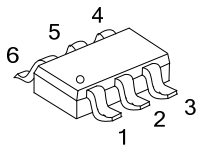
U74LVC1G19

CMOS IC

1-OF-2 DECODER/DEMULTIPLEXER



SOT-363

■ DESCRIPTION

The **U74LVC1G19** is a 1-of-2 decoder / demultiplexer with a common output enable. This device buffers the data on input A and passes it to the outputs 1Y and 2Y when the enable input signal is LOW.

This device is fully specified for partial power-down applications using Ioff. The Ioff circuitry disables the outputs, preventing the damaging backflow current through the device when it is powered down.

■ FEATURES

* Operate from 1.65V to 5.5V
* Inputs accept voltages to 5.5V
* Low power dissipation, I_{CC}=10μA (Max)
* ±24mA output drive(V_{CC}=3V)

■ ORDERING INFORMATION

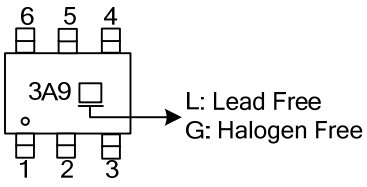
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G19L-AL6-R	U74LVC1G19G-AL6-R	SOT-363	Tape Reel

U74LVC1G19L-AL6-R

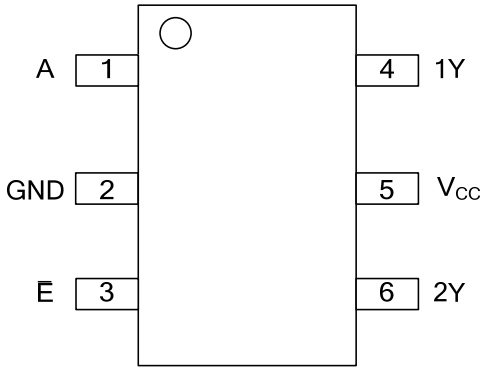
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) R: Tape Reel
(2) AL6: SOT-363
(3) Halogen Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION



■ PIN DESCRIPTION

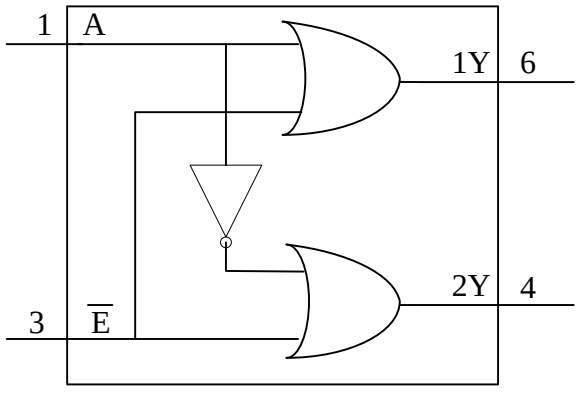
SYMBOL	PIN	DESCRIPTION
A	1	Data input
GND	2	Ground(0V)
$\overline{E}$	3	Enable input
2Y	4	Data output
Vcc	5	Supply voltage
1Y	6	Data output

■ FUNCTION TABLE

INPUT		OUTPUT	
$\overline{E}$	A	1Y	2Y
L	L	L	H
L	H	H	L
H	X	H	H

Note: H: HIGH voltage level; L: LOW voltage level

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

■ 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
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Operating Temperature	T_A		-40		85	°C
Input Transition Rise or Fall Rate	Δt/Δv	V_{CC}=1.8V±0.15V, 2.5V±0.2V			20	ns/V
		V_{CC}=3.0V±0.3V			10	ns/V
		V_{CC}=5V±0.5V			5	ns/V

■ 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_{CC}			V
		V_{CC}=2.3V ~ 2.7V		1.7			V
		V_{CC}=2.7V ~ 3.6V		2			V
		V_{CC}=4.5V ~ 5.5V		0.7*V_{CC}			V
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
		V_{CC}=2.7V ~ 3.6V				0.8	V
		V_{CC}=4.5V ~ 5.5V				0.3*V_{CC}	V
High-Level Output Voltage	V_{OH}	I_{OH}=-100μA	V_{CC}=1.65 ~ 5.5V	V_{CC}-0.1			V
		I_{OH}=-4mA	V_{CC}=1.65V	1.2	1.54		V
		I_{OH}=-8mA	V_{CC}=2.3V	1.9	2.15		V
		I_{OH}=-16mA	V_{CC}=3.0V	2.4	2.50		V
		I_{OH}=-24mA	V_{CC}=3.0V	2.3	2.62		V
		I_{OH}=-32mA	V_{CC}=4.5V	3.8	4.11		V
Low-Level Output Voltage	V_{OL}	I_{OL}=100μA	V_{CC}=1.65 ~ 5.5V			0.1	V
		I_{OL}=4mA	V_{CC}=1.65V		0.07	0.45	V
		I_{OL}=8mA	V_{CC}=2.3V		0.12	0.30	V
		I_{OL}=16mA	V_{CC}=2.7V		0.17	0.40	V
		I_{OL}=24mA	V_{CC}=3.0V		0.33	0.55	V
		I_{OL}=32mA	V_{CC}=4.5V		0.39	0.55	V
Input Leakage Current	$I_{I(LEAK)}$	V_{IN}=5.5V or GND, V_{CC}=0 ~ 5.5V			±0.1	±1	μA
Power OFF Leakage Current	I_{off}	V_{IN} or V_{OUT}=5.5V, V_{CC}=0V			±0.1	±10	μA
Quiescent Supply Current	I_{CC}	V_{IN}=5.5V or GND, I_{OUT}=0 V_{CC}=1.65 ~ 5.5V			0.1	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	V_{CC}=2.3 ~ 5.5V, One input at V_{CC}-0.6V, Other inputs at V_{CC} or GND			5	500	μA
Input Capacitance	C_I	V_{CC}=3.3V, V_{IN}=V_{CC} or GND			3.5		pF

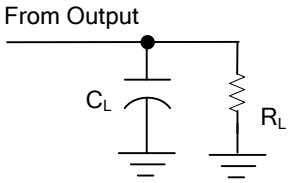
■ SWITCHING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or $\overline{E}$) to output(Y)	t_{PLH}/t_{PHL}	V_{CC}=1.8V±0.15V, C_L=30 pF R_U=1KΩ	3.2	4.0	16.1	ns
		V_{CC}=2.5V±0.2V, C_L=30pF R_C=500Ω	1.5	2.5	65	ns
		V_{CC}=3.3V±0.3V, C_L=50 pF R_C=500Ω	1.1	2.5	5.2	ns
		V_{CC}=5V±0.5V, C_L=50pF R_C=500Ω	0.5	1.8	3.9	ns

■ OPERATING CHARACTERISTICS (T_A=25°C)

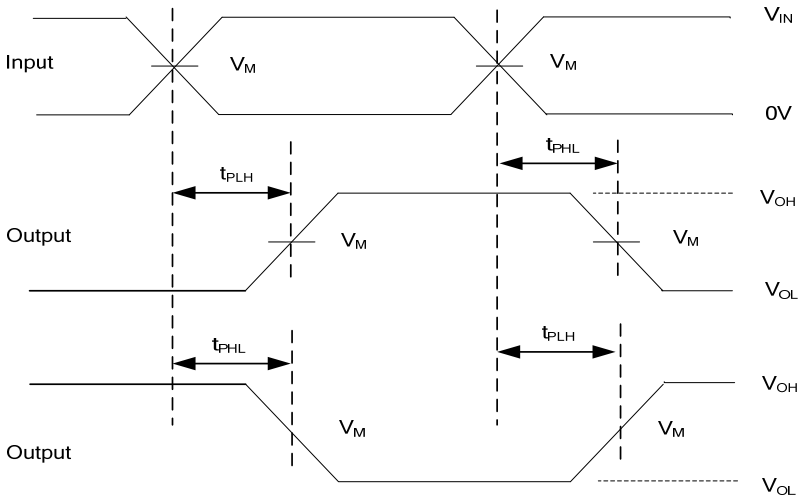
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_I = GND to V_{CC}, V_{CC}=3.3V		16		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V_{CC}	Inputs		V_M	C_L	R_L
	V_{IN}	t_R, t_F			
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	30pF	1KΩ
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	30pF	500Ω
3.3V±0.3V	2.7V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	50pF	500Ω



PROPAGATION DELAY TIMES

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