



U74ACT00

CMOS IC

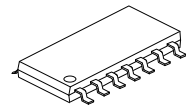
QUADRUPLE 2-INPUT POSITIVE-NAND GATES

DESCRIPTION

The UTC **U74ACT00** contains four independent 2-input positive-nand gates. Each Gate Performs the Boolean function $Y = \overline{A \cdot B}$ or $Y = \overline{A} + \overline{B}$

FEATURES

- * Operation Voltage Range: 4.5~5.5V
- * Low Power Dissipation: $I_{CC} = 2\mu A$ (Max.)
- * High Noise Immunity
- * Compatible With TTL Output



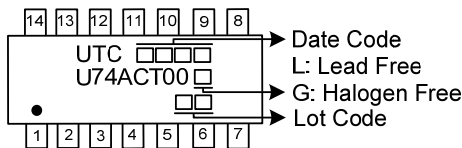
SOP-14

ORDERING INFORMATION

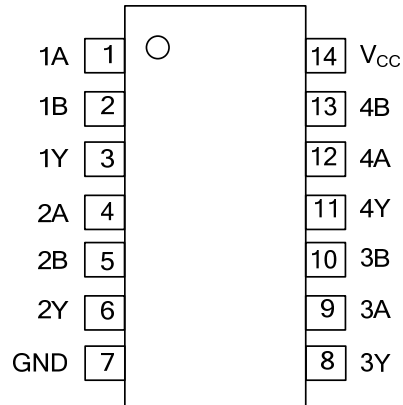
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT00L-S14-R	U74ACT00G-S14-R	SOP-14	Tape Reel

<p>U74ACT00G-S14-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S14: SOP-14</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

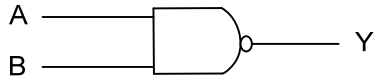


■ FUNCTION TABLE

INPUT(A)	INPUT(B)	OUTPUT(Y)
H	H	L
L	X	H
X	L	H

H = High voltage level : L = Low voltage level : X = Don't care

■ LOGIC DIAGRAM (positive gate)



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5 ~ 7	V
Input Voltage	V _{IN}	-0.5 ~ V _{CC} +0.5	V
Output Voltage	V _{OUT}	-0.5 ~ V _{CC} +0.5	V
Input Clamp Current (V _{IN} < 0 or V _{IN} > V _{CC})	I _{IK}	±20	mA
Output Clamp Current (V _{OUT} < 0 or V _{OUT} > V _{CC})	I _{OK}	±20	mA
Output Current (V _{OUT} =0V ~ V _{CC})	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 (T_A=25°C, unless otherwise specified)

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	Δt/Δv	8	ns/V
Operating Temperature	T _A	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT		
High Level Input Voltage	V _{IH}	V _{CC} =4.5~5.5V	2			V		
Low Level Input Voltage	V _{IL}	V _{CC} =4.5~5.5V			0.8	V		
High-Level Output Voltage	V _{OH}	V _{CC} =4.5V	I _{OH} =-24mA	3.86			V	
			I _{OH} =-50μA	4.4	4.49		V	
		V _{CC} =5.5V	I _{OH} =-24mA	4.86				V
			I _{OH} =-50μA	5.4	5.49			V
Low-Level Output Voltage	V _{OL}	V _{CC} =4.5V	I _{OL} =24mA			0.36	V	
			I _{OL} =50μA		0.001	0.1	V	
		V _{CC} =5.5V	I _{OL} =24mA			0.36		V
			I _{OL} =50μA		0.001	0.1		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} =0A			2	μA		
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =5.5V, One input at 3.4V, Other inputs at V _{CC} or GND		0.6		mA		
Input Capacitance	C _I	V _{CC} = 5V, V _{IN} = V _{CC} or GND		2.6		pF		

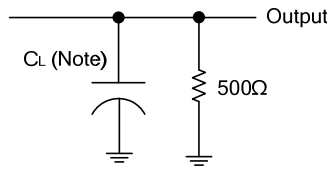
■ SWITCHING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	t _{PLH}	V _{CC} =5V±0.5V, C _L =50pF, R _L =500Ω	1.5	5.5	9.0	ns
	t _{PHL}		1.5	4.0	7.0	ns

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

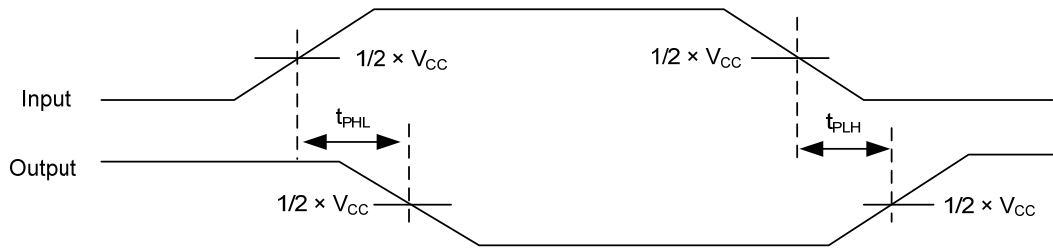
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =5.0V, C _L =50pF, f=10MHz		40		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

Note : C_L includes probe and jig capacitance.



PROPAGATION DELAY FROM INPUT(A) TO OUTPUT(Y).

- Notes: 1. C_L includes probe and jig capacitance.
 2. All input pulses are supplied by generators having the following characteristics: $PRR \leq 1\text{MHz}$, $Z_O = 50\Omega$.

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