



U74AHC1G08

CMOS IC

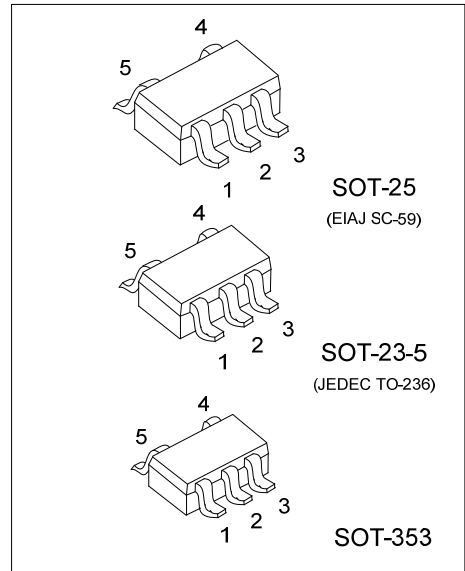
2-INPUT AND GATE

DESCRIPTION

The UTC **U74AHC1G08** is a high-speed si-gate CMOS device which provides the 2-input AND function.

FEATURES

- * Operation Voltage Range: 2 ~ 5.5V
- * Low Power Current: $I_{CC}=40\mu A$ (Max.)
- * High speed: $t_{PD}=4.8ns$ (Typ.) @ $V_{CC}=5V$

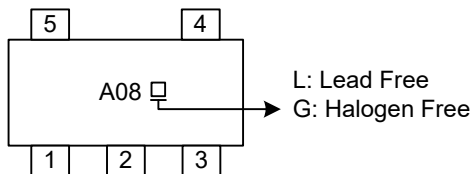


ORDERING INFORMATION

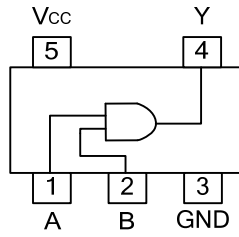
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC1G08L-AE5-R	U74AHC1G08G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G08L-AF5-R	U74AHC1G08G-AF5-R	SOT-25	Tape Reel
U74AHC1G08L-AL5-R	U74AHC1G08G-AL5-R	SOT-353	Tape Reel

<p>U74AHC1G08G-AE5-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



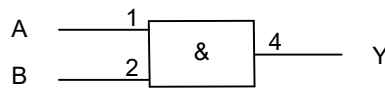
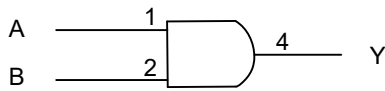
■ PIN CONFIGURATION



■ 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)



IEC logic symbol

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

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
Power Dissipation	P _D	250	mW
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 Times	t _r , t _f	V _{CC} =3.3V±0.3V			100	ns/V
		V _{CC} =5.0V±0.5V			20	
Operating Temperature	T _{OPR}		-40		125	°C

■ STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+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, I _{OH} =-50μA	1.9	2.0		1.9			V
		V _{CC} =3.0V, I _{OH} =-50μA	2.9	3.0		2.9			V
		V _{CC} =4.5V, I _{OH} =-50μA	4.4	4.5		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, I _{OL} =50μA			0.1			0.1	V
		V _{CC} =3.0V, I _{OL} =50μA			0.1			0.1	V
		V _{CC} =4.5V, I _{OL} =50μA			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} =V _{CC} or GND			±0.1			±2	μA
Quiescent Supply Current	I _Q	V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			1			40	μA

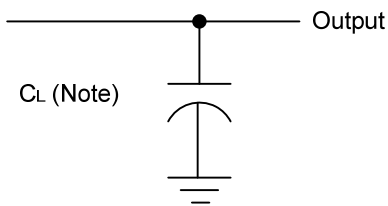
■ DYNAMIC CHARACTERISTICS (Input: $t_R, t_F \leq 3\text{ns}$; $P_{RR} \leq 1\text{MHz}$)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^\circ\text{C}$			$T_A=-40\sim+125^\circ\text{C}$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	$V_{CC}=3.3V \pm 0.3V, C_L=15\text{pF}$		6.7	9.8	1		12	ns
	t_{PHL}			6.7	9.8	1		12	ns
	t_{PLH}	$V_{CC}=3.3V \pm 0.3V, C_L=50\text{pF}$		9.2	13.3	1		16	ns
	t_{PHL}			9.2	13.3	1		16	ns
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	$V_{CC}=5V \pm 0.5V, C_L=15\text{pF}$		4.8	6.9	1		8	ns
	t_{PHL}			4.8	6.9	1		8	ns
	t_{PLH}	$V_{CC}=5V \pm 0.5V, C_L=50\text{pF}$		6.3	8.9	1		10.5	ns
	t_{PHL}			6.3	8.9	1		10.5	ns

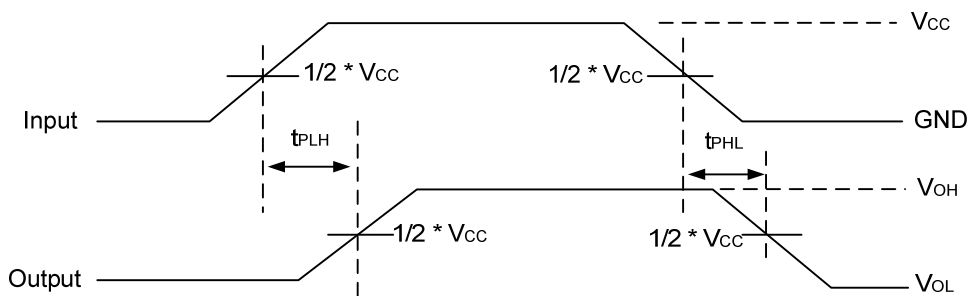
■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF
Power Dissipation Capacitance	C_{PD}	No load, $V_{CC}=5V, f=1\text{MHz}$		18		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: CL includes probe and jig capacitance.



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