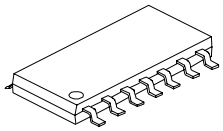
U74HCT00

CMOS IC

QUADRUPLE 2-INPUT NAND GATE



SOP-14

*Pb-free plating product number:
U74HCT00L

■ DESCRIPTION

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

■ FEATURES

* Operation voltage range: 4.5~5.5V
* Low power dissipation: I_{CC}=20μA(Max)
* High speed: tpd=10ns(Typ)
*±4mA output drive at 5V
* Input are TTL-voltage compatible

■ ORDERING INFORMATION

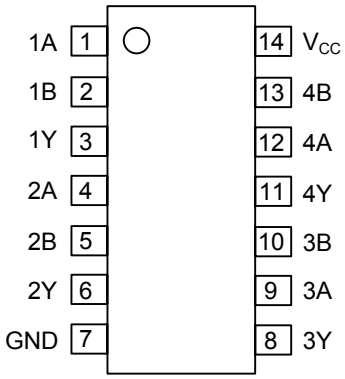
Ordering Number		Package	Packing
Normal	Lead Free Plating		
U74HCT00-S14-R	U74HCT00L-S14-R	SOP-14	Tape Reel
U74HCT00-S14-T	U74HCT00L-S14-T	SOP-14	Tube

U74HCT00L-S14-R

(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel, T: Tube
(2) S14: SOP-14
(3) L: Lead Free Plating, Blank: Pb/Sn

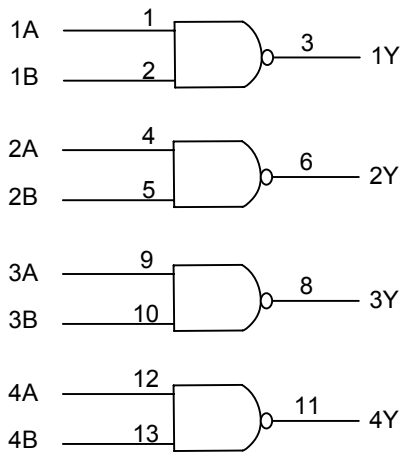
■ PIN CONFIGURATION

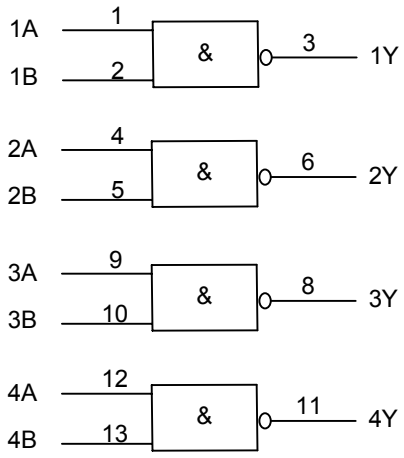


■ FUNCTION TABLE (each gate)

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	℃

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	ΔI_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

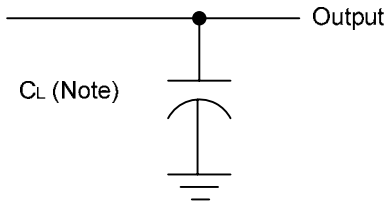
■ DYNAMIC CHARACTERISTICS (T_A=25°C, Input: t_R, t_F≤6ns; PRR≤1MHz)

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	Cpd	No load		20		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.