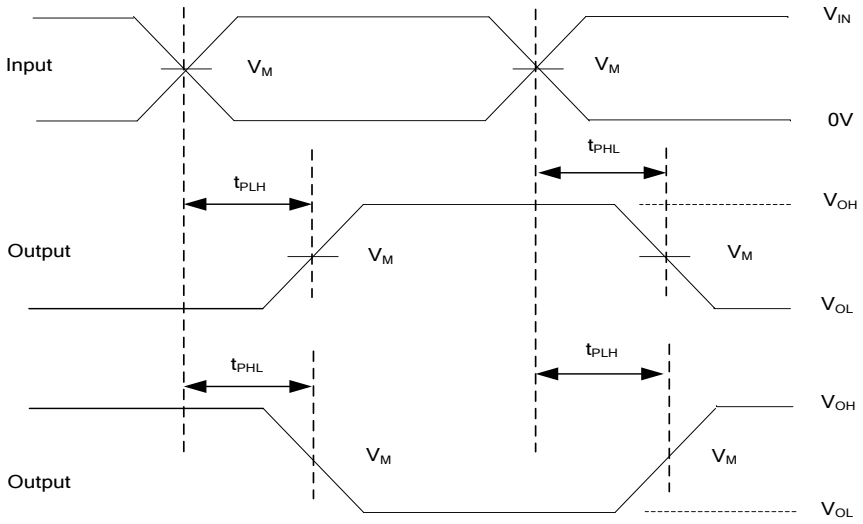
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	V_{CC}=1.8V, f=10MHz		35		pF
		V_{CC}=2.5V, f=10MHz		35		pF
		V_{CC}=3.3V, f=10MHz		37		pF
		V_{CC}=5V, f=10MHz		40		pF

■ 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~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} =3.0V~3.6V	3.0V	≤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.