



## U74AHCT08

CMOS IC

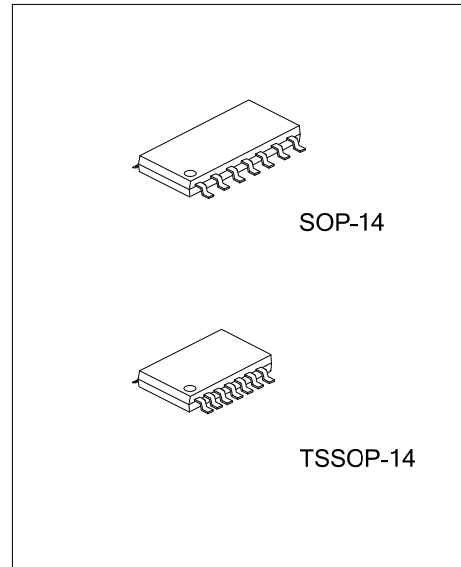
### QUADRUPLE 2-INPUT POSITIVE-AND GATE

#### DESCRIPTION

The **U74AHCT08** is a quadruple 2-input AND gate which performs the function  $Y=A \times B$  or  $Y=\overline{\overline{A} + \overline{B}}$ .

#### FEATURES

- \* Low Power Dissipation:  $I_{CC} = 2.0 \mu A$  (Max.)
- \* High Speed:  $t_{PD} = 5ns$  (Typ.)
- \* High Noise Immunity

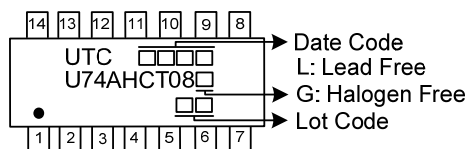


#### ORDERING INFORMATION

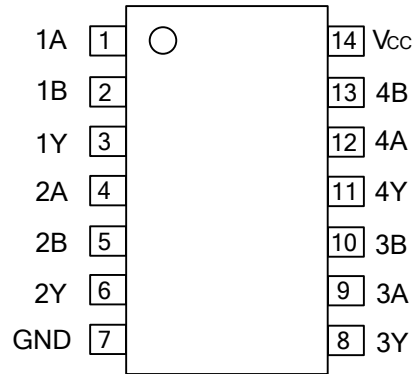
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT08L-S14-R	U74AHCT08G-S14-R	SOP-14	Tape Reel
U74AHCT08L-P14-R	U74AHCT08G-P14-R	TSSOP-14	Tape Reel

<p>U74AHCT08G-S14-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) S14: SOP-14, P14: TSSOP-14</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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#### MARKING



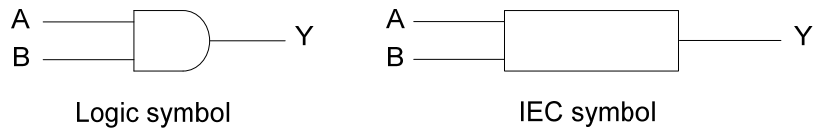
■ PIN CONFIGURATION



■ FUNCTION TABLE (Each Gate)

INPUTS		OUTPUT
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ LOGIC DIAGRAM (Positive Logic)



■ 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	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ 7	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Input Clamp Current	I <sub>IK</sub>	-20	mA
Output Clamp Current	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±25	mA
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±50	mA
Storage Temperature	T <sub>STG</sub>	-65 ~ +150	°C

Notes: 1. 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.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V <sub>CC</sub>		4.5		5.5	V
Input Voltage	V <sub>IN</sub>		0		5.5	V
Output Voltage	V <sub>OUT</sub>		0		V <sub>CC</sub>	V
Input Transition Rise or Fall Rate	Δt/ΔV	V <sub>CC</sub> =5.0+0.5V			20	ns/V
Operating Temperature	T <sub>A</sub>		-40		+125	°C

■ STATIC 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> = 4.5~5.5 V	2.0			V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> = 4.5~5.5 V			0.8	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> = 4.5V, I <sub>OH</sub> = -50 μA	4.4	4.5		V
		V <sub>CC</sub> = 4.5V, I <sub>OH</sub> = -8 mA	3.94			
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> = 4.5V, I <sub>OL</sub> = 50μA			0.1	V
		V <sub>CC</sub> = 4.5V, I <sub>OL</sub> = 8 mA			0.36	
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> = 0			2	μA
Additional quiescent Supply Current	ΔI <sub>Q</sub>	V <sub>CC</sub> = 5.5V, V <sub>IN</sub> = 3.4V; other input at V <sub>CC</sub> or GND; I <sub>OUT</sub> =0			1.35	mA
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> = 5V, V <sub>IN</sub> = V <sub>CC</sub> or GND		4	10	pF

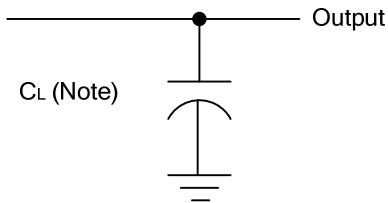
■ DYNAMIC CHARACTERISTICS (t<sub>R</sub>, t<sub>F</sub> ≤ 3 ns;)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A and B) to output (Y)	t <sub>PLH</sub>	V <sub>CC</sub> = 5±0.5 V, C <sub>L</sub> = 15 pF		5	6.9	ns
	t <sub>PHL</sub>			5	6.9	
	t <sub>PLH</sub>	V <sub>CC</sub> = 5±0.5 V, C <sub>L</sub> = 50 pF		5.5	7.9	
	t <sub>PHL</sub>			5.5	7.9	

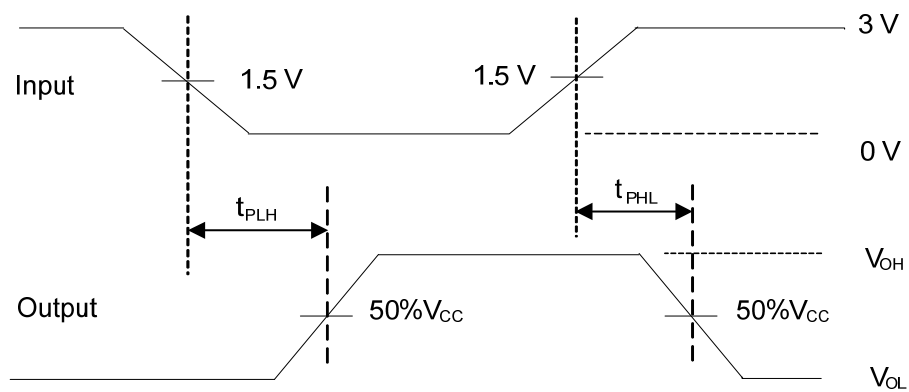
■ OPERATING CHARACTERISTICS (V<sub>CC</sub> = 5V; T<sub>A</sub>=25°C, unless otherwise specified))

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	No load, f=1MHz	18	pF

■ TEST CIRCUIT AND WAVEFORMS



Note : CL includes probe and jig capacitance.



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