



U74HCT21

CMOS IC

DUAL 4-INPUT AND GATES

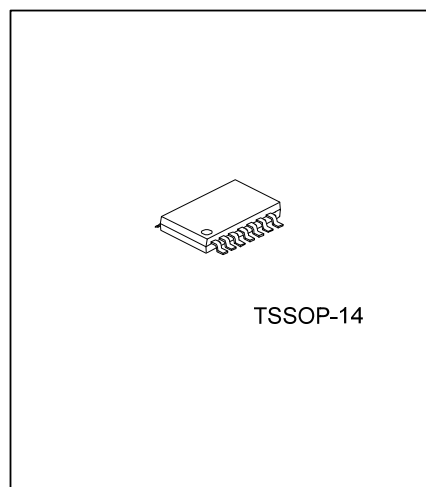
DESCRIPTION

The **U74HCT21** contains two independent 4-input AND gates. They perform the Boolean function $Y=A \bullet B \bullet C \bullet D$

or $Y=\overline{A+B+C+D}$ in positive logic.

FEATURES

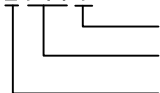
- * Operation Voltage Range: 4.5V~5.5V
- * Low Quiescent Current: $I_{CC}=2\mu A(\text{Max})$
- * High Speed: $t_{PD}=15\text{ns @ } 4.5\text{V (Typ)}$
- * Low Input Current: 100nA Max
- * Inputs are TTL Voltage Compatible



ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT21L-P14-T	U74HCT21G-P14-T	TSSOP-14	Tube
U74HCT21L-P14-R	U74HCT21G-P14-R	TSSOP-14	Tape Reel

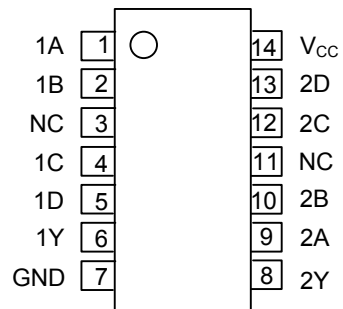
U74HCT21L-P14-T



- (1) Packing Type
- (2) Package Type
- (3) Lead Free

- (1) R: Tape Reel, T: Tube
- (2) P14: TSSOP-14
- (3) G: Halogen Free, L: Lead Free

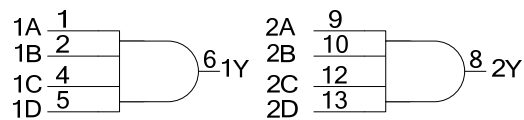
PIN CONFIGURATION



FUNCTION TABLE

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

LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

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	$^{\circ}C$

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	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	t_R, t_F	$V_{CC}=4.5V$			500	ns
Operating Temperature	T_A		-40		85	$^{\circ}C$

■ STATIC CHARACTERISTICS ($T_A = 25^{\circ}C$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC} = 4.5V$ to $5.5V$	2.0			V
Low-Level Input Voltage	V_{IL}	$V_{CC} = 4.5V$ to $5.5V$			0.8	V
High-Level Output Voltage	V_{OH}	$V_{CC} = 4.5V, I_O = -20\mu A$	4.4	4.999		V
		$V_{CC} = 4.5V, I_O = -4mA$	3.98	4.3		
Low-Level Output Voltage	V_{OL}	$V_{CC} = 4.5V, I_O = 20\mu A$		0.001	0.1	V
		$V_{CC} = 4.5V, I_O = 4mA$		0.17	0.26	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC} = 5.5V, V_{IN} = V_{CC}$ or GND		± 0.1	± 100	nA
Quiescent Supply Current	I_{CC}	$V_{CC} = 5.5V, V_{IN} = V_{CC}$ or GND, $I_O = 0$			2	μA
Additional Quiescent Supply Current	ΔI_{CC}	One input at $V_{CC} - 2.1V$, other inputs at 0 or V_{CC}		100	360	μA
Input Capacitance	C_{IN}	$V_{CC} = 4.5V \sim 5.5V$		3	10	pF

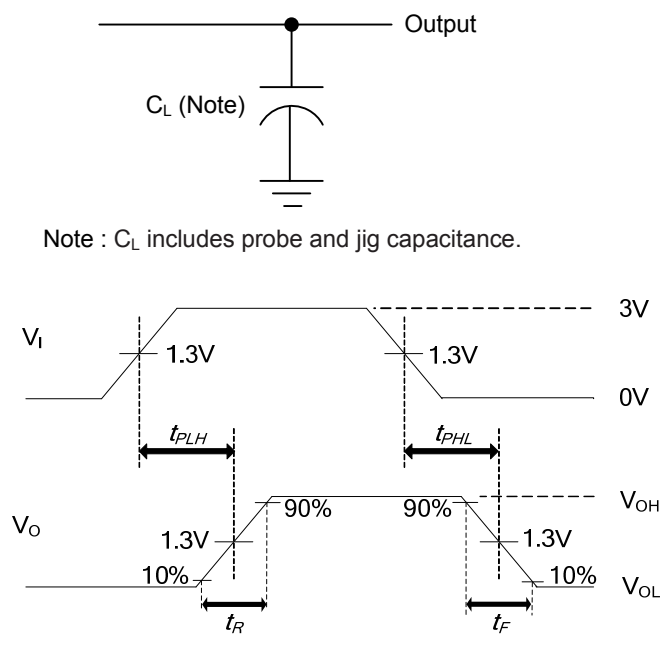
■ DYNAMIC CHARACTERISTICS ($T_A = 25^{\circ}C$, Input: $t_R = t_F = 6ns$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	t_{PLH}, t_{PHL}	$V_{CC} = 4.5V, C_L = 50pF$		15	27	ns
Output Transition Time	t_T	$V_{CC} = 4.5V, C_L = 50pF$		7	15	ns

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

PARAMETER	SYMBOL	TEST CONDITION	RATINGS	UNIT
Power Dissipation Capacitance	C_{PD}	No Load	42	pF

■ TEST CIRCUIT AND WAVEFORMS



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