



U74AHC08A

CMOS IC

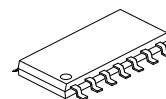
QUADRUPLE 2-INPUT POSITIVE-AND GATES

■ DESCRIPTION

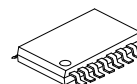
The **U74AHC08A** is QUADRUPLE 2-INPUT POSITIVE-AND GATES. Which provides the Function $Y=A \times B$.

■ FEATURES

- * Operation voltage range: 2V ~ 5.5V
- * Max t_{PD} of 7ns at 5V
- * Low power consumption, $I_{CC} = 2\mu A$ (Max.)
- * $\pm 8mA$ output drive at 4.5V
- * Green & Pb Free



SOP-14U

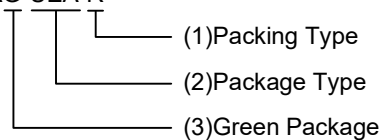


TSSOP-14U

■ ORDERING INFORMATION

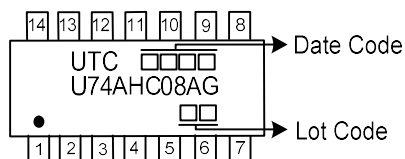
Ordering Number	Package	Packing
U74AHC08AG-UEA-R	SOP-14U	Tape Reel
U74AHC08AG-UEB-R	TSSOP-14U	Tape Reel

U74AHC08AG-UEA-R

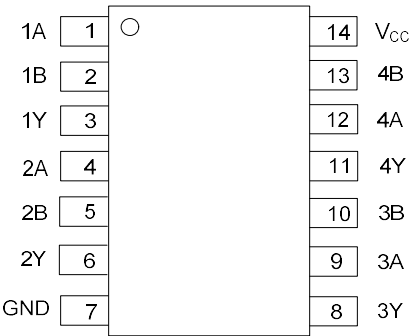


- (1) R: Tape Reel
- (2) UEA: SOP-14U, UEB: TSSOP-14U
- (3) G: Halogen Free and Lead Free

■ MARKING



PIN CONFIGURATION

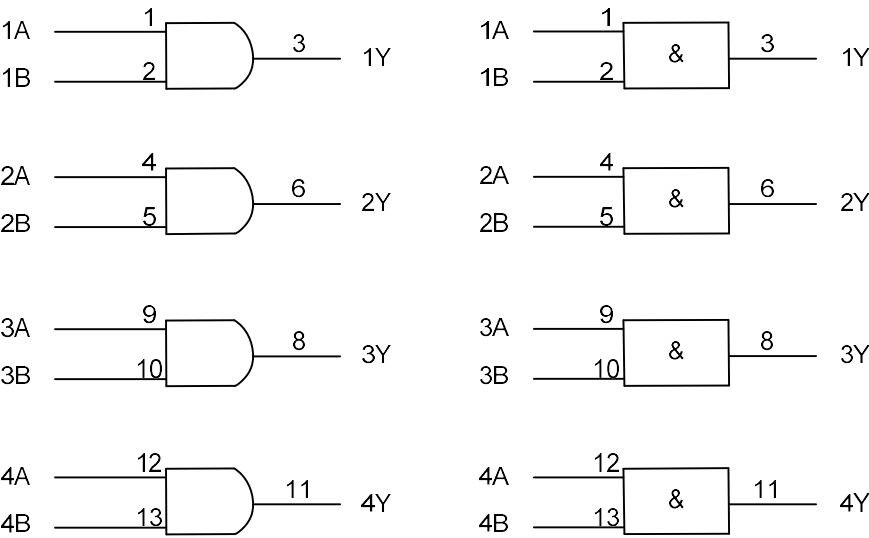


FUNCTION TABLE (Each Gate)

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

Note: H: HIGH voltage level; L: LOW voltage level

LOGIC DIAGRAM (Positive Logic)



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified) (Note 1 ~ 2)

PARAMETER	SYMBOL	CONDITIONS	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}	$V_{IN}<0$	-20	mA
Output Clamp Current	I_{OK}	$V_{OUT}<0$ or $V_{OUT}>V_{CC}$	± 20	mA
Output Current	I_{OUT}	$V_{OUT}=0$ to V_{CC}	± 25	mA
V_{CC} or GND Current	I_{CC}		± 50	mA
Electrostatic Discharge	$V_{(ESD)}$	Human-Body Model (HBM) Per JESD22-A114/115	2000	V
Storage Temperature	T_{STG}		-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. It's guarantee by design, this parameter is not production tested.

■ 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	$\Delta t/\Delta v$	$V_{CC}=3.3V\pm 0.3V$			100	ns/V
		$V_{CC}=5.0V\pm 0.5V$			20	ns/V
Ambient Operating Temperature	T_A		-40		+125	°C

Note: It's guarantee by design, this parameter is not production tested.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-14U	θ_{JA}	125	°C/W
	TSSOP-14U		150	°C/W

■ STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =2.0V	1.5			1.5			V
		V _{CC} =3.0V	2.1			2.1			V
		V _{CC} =5.5V	3.85			3.85			V
Low-Level Input Voltage	V _{IL}	V _{CC} =2.0V			0.5			0.5	V
		V _{CC} =3.0V			0.9			0.9	V
		V _{CC} =5.5V			1.65			1.65	V
High-Level Output Voltage	V _{OH}	V _{CC} =2.0V	1.9			1.9			V
		V _{CC} =3.0V	2.9			2.9			V
		V _{CC} =4.5V	4.4			4.4			V
		V _{CC} =3.0V, I _{OH} =-4mA	2.58			2.4			V
		V _{CC} =4.5V, I _{OH} =-8mA	3.94			3.7			V
Low-Level Output Voltage	V _{OL}	V _{CC} =2.0V			0.1			0.1	V
		V _{CC} =3.0V			0.1			0.1	V
		V _{CC} =4.5V			0.1			0.1	V
		V _{CC} =3.0V, I _{OL} =4mA			0.36			0.55	V
		V _{CC} =4.5V, I _{OL} =8mA			0.36			0.55	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0~5.5V, V _{IN} =5.5 or GND			±0.1			±2	μA
Quiescent Supply Current	I _{CC}	V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			2			40	μA

Note: It's guarantee by design, this parameter is not production tested.

■ DYNAMIC CHARACTERISTICS (Input: t_r, t_f ≤ 3ns, P_{RR} ≤ 1MHz)

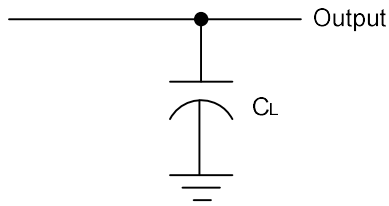
PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay from Input (nA or nB) to Output(nY)	t _{PLH}	V _{CC} =3.3V±0.3V, C _L =15pF			10			13	ns
	t _{PHL}				10			13	ns
	t _{PLH}	V _{CC} =3.3V±0.3V, C _L =50pF			12			15	ns
	t _{PHL}				12			15	ns
Propagation Delay from Input (nA or nB) to Output(nY)	t _{PLH}	V _{CC} =5.0V±0.5V, C _L =15pF			7			10	ns
	t _{PHL}				7			10	ns
	t _{PLH}	V _{CC} =5.0V±0.5V, C _L =50pF			8			11	ns
	t _{PHL}				8			11	ns

Note: It's guarantee by design, this parameter is not production tested.

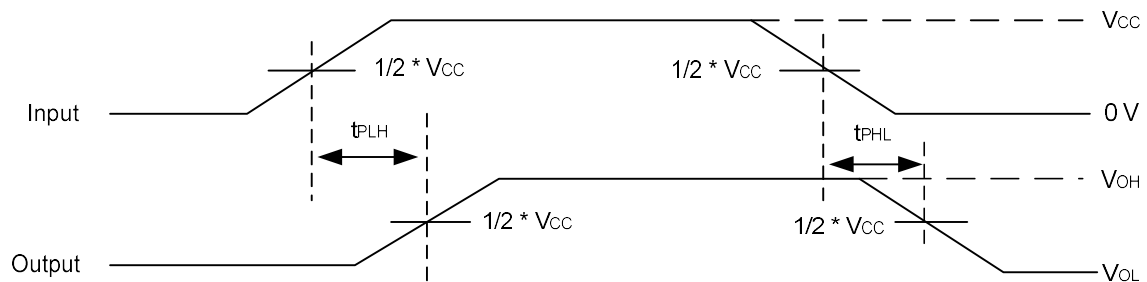
■ OPERATING CHARACTERISTICS (V_{CC}=5V, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C _{IN}	V _{CC} =5.0V, V _{IN} =V _{CC} or GND			10	pF
Power Dissipation Capacitance	C _{PD}	No load, f=1MHz		18		pF

■ TEST CIRCUIT AND WAVEFORMS



CL includes probe and jig capacitance.



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