



U74LVC1G0832

CMOS IC

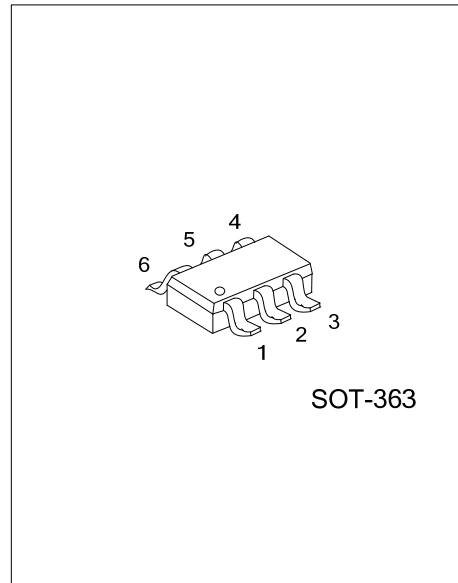
SINGLE 3-INPUT POSITIVE AND-OR GATE

DESCRIPTION

This device is designed for 1.65V to 5.5V V_{CC} operation.

The **U74LVC1G0832** device is a single 3-input positive AND-OR gate. it performs the Boolean function $Y=(A \cdot B) + C$ in positive logic.

By tying one input to GND or V_{CC} , the **U74LVC1G0832** device offers two more functions. When C is tied to GND, this device performs as a 2-input AND gate ($Y=A \cdot B$). When A is tied to V_{CC} , the device works as a 2-input OR gate ($Y=B+C$). This device also works as a 2-input OR gate when B is tied to V_{CC} ($Y=A+C$).



SOT-363

FEATURES

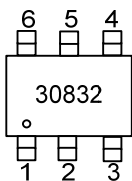
- * Wide supply voltage range from 1.65V to 5.5V
- * Inputs accept voltages up to 5.5V
- * I_{OFF} supports partial-power-down mode
- * Low static power consumption; $I_{CC}=10\mu A$ (Max.)

ORDERING INFORMATION

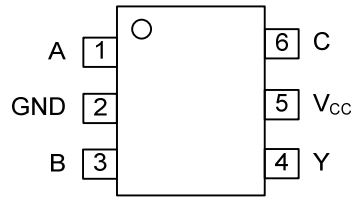
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G0832L-AL6-R	U74LVC1G0832G-AL6-R	SOT-363	Tape Reel

<p>U74LVC1G0832G-AL6-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

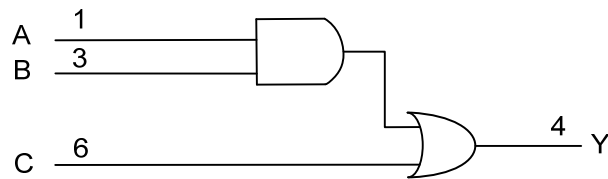


■ FUNCTION TABLE

INPUT			OUTPUT(Y)
A	B	C	Y
X	X	H	H
H	H	X	H
X	L	L	L
L	X	L	L

Note: H: High voltage level; L: Low voltage level; X: Valid H or L

■ LOGIC DIAGRAM (positive logic)



Logic symbol

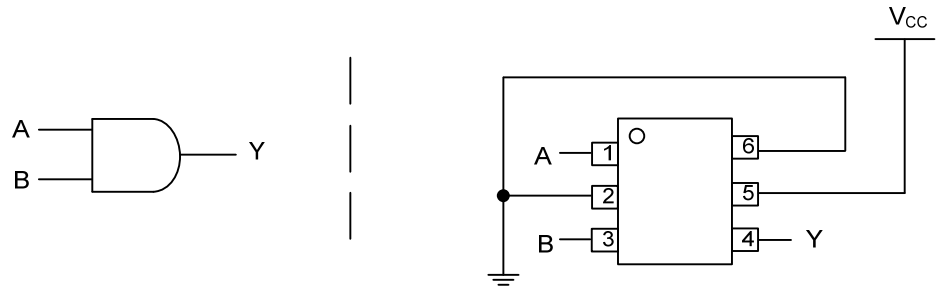
FLYING 汎翔國際有限公司
www.flying1688.com

FUNCTION SELECTION TABLE

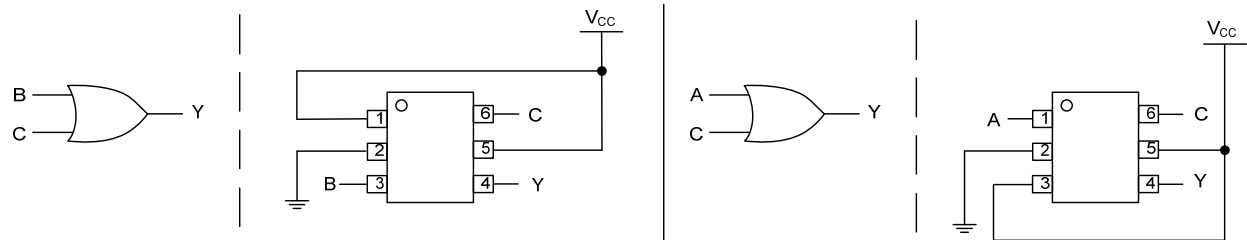
LOGIC FUNCTION
2-Input AND Gate
2-Input OR Gate
$Y = (A \cdot B) + C$

LOGIC FUNCTION

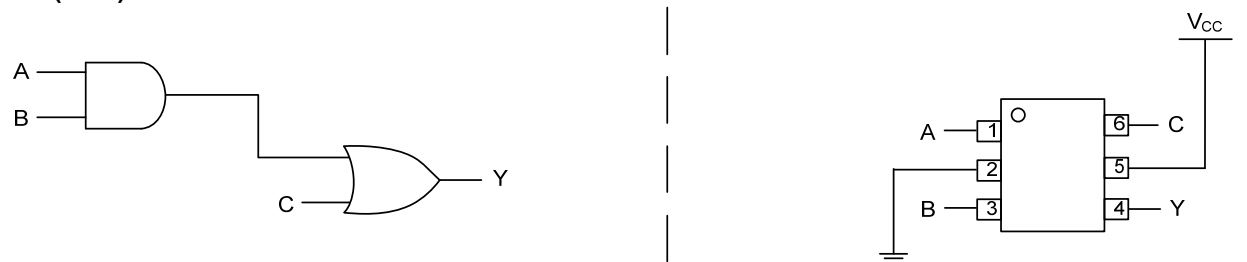
2-Input AND Gate



2-Input OR Gate



$Y = (A \cdot B) + C$



■ ABSOLUTE MAXIMUM RATINGS

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}		±50	mA
Input Clamp Current	I_{IK}	$V_{IN} < 0V$	-50	mA
Output Clamp Current	I_{OK}	$V_{OUT} < 0V$	-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

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}	$V_{CC}=1.8\pm 0.15V$	$0.65 \times V_{CC}$		5.5	V
		$V_{CC}=2.5\pm 0.2V$	1.7		5.5	V
		$V_{CC}=3.3\pm 0.3V$	2		5.5	V
		$V_{CC}=5\pm 0.5V$	$0.7 \times V_{CC}$		5.5	V
Low-level input voltage	V_{IL}	$V_{CC}=1.8\pm 0.15V$	0		$0.35 \times V_{CC}$	V
		$V_{CC}=2.5\pm 0.2V$	0		0.7	V
		$V_{CC}=3.3\pm 0.3V$	0		0.8	V
		$V_{CC}=5\pm 0.5V$	0		$0.3 \times V_{CC}$	V
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
		$V_{CC}=3.3V\pm 0.3V$			10	ns/V
		$V_{CC}=5V\pm 0.5V$			5	ns/V
Operating Temperature	T_A		-40		125	°C

■ ELECTRICAL CHARACTERISTICS ($V_{CC}=3.3V$, $T_A=25^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Output Voltage	V_{OH}	$V_{IN}=5.5V$ or GND	$V_{CC}=1.65 \sim 5.5V$, $I_{OH}=-100\mu A$	$V_{CC}-0.1$		V	
			$V_{CC}=1.65V$, $I_{OH}=-4mA$	1.2		V	
			$V_{CC}=2.3V$, $I_{OH}=-8mA$	1.9		V	
			$V_{CC}=3.0V$	$I_{OH}=-16mA$	2.4		V
				$I_{OH}=-24mA$	2.3		V
$V_{CC}=4.5V$, $I_{OH}=-32mA$	3.8		V				
Low-Level Output Voltage	V_{OL}	$V_{IN}=5.5V$ or GND	$V_{CC}=1.65 \sim 5.5V$, $I_{OL}=100\mu A$		0.1	V	
			$V_{CC}=1.65V$, $I_{OL}=4mA$		0.45	V	
			$V_{CC}=2.3V$, $I_{OL}=8mA$		0.3	V	
			$V_{CC}=3.0V$	$I_{OL}=16mA$		0.4	V
				$I_{OL}=24mA$		0.55	V
$V_{CC}=4.5V$, $I_{OL}=32mA$		0.55	V				
Input Leakage Current (A, B or C inputs)	$I_{I(LEAK)}$	$V_{CC}=0 \sim 5.5V$, $V_{IN}=5.5V$ 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_{CC}	$V_{CC}=1.65 \sim 5.5V$, $V_{IN}=5.5V$ or GND, $I_{OUT}=0A$			10	μA	
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	$V_{CC}=3 \sim 5.5V$, 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		7		pF	

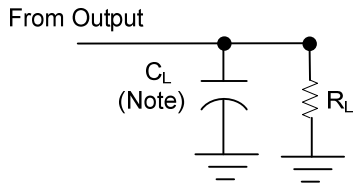
■ SWITCHING CHARACTERISTICS ($T_A=25^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A, B or C) to output(Y)	t_{PD}	$C_L=15pF$, $R_L=1M\Omega$	$V_{CC}=1.8\pm 0.15V$	3.7		14	ns
			$V_{CC}=2.5\pm 0.2V$	2.4		7	ns
			$V_{CC}=3.3\pm 0.3V$	1.7		5	ns
			$V_{CC}=5\pm 0.5V$	1.2		3.4	ns
		$C_L=30pF$, $R_L=1K\Omega$	$V_{CC}=1.8\pm 0.15V$	2.5		17.5	ns
		$C_L=30pF$, $R_L=500\Omega$	$V_{CC}=2.5\pm 0.2V$	1.8		7.6	ns
		$C_L=50pF$, $R_L=500\Omega$	$V_{CC}=3.3\pm 0.3V$	1.8		5.9	ns
$V_{CC}=5\pm 0.5V$	1.3			4.5	ns		

■ OPERATING CHARACTERISTICS ($f=10MHz$, $T_A=25^{\circ}C$, unless otherwise specified)

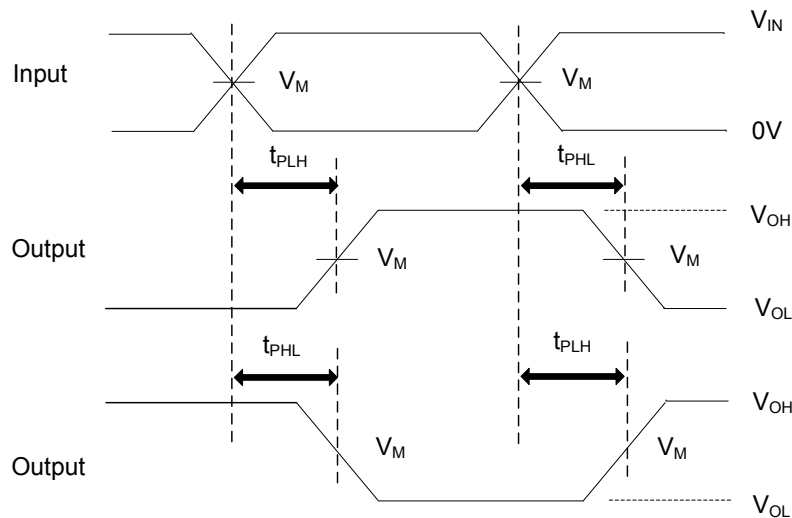
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=1.8V$		15		pF
		$V_{CC}=2.5V$		15		pF
		$V_{CC}=3.3V$		16		pF
		$V_{CC}=5V$		18		pF

TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

V_{CC}	Inputs		V_M	C_L	R_L	V_{Δ}
	V_{IN}	t_R, t_F				
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15, 30pF	1M Ω , 1k Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	15, 30pF	1M Ω , 500 Ω	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	15, 50pF	1M Ω , 500 Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	15, 50pF	1M Ω , 500 Ω	0.3V



PROPAGATION DELAY TIMES

Notes: 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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