



## U74ACT08

CMOS IC

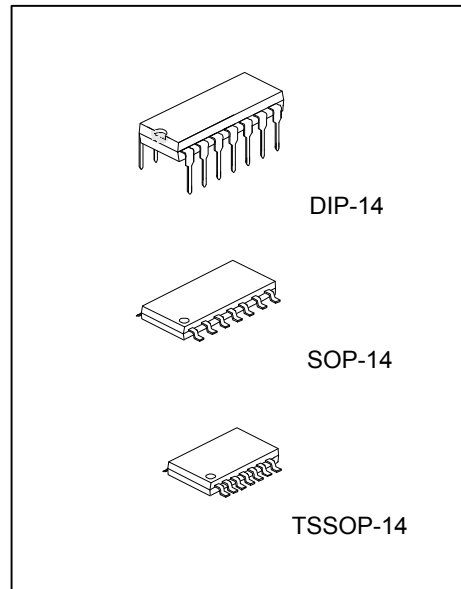
### QUAD 2-INPUT AND GATE

#### 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

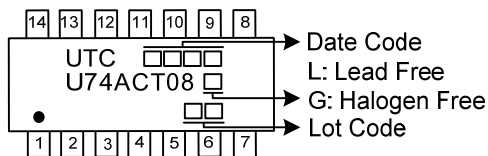


#### ORDERING INFORMATION

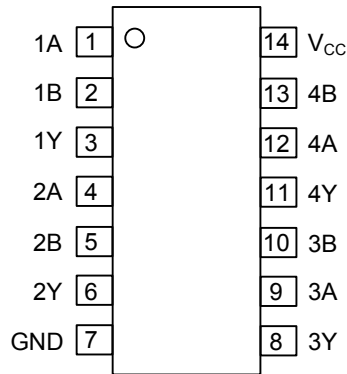
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT08L-D14-T	U74ACT08G-D14-T	DIP-14	Tube
U74ACT08L-S14-R	U74ACT08G-S14-R	SOP-14	Tape Reel
U74ACT08L-P14-R	U74ACT08G-P14-R	TSSOP-14	Tape Reel

<p>U74ACT08G-D14-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) D14: DIP-14, S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



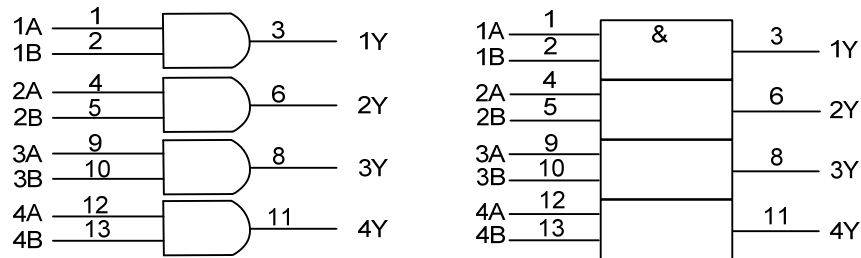
■ PIN CONFIGURATION



■ 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)



■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ 7	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
DC Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Input Clamp Current (V <sub>IN</sub> <0)	I <sub>IK</sub>	±20	mA
Output Clamp Current (V <sub>OUT</sub> <0)	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±50	mA
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±200	mA
Storage Temperature	T <sub>STG</sub>	-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 (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	4.5 ~ 5.5	V
Input Voltage	V <sub>IN</sub>	0 ~ V <sub>CC</sub>	V
Output Voltage	V <sub>OUT</sub>	0 ~ V <sub>CC</sub>	V
Input Transition Rise or Fall Rate	Δt/ΔV	8	ns/V
Operating Temperature	T <sub>A</sub>	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =4.5V~5.5V	2.0			V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =4.5V~5.5V			0.8	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V	I <sub>OH</sub> =-24mA	3.86		V
			I <sub>OH</sub> =-50μA	4.4	4.49	V
		V <sub>CC</sub> =5.5V	I <sub>OH</sub> =-24mA	4.86		V
			I <sub>OH</sub> =-50μA	5.4	5.49	V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5V	I <sub>OL</sub> =24mA		0.36	V
			I <sub>OL</sub> =50μA	0.001	0.1	V
		V <sub>CC</sub> =5.5V	I <sub>OL</sub> =24mA		0.36	V
			I <sub>OL</sub> =50μA	0.001	0.1	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =5.5V or GND			±0.1	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>OUT</sub> =0			4	μA
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =3.4V; other input at V <sub>CC</sub> or GND; I <sub>OUT</sub> =0		0.6		mA
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> =5.0V, V <sub>IN</sub> =V <sub>CC</sub> or GND		4		pF

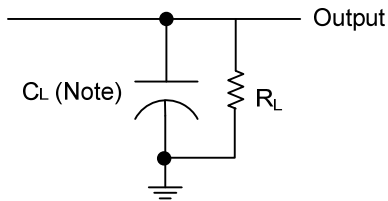
■ DYNAMIC CHARACTERISTIC (input t<sub>R</sub> = t<sub>F</sub> =3ns, T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Propagation Delay Time	t <sub>PLH</sub> / t <sub>PHL</sub>	V <sub>CC</sub> =5.0V±0.5V, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	1.5	5	9	ns

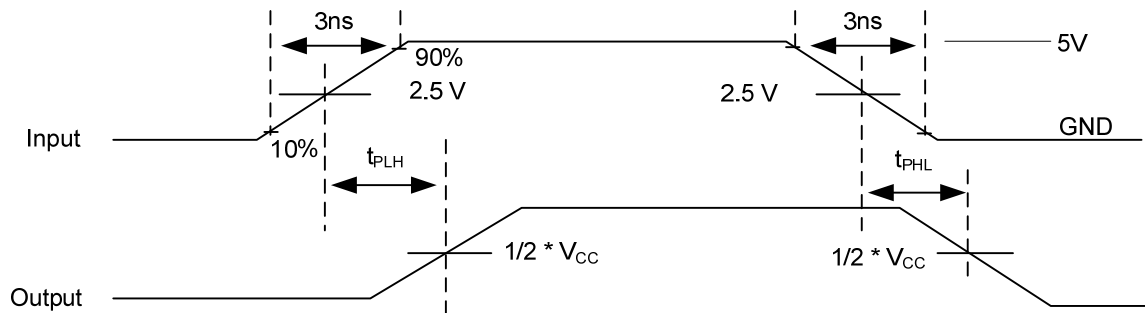
■ OPERATING CHARACTERISTIC (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>CC</sub> =5.0V		30		pF

■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.



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