



U74AHC32

CMOS IC

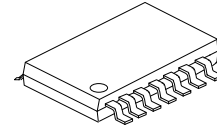
QUADRUPLE 2-INPUT POSITIVE-OR GATES

■ 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 tpd of 7.5ns at 5 V
- * Low power dissipation: $I_{CC}=2\mu A(\text{Max})$ at $T_a=25^\circ\text{C}$
- * Halogen Free



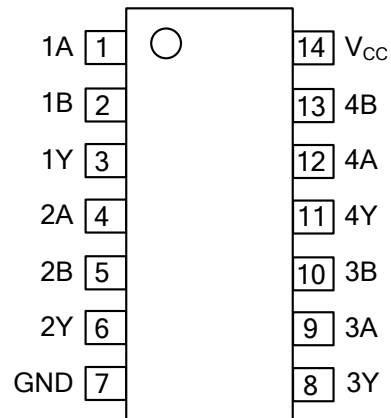
TSSOP-14

■ ORDERING INFORMATION

Ordering Number	Package	Packing
U74AHC32G-P14-R	TSSOP-14	Tape Reel

U74AHC02G-P14-R	(1) Packing Type (2) Package Type (3) Halogen Free	(1) R: Tape Reel (2) P14: TSSOP-14 (3) G: Halogen Free
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PIN CONFIGURATION

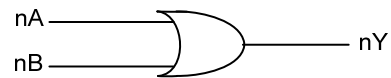


FUNCTION TABLE

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

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	θ_{JA}	113	°C/W

■ 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 (Ta=25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
High-Level Output Voltage	V _{OH}	I _{OH} =-50μA	V _{CC} =2.0V	1.9	2.0		V
			V _{CC} =3.0V	2.9	3.0		V
			V _{CC} =4.5V	4.4	4.5		V
		I _{OH} =-4mA	V _{CC} =3.0V	2.58			V
		I _{OH} =-8mA	V _{CC} =4.5V	3.94			V
Low-Level Output Voltage	V _{OL}	I _{OL} =50μA	V _{CC} =2.0V			0.1	V
			V _{CC} =3.0V			0.1	V
			V _{CC} =4.5V			0.1	V
		I _{OL} =4mA	V _{CC} =3.0V			0.36	V
		I _{OL} =8mA	V _{CC} =4.5V			0.36	V
Input Leakage Current	I _{I(LEAK)}	V _{IN} =5.5V 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} =5.5V			2	μA
Input Capacitance	C _{IN}	V _{IN} =V _{CC} or GND	V _{CC} =5.0V		2	10	pF

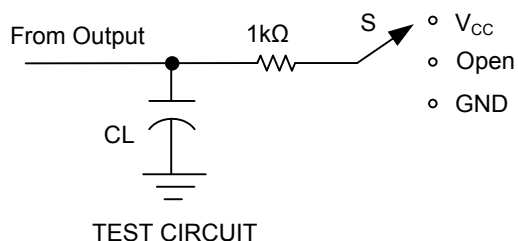
■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

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

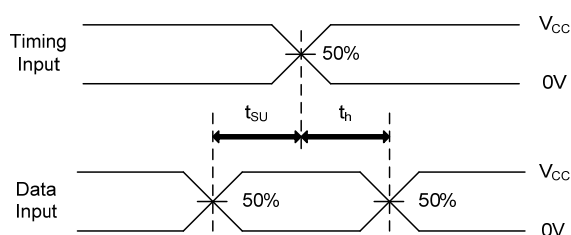
■ OPERATING CHARACTERISTICS (T_a=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{pd}	No load, f=1MHz, V _{CC} =5V		14		pF

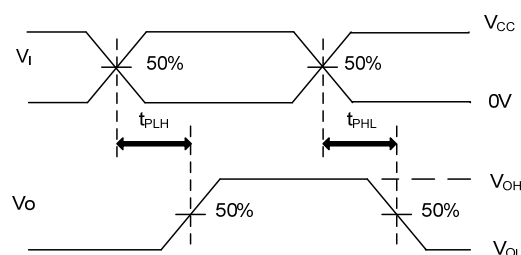
■ TEST CIRCUIT AND WAVEFORMS



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: CL includes probe and jig capacitance.
 $PRR \leq 1\text{MHz}$, $Z_O = 50\Omega$, $t_r \leq 3\text{ns}$, $t_f \leq 3\text{ns}$.

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