



U74AHCT1G08

CMOS IC

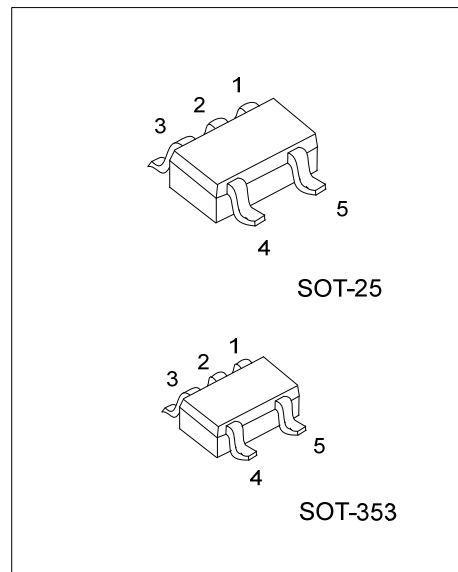
2-INPUT AND GATE

DESCRIPTION

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

FEATURES

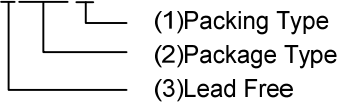
- * Low Power Dissipation: $I_{CC}=1.0\mu A(\text{Max})$
- * High Speed: $t_{PD}=5\text{ns}(\text{Typ})$
- * High Noise Immunity



ORDERING INFORMATION

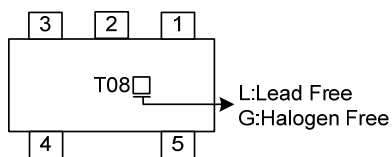
Ordering Number		Package	Packing
Lead Free Plating	Halogen Free		
U74AHCT1G08L-AF5-R	U74AHCT1G08G-AF5-R	SOT-25	Tape Reel
U74AHCT1G08L-AL5-R	U74AHCT1G08G-AL5-R	SOT-353	Tape Reel

U74AHCT1G08L-AF5-R

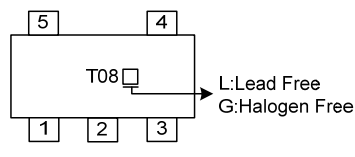


- (1) R: Tape Reel
- (2) AF5: SOT-25, AL5: SOT-353
- (3) L: Lead Free, G: Halogen Free

MARKING

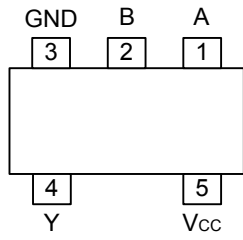


SOT-25



SOT-353

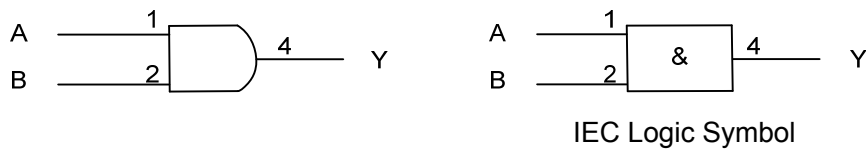
■ PIN CONFIGURATION



■ 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)



■ 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	t_R, t_F	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	T_A		-40		85	°C

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

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
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			V
Low-Level Output Voltage	V_{OL}	$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OL}=8mA$			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	ΔI_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

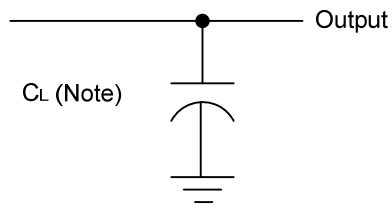
■ DYNAMIC CHARACTERISTICS ($t_R, t_F \leq 3ns$;))

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}	$V_{CC}=5V \pm 0.5V, C_L=50 pF$		5.5	7.9	ns
	t_{PHL}			5.5	7.9	ns

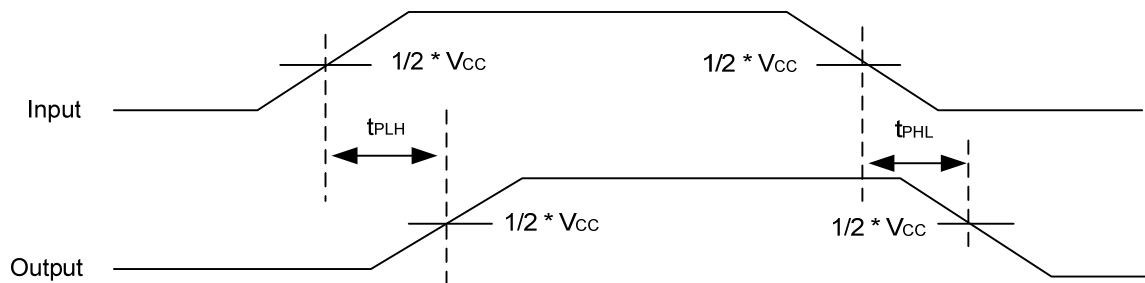
■ OPERATING CHARACTERISTICS ($V_{CC}=5V; T_A=25^\circ\text{C}$)

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

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



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