



U74AHC08

CMOS IC

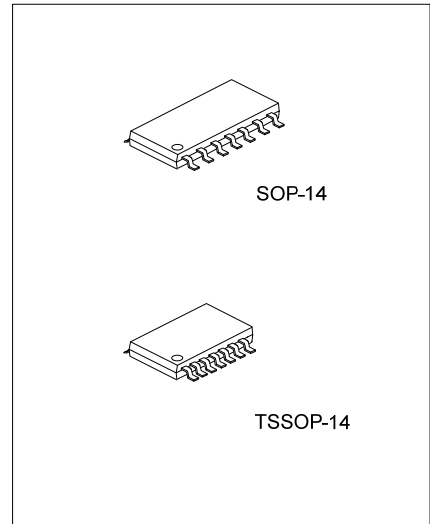
QUADRUPLE 2-INPUT POSITIVE-AND GATES

DESCRIPTION

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

FEATURES

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

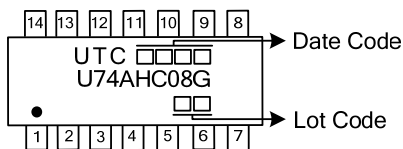


ORDERING INFORMATION

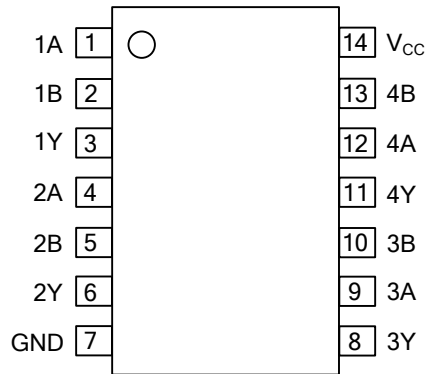
Ordering Number	Package	Packing
U74AHC08G-S14-R	SOP-14	Tape Reel
U74AHC08G-P14-R	TSSOP-14	Tape Reel

<p>U74AHC08G-S14-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S14: SOP-14, P14: TSSOP-14</p> <p>(3) G: Halogen Free and Lead Free</p>
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MARKING



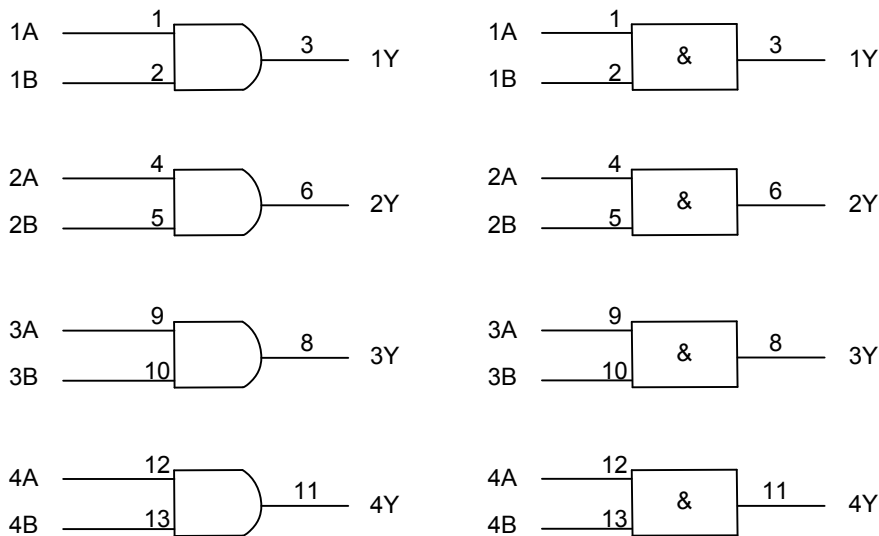
■ PIN CONFIGURATION



■ 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	$V_{CC}=3.3\pm 0.3V$			100	ns/V
		$V_{CC}=5.0\pm 0.5V$			20	
Ambient Operating Temperature	T_{OPR}		-40		85	°C

■ STATIC CHARACTERISTICS ($T_A=25^\circ C$)

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}	$V_{CC}=2.0V$	$I_{OH}=-50\mu A$	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}	$V_{CC}=2.0V$	$I_{OL}=50\mu A$			0.1
		$V_{CC}=3.0V$				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	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=5.5$ 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

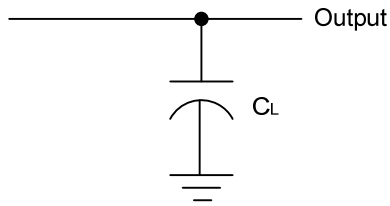
■ DYNAMIC CHARACTERISTICS (Input: $t_R, t_F \leq 3\text{ns}$; $\text{PRR} \leq 1\text{MHz}$)

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

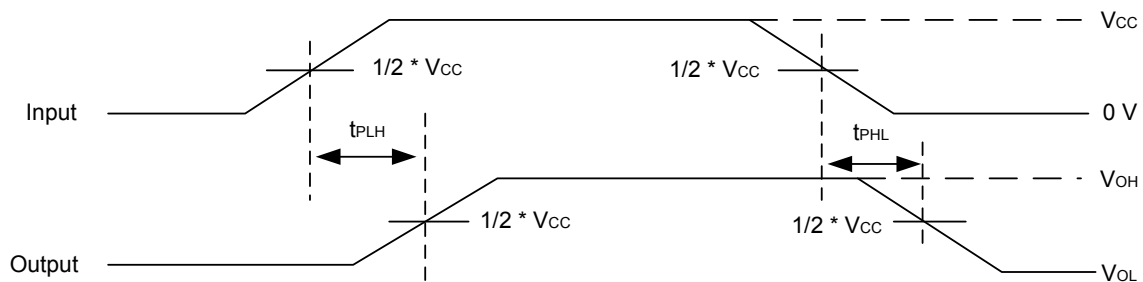
■ OPERATING CHARACTERISTICS ($V_{CC}=5V$; $T_A=25^\circ\text{C}$)

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



CL includes probe and jig capacitance.



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