



U74AHC08

CMOS IC

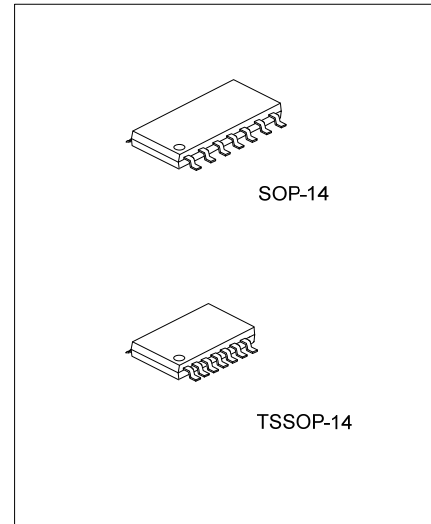
QUADRUPL 2-INPUT POSITIVE-AND GATES

■ DESCRIPTION

The **U74AHC08** is QUADRUPL 2-INPUT POSITIVE-AND GATES. Which provides the Function $Y=A*B$.

■ FEATURES

- * Operation voltage range: 2~5.5V
- * Max t_{PD} of 7.9 ns at 5 V
- * Low power consumption, $I_{CC}=2\mu A$ (Max)
- * $\pm 8mA$ output drive at 5 V

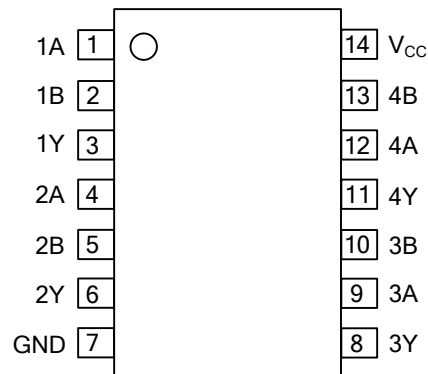


■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC08L-S14-R	U74AHC08G-S14-R	SOP-14	Tape Reel
U74AHC08L-P14-R	U74AHC08G-P14-R	TSSOP-14	Tape Reel

U74AHC08G-S14-R	(1)Packing Type (2)Package Type (3)Halogen Free	(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) L: Lead Free, G:Halogen Free
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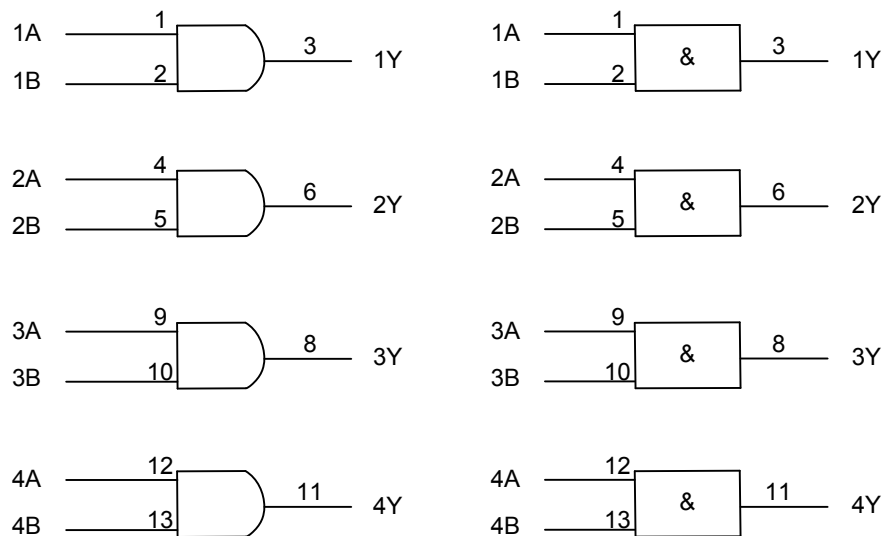
PIN CONFIGURATION



FUNCTION TABLE (Each Gate)

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

LOGIC DIAGRAM (Positive Logic)



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
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Output Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	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.

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R, t_F	$V_{CC}=3.3\pm0.3V$			100	ns/V
		$V_{CC}=5.0\pm0.5V$			20	
Ambient Operating Temperature	T_{OPR}		-40		85	°C

STATIC CHARACTERISTICS ($T_A=25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			
		$V_{CC}=5.5V$	3.85			
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	
		$V_{CC}=5.5V$			1.65	
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V$	1.9	2.0		V
		$V_{CC}=3.0V$	2.9	3.0		
		$V_{CC}=4.5V$	4.4	4.5		
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			
Low-Level Output Voltage	V_{OL}	$V_{CC}=2.0V$			0.1	V
		$V_{CC}=3.0V$			0.1	
		$V_{CC}=4.5V$			0.1	
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36	
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim5.5V, V_{IN}=5.5$ or GND			±0.1	μA
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			2	μA
Input Capacitance	C_{IN}	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		4	10	pF

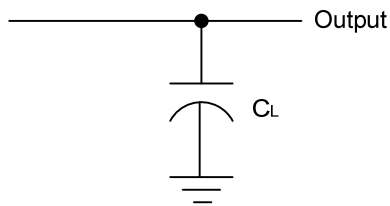
■ DYNAMIC CHARACTERISTICS (Input: $t_R, t_F \leq 3\text{ns}$; $\text{PRR} \leq 1\text{MHz}$)

PARAMETER	SYMBOL	$V_{CC}(\text{V})$	MIN	TYP	MAX	UNIT
Propagation Delay from Input (A and B) to Output(Y)	t_{PLH}	$V_{CC}=3.3 \pm 0.3\text{V}, C_L=15\text{pF}$		6.2	8.8	ns
	t_{PHL}			6.2	8.8	
	t_{PLH}	$V_{CC}=3.3 \pm 0.3\text{V}, C_L=50\text{pF}$		8.7	12.3	
	t_{PHL}			8.7	12.3	
Propagation Delay from Input (A and B) to Output(Y)	t_{PLH}	$V_{CC}=5.0 \pm 0.5\text{V}, C_L=15\text{pF}$		4.3	5.9	ns
	t_{PHL}			4.3	5.9	
	t_{PLH}	$V_{CC}=5.0 \pm 0.5\text{V}, C_L=50\text{pF}$		5.8	7.9	
	t_{PHL}			5.8	7.9	

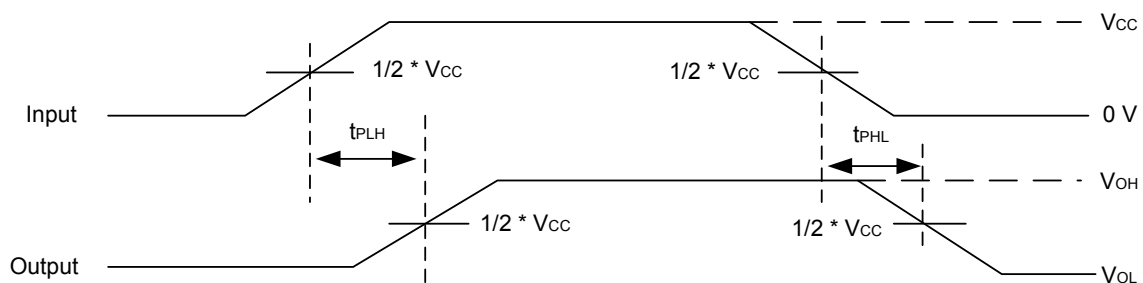
■ OPERATING CHARACTERISTICS ($V_{CC}=5\text{V}$; $T_A=25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, $f=1\text{MHz}$		18		pF

■ TEST CIRCUIT AND WAVEFORMS



C_L includes probe and jig capacitance.



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