



U74ACT08

CMOS IC

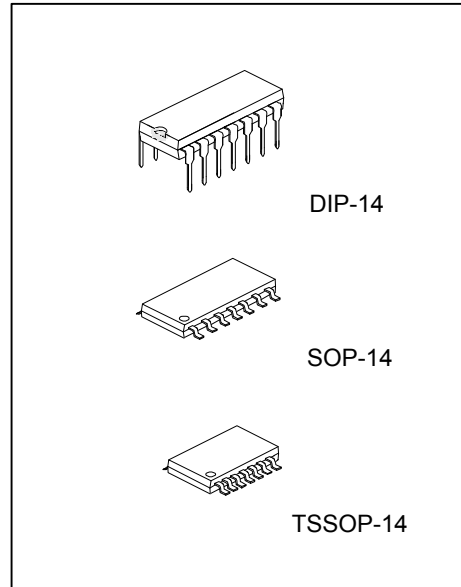
QUAD 2-INPUT AND GATE

DESCRIPTION

The U74ACT08 consists of four 2-INPUT AND GATE, it provides the function $Y=A*B$, the device is designed to interface directly High Speed CMOS systems with TTL, NMOS and CMOS output voltage levels.

FEATURES

- * Operation Voltage Range: 4.5~5.5V
- * Low Power Dissipation: $I_{CC}=4\mu A(\text{Max})$
- * High Noise Immunity
- * Compatible With TTL Output



ORDERING INFORMATION

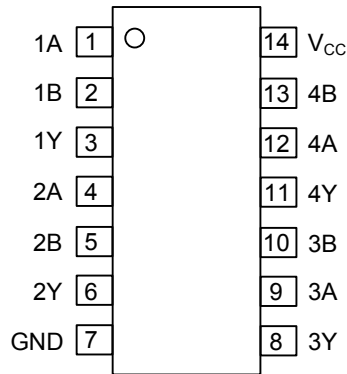
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT08L-D14-T	U74ACT08G-D14-T	DIP-14	Tube
-	U74ACT08G-S14-R	SOP-14	Tape Reel
-	U74ACT08G-P14-R	TSSOP-14	Tape Reel

<p>U74ACT08L-D14-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) D14: DIP-14, S14: SOP-14, P14: TSSOP-14 (3) L: Lead Free G: Halogen Free and Lead Free</p>
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MARKING

DIP-14	SOP-14 / TSSOP-14
<p>14 13 12 11 10 9 8 → Date Code UTC □□□□ L: Lead Free U74ACT08 □ G: Halogen Free □□ → Lot Code 1 2 3 4 5 6 7</p>	<p>14 13 12 11 10 9 8 → Date Code UTC □□□□ U74ACT08G □□ → Lot Code 1 2 3 4 5 6 7</p>

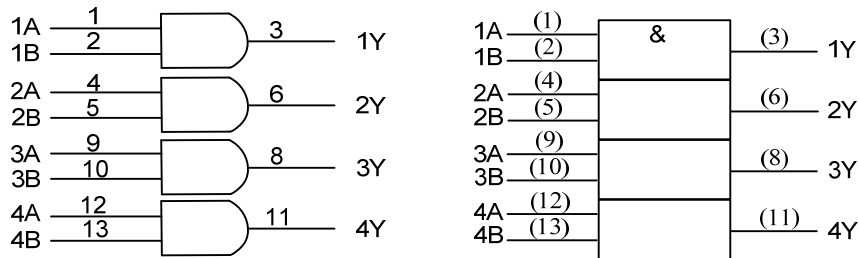
■ PIN CONFIGURATION



■ 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 RATING (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~7	V
Input Voltage	V_{IN}	-0.5~ $V_{CC}+0.5$	V
DC Output Voltage	V_{OUT}	-0.5~ $V_{CC}+0.5$	V
Input Clamp Current ($V_{IN}<0$)	I_{IK}	±20	mA
Output Clamp Current ($V_{OUT}<0$)	I_{OK}	±20	mA
Output Current	I_{OUT}	±50	mA
V_{CC} or GND Current	I_{CC}	±200	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	RATINGS	UNIT
Supply Voltage	V_{CC}	4.5 ~ 5.5	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	8	ns/V
Operating Temperature	T_A	-40 ~ +85	°C

■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=4.5V\sim 5.5V, V_{OUT}=0.1V$ or $V_{CC}-0.1V$	2.0	1.5		V
Low-Level Input Voltage	V_{IL}	$V_{CC}=4.5V\sim 5.5V, V_{OUT}=0.1V$ or $V_{CC}-0.1V$		1.5	0.8	V
High-Level Output Voltage	V_{OH}	$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.49		V
		$V_{CC}=5.5V, I_{OH}=-50\mu A$	5.4	5.49		
		$V_{CC}=4.5V, I_{OH}=-24mA$	3.86			
		$V_{CC}=5.5V, I_{OH}=-24mA$	4.86			
Low-Level Output Voltage	V_{OL}	$V_{CC}=4.5V, I_{OL}=50\mu A$		0.001	0.1	V
		$V_{CC}=5.5V, I_{OL}=50\mu A$		0.001	0.1	
		$V_{CC}=4.5V, I_{OL}=24mA$			0.36	
		$V_{CC}=5.5V, I_{OL}=24mA$			0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=5.5V$ or GND			±0.1	μA
Additional Quiescent Supply Current	ΔI_Q	$V_{CC}=5.5V, V_{IN}=3.4V$; other input at V_{CC} or GND; $I_{OUT}=0$		0.6		mA
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$			4	μA
Input Capacitance	C_{IN}	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		4		pF

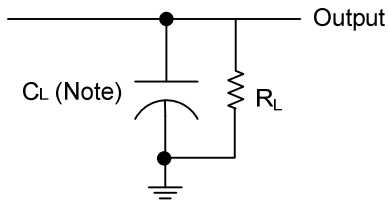
■ DYNAMIC CHARACTERISTIC (input $t_R = t_F = 3ns, T_A = 25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Propagation Delay Time	$t_{PLH} t_{PHL}$	$V_{CC} = 5.0V \pm 0.5V, C_L = 50pF, R_L = 500\Omega$	1.5	5	9	ns

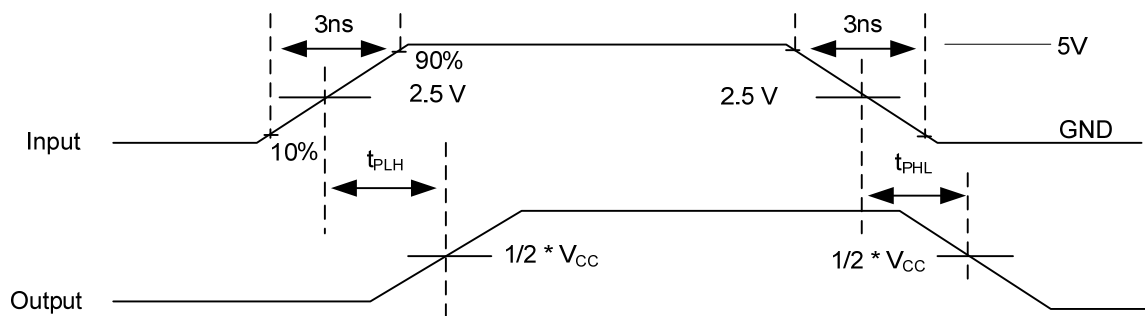
■ OPERATING CHARACTERISTIC

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC} = 5.0V$		30		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



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