



# U74AHCT1G00

CMOS IC

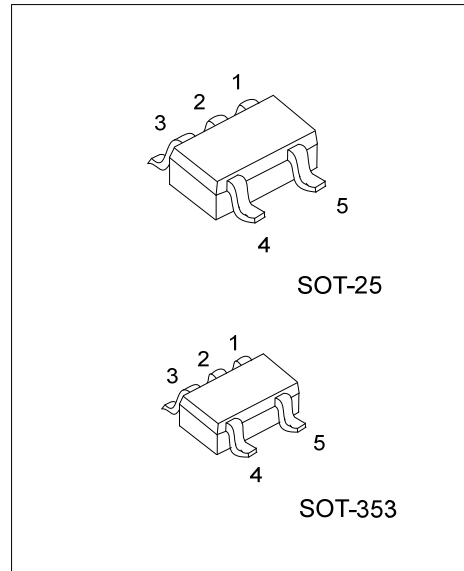
## 2-INPUT NAND GATE

### DESCRIPTION

The U74AHCT1G00 is a 2-input NAND gate which provides the Function  $Y = \overline{A \cdot B}$ .

### FEATURES

- \* Low power dissipation:  $I_{CC} = 1.0\mu A(\text{Max})$
- \* High speed:  $t_{pd} = 5\text{ns}(\text{Typ})$
- \* High noise immunity



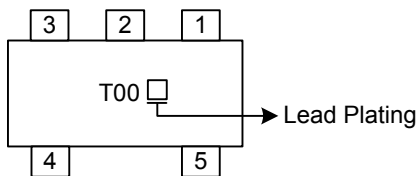
\*Pb-free plating product number:  
U74AHCT1G00L

### ORDERING INFORMATION

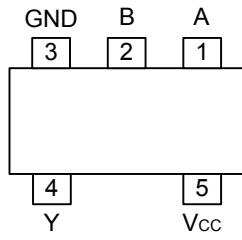
Ordering Number		Package	Packing
Normal	Lead Free Plating		
U74AHCT1G00-AF5-R	U74AHCT1G00L-AF5-R	SOT-25	Tape Reel
U74AHCT1G00-AL5-R	U74AHCT1G00L-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G00L-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) L: Lead Free Plating, Blank: Pb/Sn</p>
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### MARKING



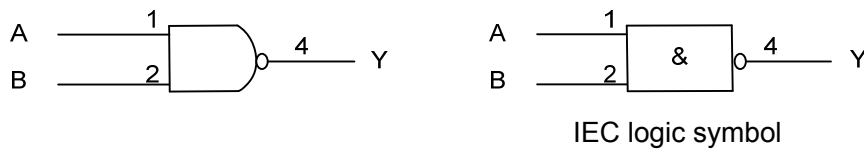
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-0.5~7	V
Input Voltage	$V_{IN}$	-0.5~7	V
Output Voltage	$V_{OUT}$	-0.5~ $V_{CC}+0.5$	V
Input Clamp Current	$I_{IK}$	-20	mA
Output Clamp Current	$I_{OK}$	$\pm 20$	mA
Output Current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 50$	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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		4.5		5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$		0		$V_{CC}$	V
Input Transition Rise or Fall Rate	$t_R, t_F$	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	$T_A$		-40		85	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}= 4.5V\sim 5.5V$	2.0			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}= 4.5V\sim 5.5V$			0.8	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}= 4.5V, I_{OH}=-50\mu A$	4.4	4.5		V
		$V_{CC}= 4.5V, I_{OH}=-8mA$	3.94			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}= 4.5V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}= 4.5V, I_{OL}=8mA$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}= 0 \sim 5.5V, V_{IN}=V_{CC}$ or GND			$\pm 0.1$	$\mu A$
Quiescent Supply Current	$I_Q$	$V_{CC}= 5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	$\mu A$
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}= 5.5V, V_{IN}=3.4V$ ; other input at $V_{CC}$ or GND; $I_{OUT}=0$			1.35	mA
Input Capacitance	$C_{IN}$	$V_{CC}= 5V, V_{IN}=V_{CC}$ or GND		2	10	pF

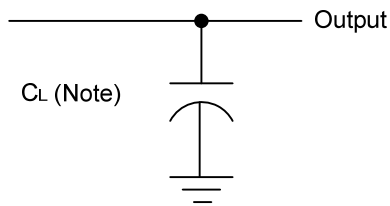
■ DYNAMIC CHARACTERISTICS ( $t_R, t_F \leq 3ns$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input (A and B) to Output(Y)	$t_{PLH}$	$5V \pm 0.5V, C_L=15pF$		5	6.9	ns
	$t_{PHL}$	$5V \pm 0.5V, C_L=15pF$		5	6.9	ns
	$t_{PLH}$	$5V \pm 0.5V, C_L=50pF$		5.5	7.9	ns
	$t_{PHL}$	$5V \pm 0.5V, C_L=50pF$		5.5	7.9	ns

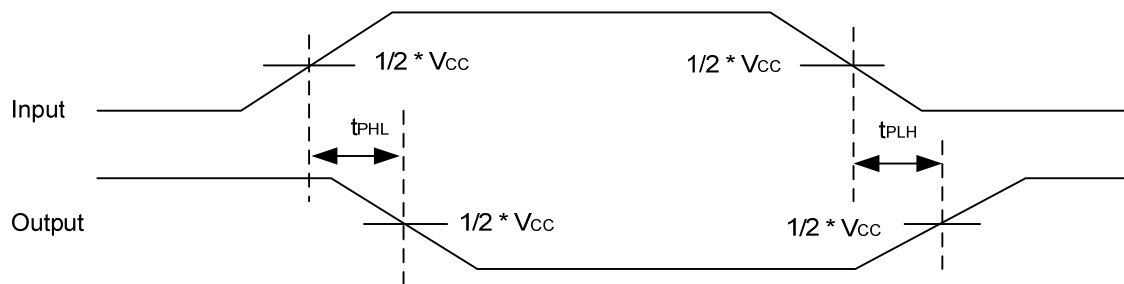
■ OPERATING CHARACTERISTICS ( $V_{CC}=5V; T_A=25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	No load, $f=1MHz$		10.5		pF

## ■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.



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