



## U74AHC32

CMOS IC

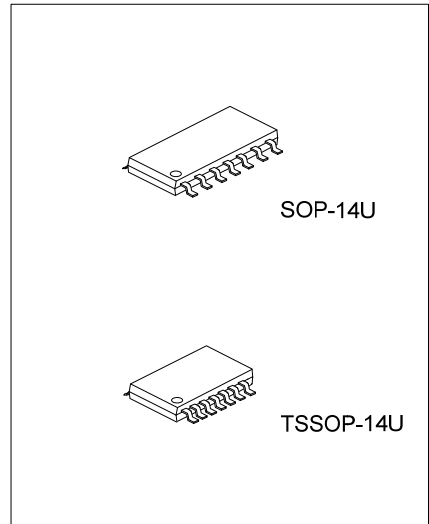
### QUADRUPLE 2-INPUT POSITIVE-OR GATES

#### 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:  $I_{CC}=2.0\mu A(\text{Max.})$

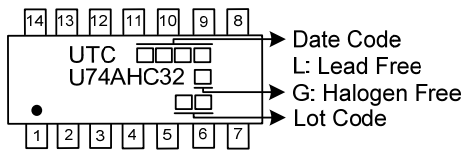


#### ORDERING INFORMATION

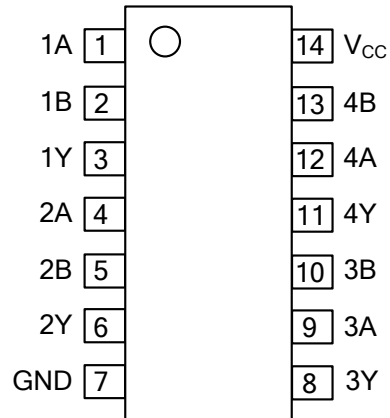
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC32L-UEA-R	U74AHC32G-UEA-R	SOP-14U	Tape Reel
U74AHC32L-UEB-R	U74AHC32G-UEB-R	TSSOP-14U	Tape Reel

<p>U74AHC32G-UEA-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) UEA: SOP-14U, UEB: TSSOP-14U</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
---	--

#### MARKING



## ■ PIN CONFIGURATION

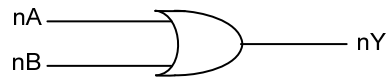


## ■ FUNCTION TABLE

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



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

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
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	SOP-14U	125	°C/W
	TSSOP-14U	150	°C/W

■ RECOMMENDED OPERATING CONDITIONS (Unless otherwise specified)

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
Operating Temperature	$T_A$		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =2.0V	I <sub>OH</sub> =-50μA	1.9	2.0		V
		V <sub>CC</sub> =3.0V		2.9	3.0		V
		V <sub>CC</sub> =4.5V		4.4	4.5		V
		V <sub>CC</sub> =3.0V	I <sub>OH</sub> =-4mA	2.58			V
		V <sub>CC</sub> =4.5V	I <sub>OH</sub> =-8mA	3.94			V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =2.0V	I <sub>OL</sub> =50μA			0.1	V
		V <sub>CC</sub> =3.0V				0.1	V
		V <sub>CC</sub> =4.5V				0.1	V
		V <sub>CC</sub> =3.0V	I <sub>OL</sub> =4mA			0.36	V
		V <sub>CC</sub> =4.5V	I <sub>OL</sub> =8mA			0.36	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =0 to 5.5V, V <sub>IN</sub> =5.5V or GND			±0.1	μA	
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>OUT</sub> =0			2	μA	
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> =5.0V, V <sub>IN</sub> =V <sub>CC</sub> or GND		2	10	pF	

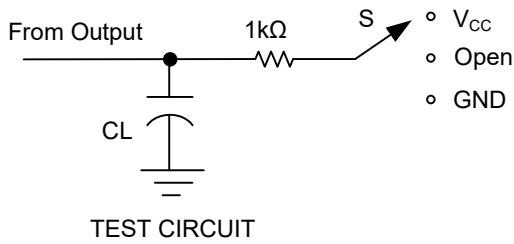
■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A or B) to output(Y)	t <sub>PLH</sub> / t <sub>PHL</sub>	V <sub>CC</sub> =3.3V±0.3V	C <sub>L</sub> =15 pF		5.5	7.9	ns
			C <sub>L</sub> =50 pF		8	11.4	ns
		V <sub>CC</sub> =5.0V±0.5V	C <sub>L</sub> =15 pF		3.8	5.5	ns
			C <sub>L</sub> =50 pF		5.3	7.5	ns

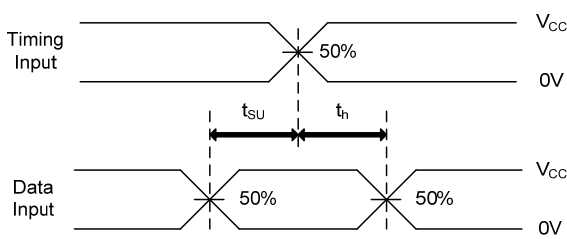
■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	No load, f=1MHz, V <sub>CC</sub> =5V		14		pF

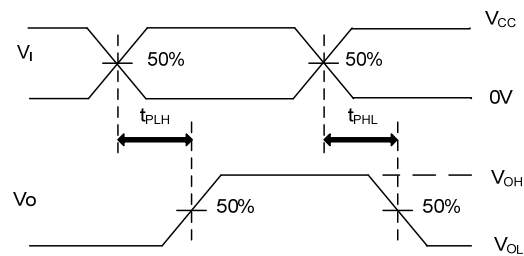
## ■ TEST CIRCUIT AND WAVEFORMS



TEST	S
t <sub>PLH</sub> /t <sub>PHL</sub>	Open
t <sub>PHZ</sub> /t <sub>PZH</sub>	GND
t <sub>PLZ</sub> /t <sub>PZL</sub>	V <sub>CC</sub>



SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES

Note: C<sub>L</sub> includes probe and jig capacitance.  
 PRR ≤ 1MHz, Z<sub>O</sub> = 50Ω, t<sub>R</sub> ≤ 3ns, t<sub>F</sub> ≤ 3ns.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.