



U74AHC32

CMOS IC

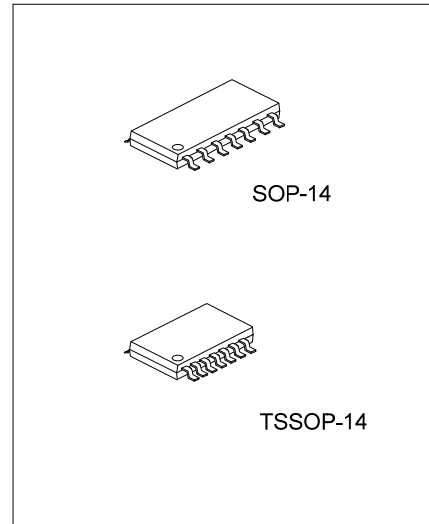
QUADRUPLE 2-INPUT POSITIVE-OR GATES

DESCRIPTION

The UTC **U74AHC32** are quadruple 2-input positive-or gates which provides the function $Y=A+B$ in positive logic.

FEATURES

- * Operate from 2V to 5.5V
- * Max t_{PD} of 7.5ns at 5 V
- * Low Power Dissipation: $I_{CC}=2\mu A(\text{Max})$ at $T_A=25^\circ C$

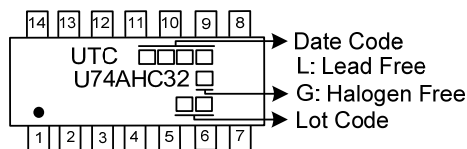


ORDERING INFORMATION

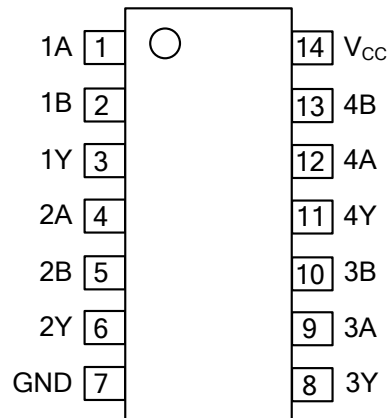
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC32L-S14-R	U74AHC32G-S14-R	SOP-14	Tape Reel
U74AHC32L-P14-R	U74AHC32G-P14-R	TSSOP-14	Tape Reel

<p>U74AHC32G-S14-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S14: SOP-14, P14: TSSOP-14</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

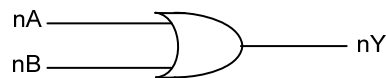


■ FUNCTION TABLE

INPUTS(A)	INPUTS(B)	OUTPUT(Y)
H	X	H
X	H	H
L	L	L

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

■ LOGIC DIAGRAM



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■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ +7	V
Input Voltage	V_{IN}	-0.5 ~ +7	V
Output Voltage	V_{OUT}	-0.5 ~ $V_{CC} + 0.5$	V
V_{CC} or GND Current	I_{CC}	±50	mA
Continuous Output Current	I_{OUT}	±25	mA
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Operating Temperature	T_{OPR}	-40 ~ + 85	°C
Storage Temperature	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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TSSOP-14	113	°C/W
	SOP-14	76	

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2		5.5	V
High-Level Input Voltage	V_{IH}	$V_{CC}=2V$	1.5			V
		$V_{CC}=3V$	2.1			V
		$V_{CC}=5.5V$	3.85			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=2V$			0.5	V
		$V_{CC}=3V$			0.9	V
		$V_{CC}=5.5V$			1.65	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or Low State	0		V_{CC}	V
High-Level Output Current	I_{OH}	$V_{CC}=2V$			-50	μA
		$V_{CC}=3.3V \pm 0.3V$			-4	mA
		$V_{CC}=5V \pm 0.5V$			-8	mA
Low-Level Output Current	I_{OL}	$V_{CC}=2V$			50	μA
		$V_{CC}=3.3V \pm 0.3V$			4	mA
		$V_{CC}=5V \pm 0.5V$			8	mA
Input Rise or Fall Times	$\frac{\Delta t}{\Delta V}$	$V_{CC}=3.3V \pm 0.3V$			100	ns/V
		$V_{CC}=5V \pm 0.5V$			20	ns/V

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Output Voltage	V_{OH}	$I_{OH}=-50\mu\text{A}$	$V_{CC}=2.0\text{V}$	1.9	2.0		V
			$V_{CC}=3.0\text{V}$	2.9	3.0		V
			$V_{CC}=4.5\text{V}$	4.4	4.5		V
		$I_{OH}=-4\text{mA}$	$V_{CC}=3.0\text{V}$	2.58			V
		$I_{OH}=-8\text{mA}$	$V_{CC}=4.5\text{V}$	3.94			V
Low-Level Output Voltage	V_{OL}	$I_{OL}=50\mu\text{A}$	$V_{CC}=2.0\text{V}$			0.1	V
			$V_{CC}=3.0\text{V}$			0.1	V
			$V_{CC}=4.5\text{V}$			0.1	V
		$I_{OL}=4\text{mA}$	$V_{CC}=3.0\text{V}$			0.36	V
		$I_{OL}=8\text{mA}$	$V_{CC}=4.5\text{V}$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{IN}=5.5\text{V}$ or GND	$V_{CC}=0$ to 5.5V			± 0.1	μA
Quiescent Supply Current	I_Q	$V_{IN}=V_{CC}$ or GND $I_{OUT}=0$	$V_{CC}=5.5\text{V}$			2	μA
Input Capacitance	C_{IN}	$V_{IN}=V_{CC}$ or GND	$V_{CC}=5.0\text{V}$		2	10	pF

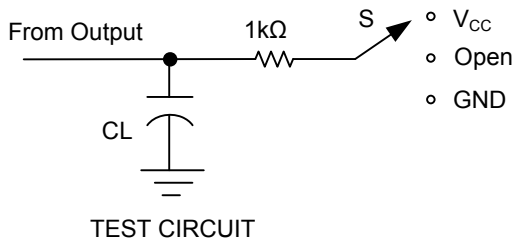
■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A or B) to output(Y)	t_{PLH} / t_{PHL}	$V_{CC}=3.3\text{V}\pm 0.3\text{V}$	$C_L=15\text{ pF}$		5.5	7.9	ns
			$C_L=50\text{ pF}$		8	11.4	ns
		$V_{CC}=5.0\text{V}\pm 0.5\text{V}$	$C_L=15\text{ pF}$		3.8	5.5	ns
			$C_L=50\text{ pF}$		5.3	7.5	ns

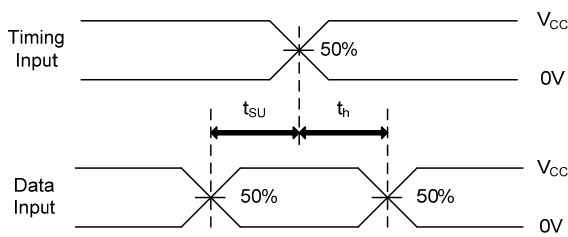
■ OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, $f=1\text{MHz}$, $V_{CC}=5\text{V}$		14		pF

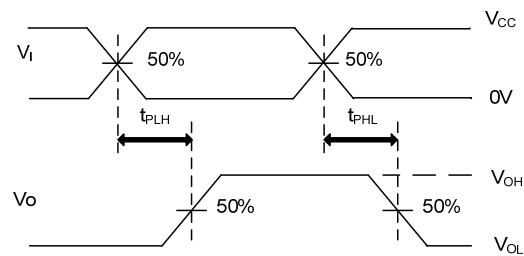
■ TEST CIRCUIT AND WAVEFORMS



TEST	S
t _{PLH} /t _{PHL}	Open
t _{PHZ} /t _{PZH}	GND
t _{PLZ} /t _{PZL}	V _{CC}



SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES

Note: C_L includes probe and jig capacitance.
 PRR ≤ 1MHz, Z_O = 50Ω, t_R ≤ 3ns, t_F ≤ 3ns.

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