



## U74LVC1G19

CMOS IC

### 1-OF-2 DECODER/DEMULTIPLEXER

#### 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

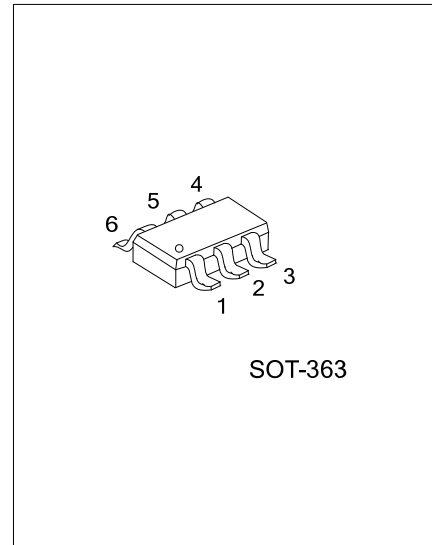
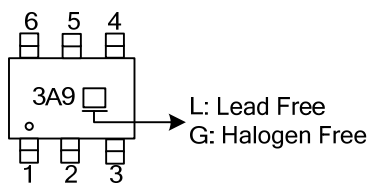
- \* Operate from 1.65V to 5.5V
- \* Inputs accept voltages to 5.5V
- \* Low power dissipation, I<sub>CC</sub>=10μA (Max)
- \* ±24mA output drive(V<sub>CC</sub>=3V)

#### ORDERING INFORMATION

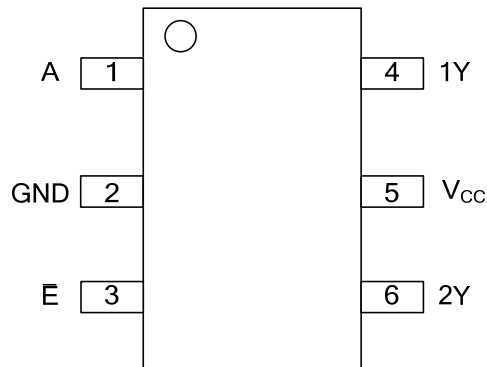
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G19L-AL6-R	U74LVC1G19G-AL6-R	SOT-363	Tape Reel

<p>U74LVC1G19L-AL6-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) R: Tape Reel (2) AL6: SOT-363 (3) Halogen Free, L: Lead Free</p>
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#### MARKING



■ PIN CONFIGURATION



■ PIN DESCRIPTION

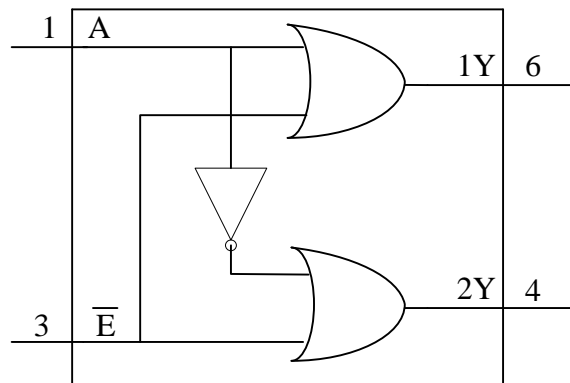
SYMBOL	PIN	DESCRIPTION
A	1	Data input
GND	2	Ground(0V)
$\bar{E}$	3	Enable input
2Y	4	Data output
Vcc	5	Supply voltage
1Y	6	Data output

■ FUNCTION TABLE

INPUT		OUTPUT	
$\bar{E}$	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	$\Delta t/\Delta v$	$V_{CC}=1.8V\pm 0.15V, 2.5V\pm 0.2V$			20	ns/V
		$V_{CC}=3.0V\pm 0.3V$			10	ns/V
		$V_{CC}=5V\pm 0.5V$			5	ns/V

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub> =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =1.65V ~ 1.95V	0.65*V <sub>CC</sub>			V
		V <sub>CC</sub> =2.3V ~ 2.7V	1.7			V
		V <sub>CC</sub> =2.7V ~ 3.6V	2			V
		V <sub>CC</sub> =4.5V ~ 5.5V	0.7*V <sub>CC</sub>			V
Low-level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =1.65V ~ 1.95V			0.35*V <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V ~ 2.7V			0.7	V
		V <sub>CC</sub> =2.7V ~ 3.6V			0.8	V
		V <sub>CC</sub> =4.5V ~ 5.5V			0.3*V <sub>CC</sub>	V
High-Level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> =-100μA, V <sub>CC</sub> =1.65 ~ 5.5V	V <sub>CC</sub> -0.1			V
		I <sub>OH</sub> =-4mA, V <sub>CC</sub> =1.65V	1.2	1.54		V
		I <sub>OH</sub> =-8mA, V <sub>CC</sub> =2.3V	1.9	2.15		V
		I <sub>OH</sub> =-16mA, V <sub>CC</sub> =3.0V	2.4	2.50		V
		I <sub>OH</sub> =-24mA, V <sub>CC</sub> =3.0V	2.3	2.62		V
		I <sub>OH</sub> =-32mA, V <sub>CC</sub> =4.5V	3.8	4.11		V
Low-Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> =100μA, V <sub>CC</sub> =1.65 ~ 5.5V			0.1	V
		I <sub>OL</sub> =4mA, V <sub>CC</sub> =1.65V		0.07	0.45	V
		I <sub>OL</sub> =8mA, V <sub>CC</sub> =2.3V		0.12	0.30	V
		I <sub>OL</sub> =16mA, V <sub>CC</sub> =2.7V		0.17	0.40	V
		I <sub>OL</sub> =24mA, V <sub>CC</sub> =3.0V		0.33	0.55	V
		I <sub>OL</sub> =32mA, V <sub>CC</sub> =4.5V		0.39	0.55	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>IN</sub> =5.5V or GND, V <sub>CC</sub> =0 ~ 5.5V		±0.1	±1	μA
Power OFF Leakage Current	I <sub>off</sub>	V <sub>IN</sub> or V <sub>OUT</sub> =5.5V, V <sub>CC</sub> =0V		±0.1	±10	μA
Quiescent Supply Current	I <sub>CC</sub>	V <sub>IN</sub> =5.5V or GND, I <sub>OUT</sub> =0 V <sub>CC</sub> =1.65 ~ 5.5V		0.1	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>CC</sub>	V <sub>CC</sub> =2.3 ~ 5.5V, One input at V <sub>CC</sub> -0.6V, Other inputs at V <sub>CC</sub> or GND		5	500	μA
Input Capacitance	C <sub>I</sub>	V <sub>CC</sub> =3.3V, V <sub>IN</sub> =V <sub>CC</sub> or GND		3.5		pF

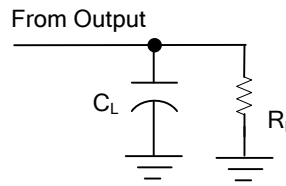
■ SWITCHING CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or $\bar{E}$ ) to output(Y)	t <sub>PLH</sub> /t <sub>PHL</sub>	V <sub>CC</sub> =1.8V±0.15V, C <sub>L</sub> =30 pF R <sub>U</sub> =1KΩ	3.2	4.0	16.1	ns
		V <sub>CC</sub> =2.5V±0.2V, C <sub>L</sub> =30pF R <sub>C</sub> =500Ω	1.5	2.5	65	ns
		V <sub>CC</sub> =3.3V±0.3V, C <sub>L</sub> =50 pF R <sub>C</sub> =500Ω	1.1	2.5	5.2	ns
		V <sub>CC</sub> =5V±0.5V, C <sub>L</sub> =50pF R <sub>C</sub> =500Ω	0.5	1.8	3.9	ns

■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C)

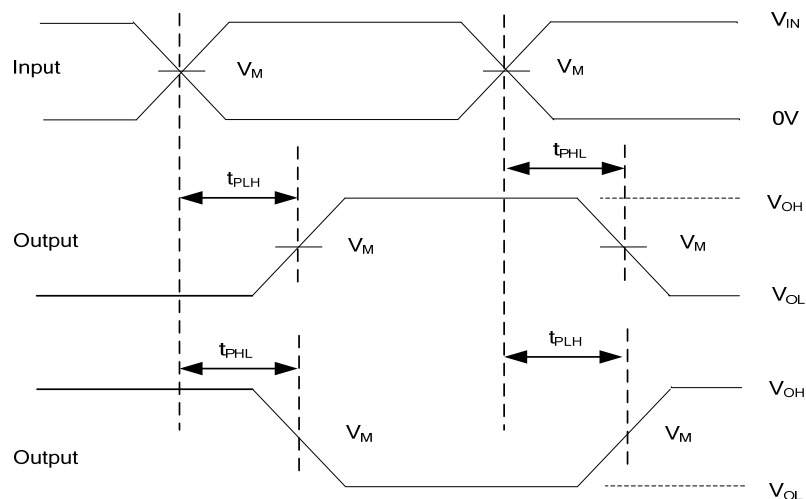
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>I</sub> = GND to V <sub>CC</sub> , V <sub>CC</sub> =3.3V		16		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

$V_{CC}$	Inputs		$V_M$	$C_L$	$R_L$
	$V_{IN}$	$t_R, t_F$			
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	30pF	1K $\Omega$
$2.5V \pm 0.2V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	30pF	500 $\Omega$
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	1.5V	50pF	500 $\Omega$
$5V \pm 0.5V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	50pF	500 $\Omega$



PROPAGATION DELAY TIMES

Note:  $C_L$  includes probe and jig capacitance.

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

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