



U74HC08

CMOS IC

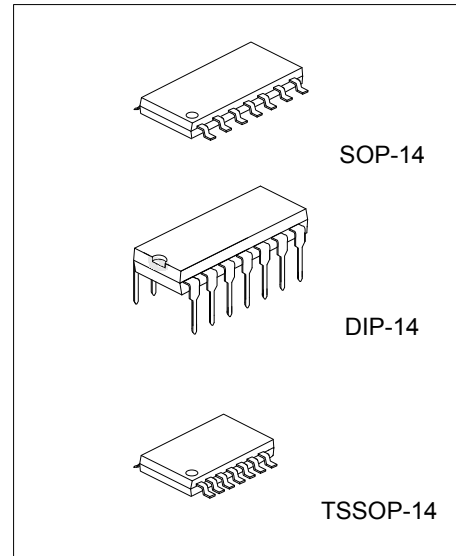
QUAD 2-INPUT AND GATES

DESCRIPTION

The **U74HC08** contains four independent 2-input AND gates, perform the Boolean function $Y = A \cdot B$ or $Y = \overline{A + B}$ in positive logic.

FEATURES

- * Operation Voltage Range: 2~6V
- * Low Quiescent Current: $I_{CC}=2\mu A$ (Max)
- * High Speed: $t_{PD}=8ns$ (Typ)
- * Low Input Current: 100nA (Max)

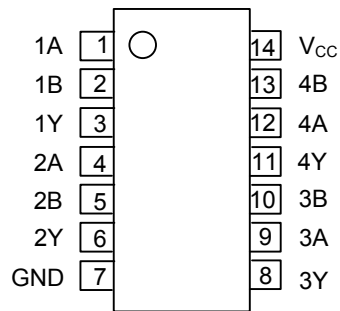


ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC08L-S14-R	U74HC08G-S14-R	SOP-14	Tape Reel
U74HC08L-S14-T	U74HC08G-S14-T	SOP-14	Tube
U74HC08L-D14-T	U74HC08G-D14-T	DIP-14	Tube
U74HC08L-P14-R	U74HC08G-P14-R	TSSOP-14	Tape Reel
U74HC08L-P14-T	U74HC08G-P14-T	TSSOP-14	Tube

<p>U74HC08L-P14-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) P14: TSSOP-14, S14: SOP-14, D14: DIP-14 (3) G: Halogen Free, L: Lead Free</p>
---	--

■ PIN CONFIGURATION



■ FUNCTION TABLE (Each Gate)

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

■ LOGIC DIAGRAM (Positive Logic)



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~7	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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	SOP-14	86	°C/W
	DIP-14	80	
	TSSOP-14	113	

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2		6	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R, t_F	$V_{CC}=2V$			1000	ns
		$V_{CC}=4.5V$			500	
		$V_{CC}=6V$			400	
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}	$V_{CC} = 2V$	1.5			V
		$V_{CC} = 4.5V$	3.15			
		$V_{CC} = 6V$	4.2			
Low-Level Input Voltage	V_{IL}	$V_{CC} = 2V$			0.5	V
		$V_{CC} = 4.5V$			1.35	
		$V_{CC} = 6V$			1.8	
High-Level Output Voltage	V_{OH}	$V_{CC} = 2V, I_{OH} = 20\mu A$	1.9	1.998		V
		$V_{CC} = 4.5V, I_{OH} = 20\mu A$	4.4	4.999		
		$V_{CC} = 6V, I_{OH} = 20\mu A$	5.9	5.999		
		$V_{CC} = 4.5V, I_{OH} = 4mA$	3.98	4.3		
		$V_{CC} = 6V, I_{OH} = 5.2mA$	5.48	5.8		
Low-Level Output Voltage	V_{OL}	$V_{CC} = 2V, I_{OL} = 20\mu A$		0.002	0.1	V
		$V_{CC} = 4.5V, I_{OL} = 20\mu A$		0.001	0.1	
		$V_{CC} = 6V, I_{OL} = 20\mu A$		0.001	0.1	
		$V_{CC} = 4.5V, I_{OL} = 4mA$		0.17	0.26	
		$V_{CC} = 6V, I_{OL} = 5.2mA$		0.15	0.26	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC} = 6V, V_{IN} = V_{CC}$ or GND		±0.1	±100	nA
Quiescent Supply Current	I_Q	$V_{CC} = 6V, V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$			2	µA
Input Capacitance	C_{IN}	$V_{CC} = 2V \sim 6V$		3	10	pF

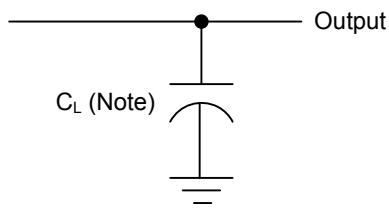
■ DYNAMIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, Input: $t_R=t_F=6\text{ns}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	t_{PLH}, t_{PHL}	$V_{CC}=2\text{V}, C_L=50\text{pF}$		50	100	ns
		$V_{CC}=4.5\text{V}, C_L=50\text{pF}$		10	20	
		$V_{CC}=6\text{V}, C_L=50\text{pF}$		8	17	
Output Transition Time	t_T	$V_{CC}=2\text{V}$		38	75	ns
		$V_{CC}=4.5\text{V}$		8	15	
		$V_{CC}=6\text{V}$		6	13	

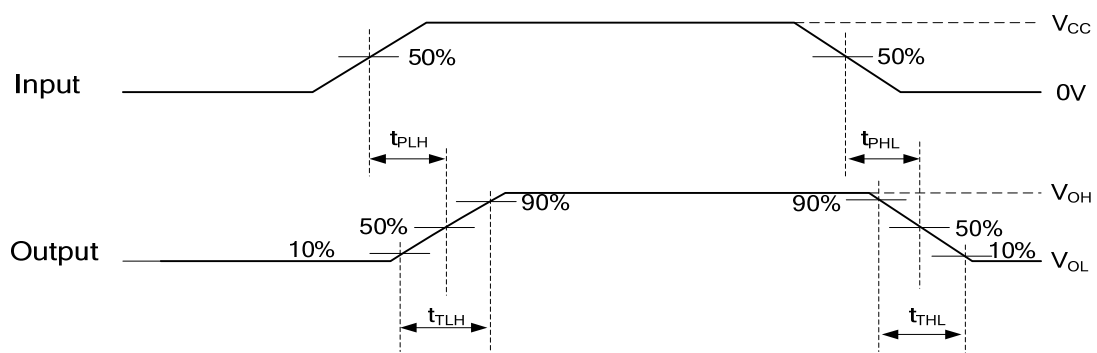
■ OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	RATINGS	UNIT
Power Dissipation Capacitance	C_{PD}	No Load	20	pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.