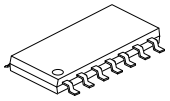
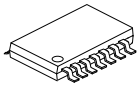
U74AHC32

CMOS IC

QUADRUPLE 2-INPUT POSITIVE-OR GATES



SOP-14



TSSOP-14

■ DESCRIPTION

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

■ FEATURES

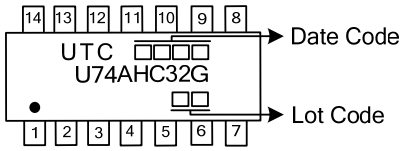
* Operate from 2V to 5.5V
* Max t_{PD} of 7.5ns at 5 V
* Low Power Dissipation: I_{CC}=2μA(Max) at Ta=25°C
* Halogen Free

■ ORDERING INFORMATION

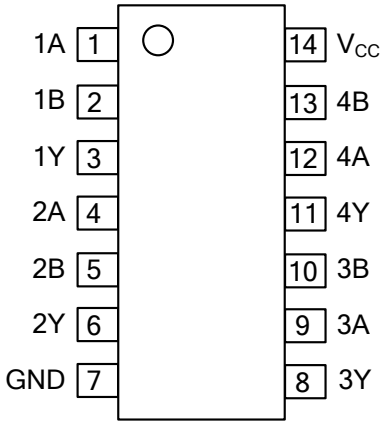
Ordering Number	Package	Packing
U74AHC32G-S14-R	SOP-14	Tape Reel
U74AHC32G-P14-R	TSSOP-14	Tape Reel

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

■ MARKING



■ PIN CONFIGURATION

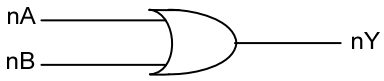


■ FUNCTION TABLE

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

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	θ_{JA}	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±0.3V			-4	mA
		V_{CC}=5V±0.5V			-8	mA
Low-Level Output Current	I_{OL}	V_{CC}=2V			50	μA
		V_{CC}=3.3V±0.3V			4	mA
		V_{CC}=5V±0.5V			8	mA
Input Rise or Fall Times	$\frac{\Delta t}{\Delta V}$	V_{CC}=3.3V±0.3V			100	ns/V
		V_{CC}=5V±0.5V			20	ns/V

■ ELECTRICAL CHARACTERISTICS (T_A=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

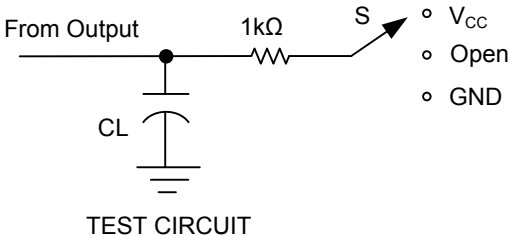
■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

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)

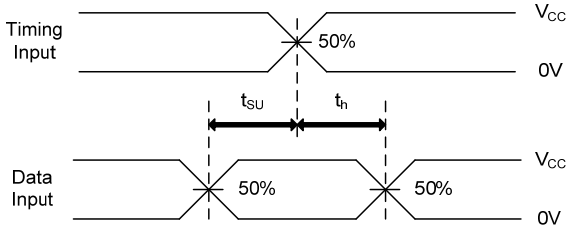
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, f=1MHz, V_{CC}=5V		14		pF

■ TEST CIRCUIT AND WAVEFORMS

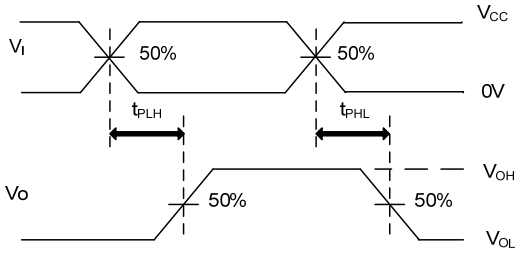


TEST CIRCUIT

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.