



## U74ACT32

CMOS IC

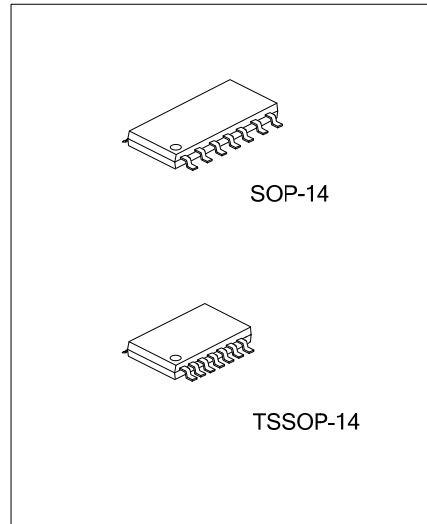
### QUADRUPLE 2-INPUT POSITIVE-OR GATES

#### DESCRIPTION

The **U74ACT32** is an advanced high-speed CMOS QUAD 2-INPUT OR GATES. Each Gate perform the Boolean function  $Y=A+B$  or  $Y = \overline{A} \cdot \overline{B}$ .

#### FEATURES

- \* Operation Voltage Range: 4.5~5.5V
- \* Low Power Dissipation:  $I_{CC}=2\mu A$  (Max.)
- \* High Noise Immunity
- \* Compatible With TTL Output

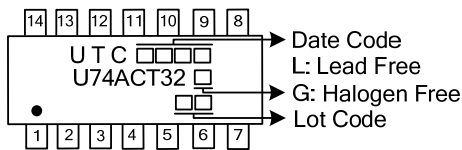


#### ORDERING INFORMATION

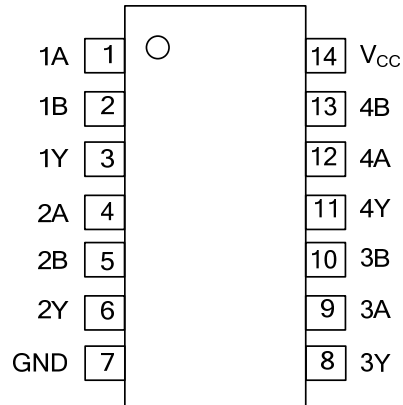
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT32L-S14-R	U74ACT32G-S14-R	SOP-14	Tape Reel
U74ACT32L-P14-R	U74ACT32G-P14-R	TSSOP-14	Tape Reel

<p>U74ACT32G-S14-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



## ■ PIN CONFIGURATION

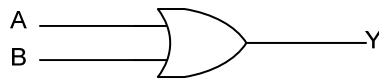


## ■ FUNCTION TABLE

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

H = High voltage level ; L = Low voltage level ; X = Don't care

## ■ LOGIC DIAGRAM (each gate)



■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ 7.0	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Input Clamp Current (V <sub>IN</sub> < 0 or V <sub>IN</sub> > V <sub>CC</sub> )	I <sub>IK</sub>	±20	mA
Output Clamp Current (V <sub>OUT</sub> < 0 or V <sub>OUT</sub> > V <sub>CC</sub> )	I <sub>OK</sub>	±20	mA
Output Current (V <sub>OUT</sub> =0V ~ V <sub>CC</sub> )	I <sub>OUT</sub>	±50	mA
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±200	mA
Storage Temperature	T <sub>STG</sub>	-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 (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	4.5 ~ 5.5	V
Input Voltage	V <sub>IN</sub>	0 ~ V <sub>CC</sub>	V
Output Voltage	V <sub>OUT</sub>	0 ~ V <sub>CC</sub>	V
Input Transition Rise or Fall Rate	Δt/Δv	8	ns/V
Operating Temperature	T <sub>A</sub>	-40 ~ +125	°C

Note: All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation.

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =4.5~5.5V	2			V	
Low Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =4.5~5.5V			0.8	V	
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V	I <sub>OH</sub> =-24mA	3.86		V	
			I <sub>OH</sub> =-50μA	4.4		V	
		V <sub>CC</sub> =5.5V	I <sub>OH</sub> =-24mA	4.86		V	
			I <sub>OH</sub> =-50μA	5.4		V	
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5V	I <sub>OL</sub> =24mA		0.36	V	
			I <sub>OL</sub> =50μA		0.001	0.1	V
		V <sub>CC</sub> =5.5V	I <sub>OL</sub> =24mA			3.6	V
			I <sub>OL</sub> =50μA		0.001	0.1	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> 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> =0A			2	μA	
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>Q</sub>	V <sub>CC</sub> =5.5V, One input at 3.4V, Other inputs at V <sub>CC</sub> or GND		0.6		mA	
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> = 5V, V <sub>IN</sub> = V <sub>CC</sub> or GND		2.6		pF	

■ SWITCHING CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

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> =5V±0.5V, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	1.0	6.5	9.0	ns

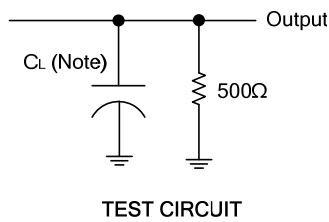
■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>CC</sub> =5.0V, C <sub>L</sub> =50pF, f=10MHz,		40		pF

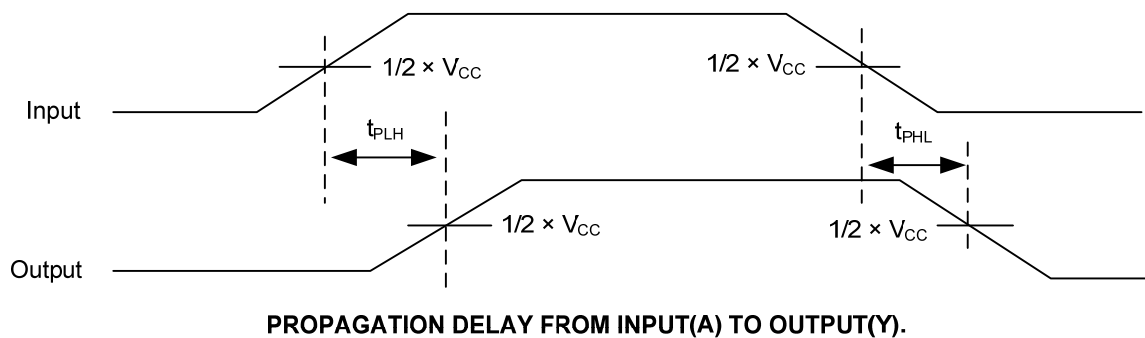
Notes: 1. C<sub>PD</sub> is used to determine the dynamic power consumption, per inverter.

2. P<sub>D</sub> = V<sub>CC</sub><sup>2</sup> f<sub>i</sub> (C<sub>PD</sub> + C<sub>L</sub>) where f<sub>i</sub> = Input Frequency, C<sub>L</sub> = Output Load Capacitance, V<sub>CC</sub> = Supply Voltage.

■ TEST CIRCUIT AND WAVEFORMS



Note :  $C_L$  includes probe and jig capacitance.



- Notes: 1.  $C_L$  includes probe and jig capacitance.  
 2. All input pulses are supplied by generators having the following characteristics: PRR  $\leq 1$ MHz,  $Z_O = 50\Omega$ .

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