



## U74AHCT1G08

CMOS IC

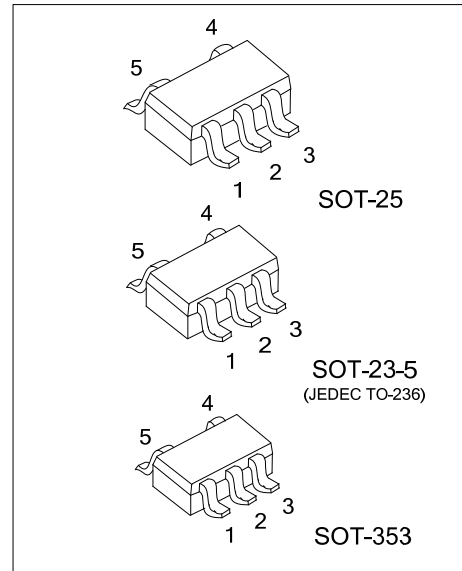
### 2-INPUT AND GATE

#### DESCRIPTION

The U74AHCT1G08 is a 2-input AND gate which provides the Function  $Y=A \times B$

#### FEATURES

- \* Operation voltage range: 4.5V ~5.5V
- \* Low Power Current:  $I_{CC}=1\mu A$  (Max.)
- \*  $\pm 8mA$  Output Drive at 5V
- \* Inputs are TTL-Voltage Compatible

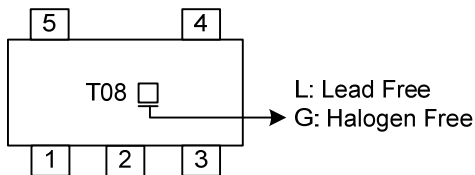


#### ORDERING INFORMATION

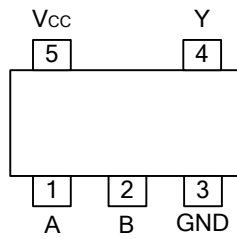
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G08L-AE5-R	U74AHCT1G08G-AE5-R	SOT-23-5	Tape Reel
U74AHCT1G08L-AF5-R	U74AHCT1G08G-AF5-R	SOT-25	Tape Reel
U74AHCT1G08L-AL5-R	U74AHCT1G08G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G08G-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



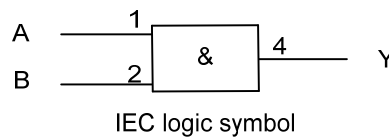
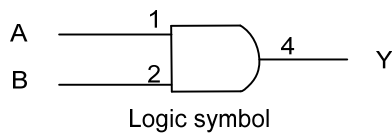
■ PIN CONFIGURATION



■ FUNCTION TABLE (Each Gate)

INPUT		OUTPUT
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ LOGIC DIAGRAM (Positive Logic)



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### ■ ABSOLUTE MAXIMUM RATINGS

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	$V_{CC}$		4.5		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	$\Delta t/\Delta V$	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	$T_A$		-40		125	°C

### ■ STATIC CHARACTERISTICS ( $T_A=25^\circ C$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Input Voltage	$V_{IH}$	$V_{CC}=4.5V\sim 5.5V$	2.0			V	
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=4.5V\sim 5.5V$			0.8	V	
High-Level Output Voltage	$V_{OH}$	$V_{CC}=4.5V$	$I_{OH}=-50\mu A$	4.4	4.5	V	
			$I_{OH}=-8mA$	3.94		V	
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=4.5V$	$I_{OL}=50\mu A$			0.1	V
			$I_{OL}=8mA$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND			±0.1	μA	
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	μA	
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=5.5V, V_{IN}=3.4V$ ; other input at $V_{CC}$ or GND; $I_{OUT}=0$			1.35	mA	
Input Capacitance	$C_{IN}$	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF	

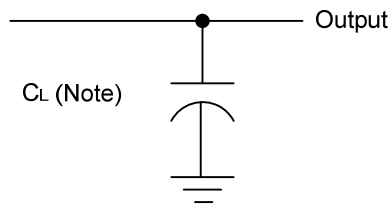
### ■ DYNAMIC CHARACTERISTICS ( $t_R, t_F \leq 3ns$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A and B) to output(Y)	$t_{PLH}$	$V_{CC}=5V\pm 0.5V, C_L=15pF$		5	6.9	ns
	$t_{PHL}$			5	6.9	ns
	$t_{PLH}$	$V_{CC}=5V\pm 0.5V, C_L=50pF$		5.5	7.9	ns
	$t_{PHL}$			5.5	7.9	ns

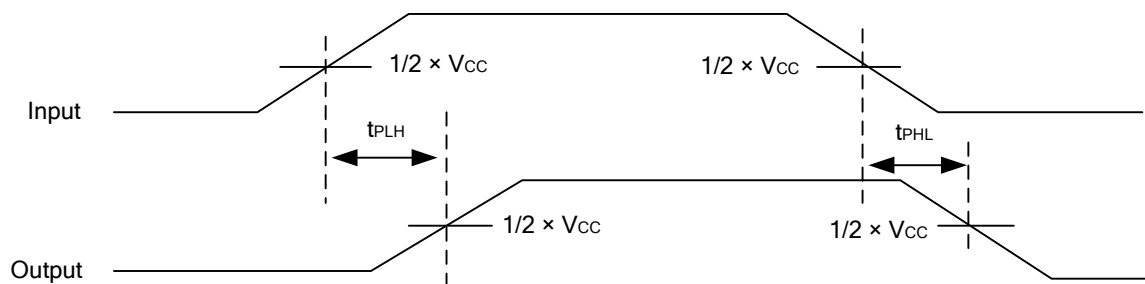
### ■ OPERATING CHARACTERISTICS ( $V_{CC}=5V, T_A=25^\circ C$ , unless otherwise specified)

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

■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.



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