



# U74ACT08

CMOS IC

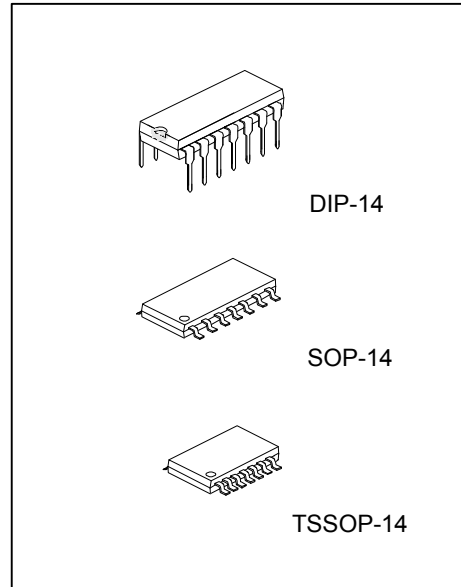
## QUAD 2-INPUT AND GATE

### 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

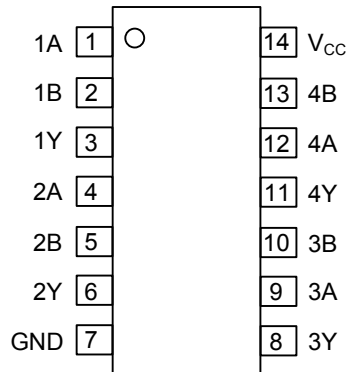


### ORDERING INFORMATION

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

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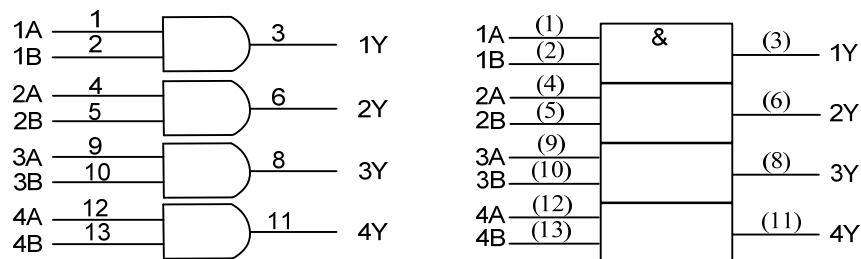
■ PIN CONFIGURATION



■ 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 ( $V_{IN}<0$ )	$I_{IK}$	$\pm 20$	mA
Output Clamp Current ( $V_{OUT}<0$ )	$I_{OK}$	$\pm 20$	mA
Output Current	$I_{OUT}$	$\pm 50$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 200$	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			$\pm 0.1$	$\mu A$
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=5.5V, V_{IN}=3.4V$ ; other input at $V_{CC}$ or GND; $I_{OUT}=0$		0.6		mA
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$			4	$\mu A$
Input Capacitance	$C_{IN}$	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		4		pF

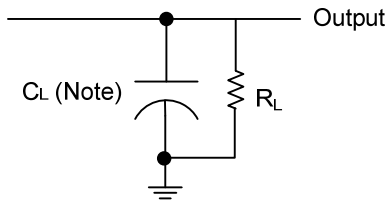
## ■ DYNAMIC CHARACTERISTIC (input $t_R = t_F = 3ns, T_A = 25^\circ C$ )

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

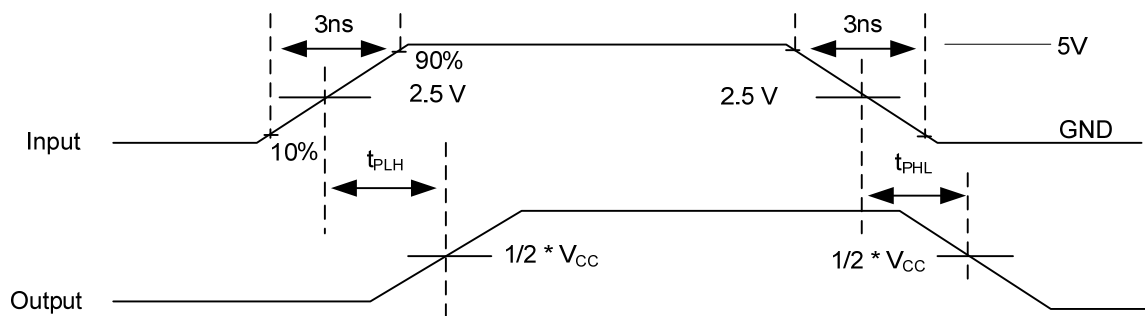
## ■ OPERATING CHARACTERISTIC

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

## ■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.



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