



## U74ACT00

CMOS IC

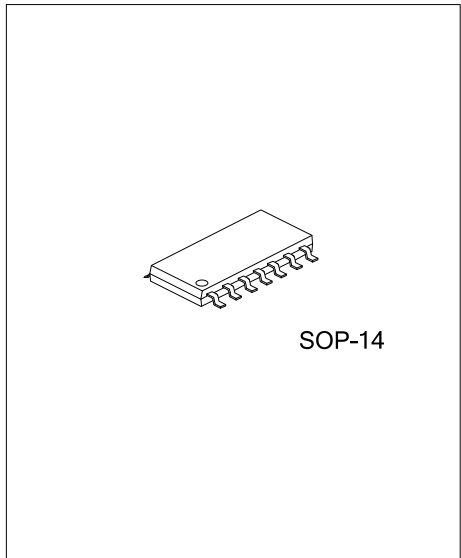
### QUADRUPLE 2-INPUT POSITIVE-NAND GATES

#### DESCRIPTION

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

#### FEATURES

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



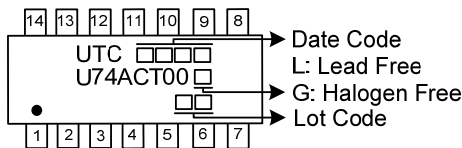
SOP-14

#### ORDERING INFORMATION

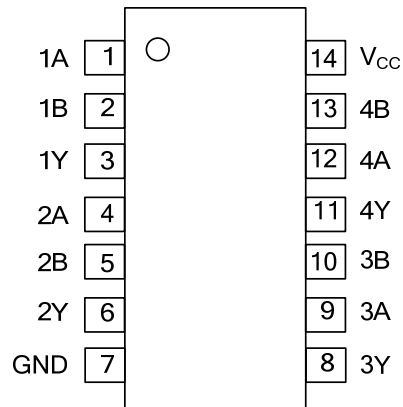
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT00L-S14-R	U74ACT00G-S14-R	SOP-14	Tape Reel

<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

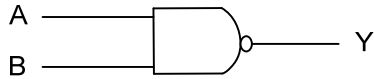


■ FUNCTION TABLE

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)



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## ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	$V_{CC}$		-0.5 ~ +7.0	V
Input Voltage (Note 2)	$V_{IN}$		-0.5 ~ + $V_{CC}+0.5$	V
Output Voltage	$V_{OUT}$		-0.5 ~ + $V_{CC}+0.5$	V
Continuous Output Current	$I_{OUT}$	$V_{OUT}=0V \sim V_{CC}$	±50	mA
Input Clamp Current	$I_{IK}$	$V_{IN} < 0$ or $V_{IN} > V_{CC}$	±20	mA
Output Clamp Current	$I_{OK}$	$V_{OUT} < 0$ or $V_{OUT} > V_{CC}$	±20	mA
Continuous Current Through $V_{CC}$ or GND	$I_{CC}$		±200	mA
Storage Temperature Range	$T_{STG}$		-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	TEST CONDITIONS	MIN	TYP	MAX	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	$\Delta t/\Delta v$				8	ns/V
Operating Temperature	$T_A$		-40		+85	°C

## ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High Level Input Voltage	$V_{IH}$	$V_{CC}=4.5\sim 5.5V$	2			V	
Low Level Input Voltage	$V_{IL}$	$V_{CC}=4.5\sim 5.5V$			0.8	V	
High-Level Output Voltage	$V_{OH}$	$V_{CC}=4.5V$	$I_{OH}=-24mA$	3.86			V
			$I_{OH}=-50\mu A$	4.4	4.49		V
		$V_{CC}=5.5V$	$I_{OH}=-24mA$	4.86			V
			$I_{OH}=-50\mu A$	5.4	5.49		V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=4.5V$	$I_{OL}=24mA$			0.36	V
			$I_{OL}=50\mu A$		0.001	0.1	V
		$V_{CC}=5.5V$	$I_{OL}=24mA$			0.36	V
			$I_{OL}=50\mu A$	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	$I_{CC}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$			2	μA	
Additional Quiescent Supply Current Per Input Pin	$\Delta I_{CC}$	$V_{CC}=5.5V$ , 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	

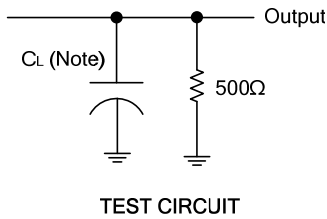
## ■ SWITCHING CHARACTERISTICS ( $C_L=50pF, R_L=500\Omega, T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	$t_{PLH}$	$V_{CC}=5V\pm 0.5V$	1.5	5.5	9.0	ns
	$t_{PHL}$		1.5	4.0	7.0	ns

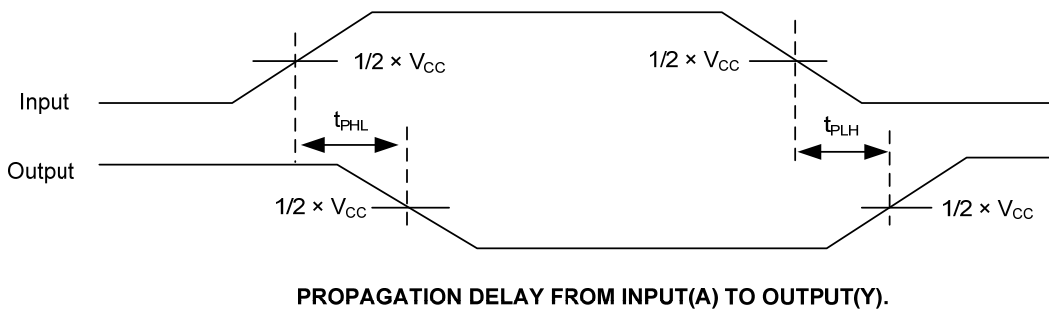
## ■ OPERATING CHARACTERISTICS ( $C_L=50pF, f=10MHz, T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	$V_{CC}=5.0V$		40		pF

■ TEST CIRCUIT AND WAVEFORMS



Note :  $C_L$  includes probe and jig capacitance.



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

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