



U74HCT00

CMOS IC

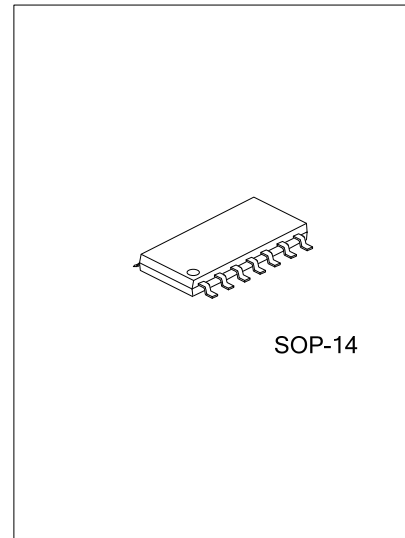
QUADRUPLE 2-INPUT NAND GATE

DESCRIPTION

The U74HCT00 is a Quadruple 2-input NAND gate which provides the Function $Y = \overline{A \cdot B}$.

FEATURES

- * Operation voltage range: 4.5~5.5V
- * Low power dissipation: $I_{CC} = 20\mu A$ (Max)
- * High speed: $t_{pd} = 10ns$ (Typ)
- * $\pm 4mA$ output drive at 5V
- * Input are TTL-voltage compatible

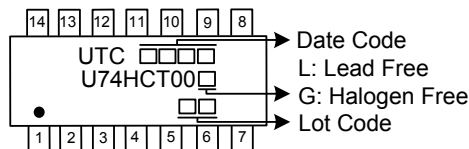


ORDERING INFORMATION

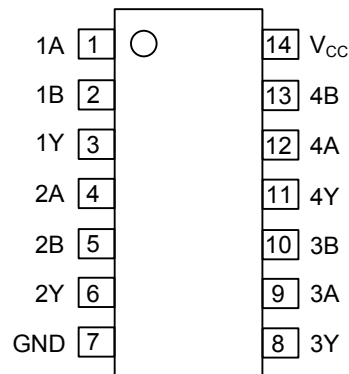
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT00L-S14-R	U74HCT00G-S14-R	SOP-14	Tape Reel

<p>U74HCT00G-S14-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) S14: SOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



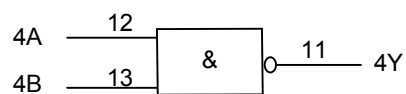
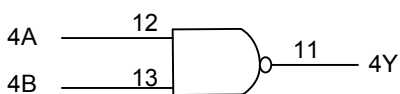
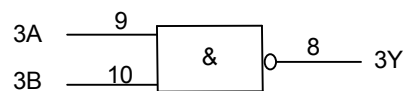
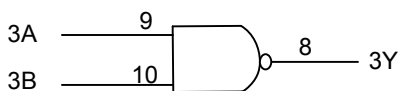
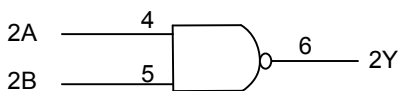
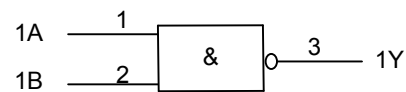
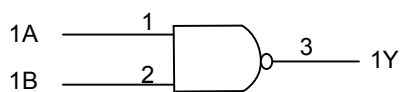
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5~7	V
Input Clamp Current	I _{IK}	±20	mA
Output Clamp Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
V _{CC} or GND Current	I _{CC}	±50	mA
Storage Temperature	T _{STG}	-65 ~ +150	°C

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance Junction Ambient	θ _{JA}	76	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		4.5	5.0	5.5	V
Input Voltage	V _{IN}		0		V _{CC}	V
Output Voltage	V _{OUT}		0		V _{CC}	V
Input Transition Rise or Fall Times	t _R , t _F				500	ns
Operating Temperature	T _A		-40		85	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =4.5V~5.5V	2			V
Low-Level Input Voltage	V _{IL}	V _{CC} =4.5V~5.5V			0.8	V
High-Level Output Voltage	V _{OH}	V _{CC} =4.5V, I _{OH} =-20μA	4.4	4.499		V
		V _{CC} =4.5V, I _{OH} =-4mA	3.98	4.3		
Low-Level Output Voltage	V _{OL}	V _{CC} =4.5V, I _{OL} =20μA		0.001	0.1	V
		V _{CC} =4.5V, I _{OL} =4mA		0.17	0.26	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0~6.0V, V _{IN} =V _{CC} or GND		±0.1	±100	nA
Quiescent Supply Current	I _Q	V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			2	μA
Additional Quiescent Supply Current	Δ I _Q	V _{CC} =5.5V, One input at 0.5V or 2.4V, other inputs at 0 or V _{CC}		1.4	2.4	mA
Input Capacitance	C _{IN}	V _{CC} =4.5V~5.5V, V _{IN} =V _{CC} or GND		3	10	pF

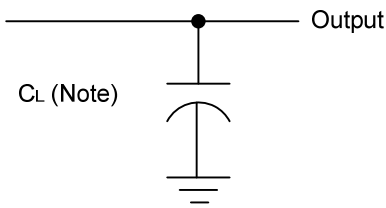
■ DYNAMIC CHARACTERISTICS (T_A=25°C, Input: t_R, t_F≤6ns; PRR≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) and (nB) to output(nY)	t _{PHL} /t _{PLH}	V _{CC} =4.5V, C _L = 50pF		11	20	ns
		V _{CC} =5.5V C _L = 50pF		10	18	
Output transition time	t _{THL} /t _{TLH}	V _{CC} =4.5V, C _L = 50pF		9	15	ns
		V _{CC} =5.5V, C _L = 50pF		8	14	

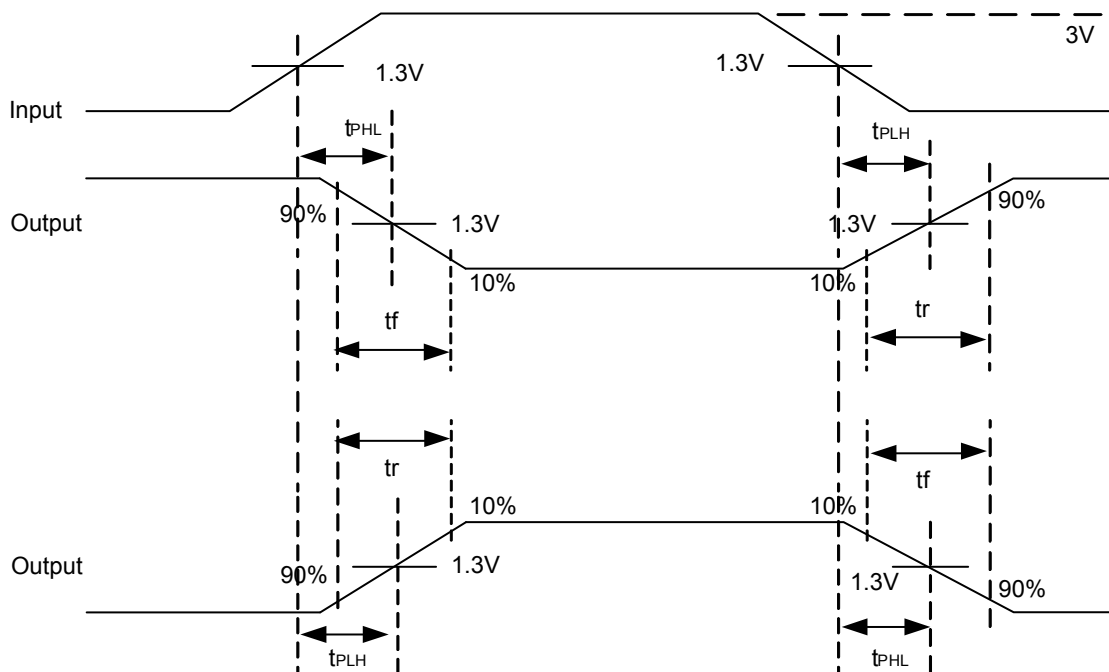
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{pd}	No load		20		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



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