



# U74AHCT1G02

CMOS IC

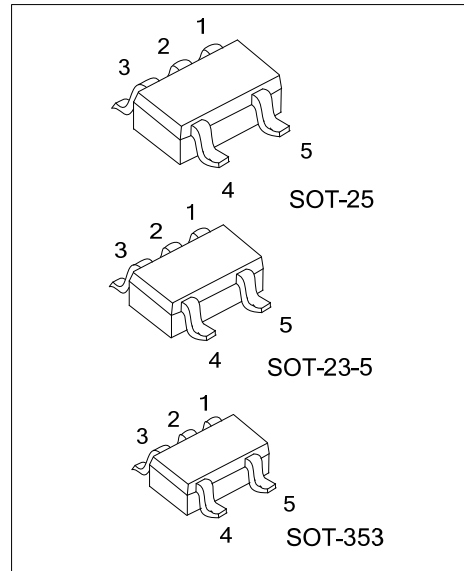
## 2-INPUT NOR GATE

### DESCRIPTION

The **U74AHCT1G02** is a single 2-input NOR gate which provides the Function.

### FEATURES

- \* Operation Voltage Range: 2.0~5.5V
- \* Low Power Dissipation
- \* High noise immunity
- \*Balanced propagation delays
- \*Specified from -40 to +125°C

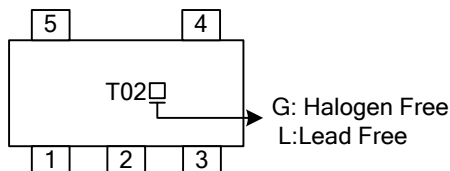


### ORDERING INFORMATION

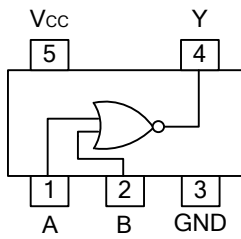
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G02L-AE5-R	U74AHCT1G02G-AE5-R	SOT-23-5	Tape Reel
U74AHCT1G02L-AF5-R	U74AHCT1G02G-AF5-R	SOT-25	Tape Reel
U74AHCT1G02L-AL5-R	U74AHCT1G02G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G02L-AF5-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free, L: Lead Free</p>
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### MARKING



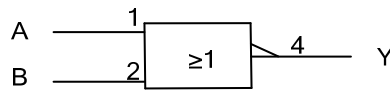
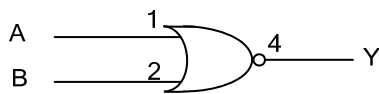
■ PIN CONFIGURATION



■ FUNCTION TABLE

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

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

## ■ 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	$I_{IK}$	$\pm 20$	mA
Output Clamp Current	$I_{OK}$	$\pm 20$	mA
Continuous Output Current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 50$	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	5.0	5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$		0		$V_{CC}$	V
Input Transition Rise or Fall Times	$t_R, t_F$	$V_{CC}=3.3V\pm 0.3V$				ns/V
		$V_{CC}=5V\pm 0.5V$			20	
Operating Temperature	$T_A$		-40	25	125	$^{\circ}C$

## ■ ELECTRICAL CHARACTERISTICS

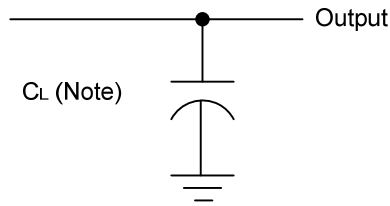
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}=4.5V\sim 5.5V$	2.0			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=4.5V\sim 5.5V$			0.8	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}=4.5V, V_{IN}=V_{IH}$ or $V_{IL}, I_{OH}=-50\mu A$	4.4	4.5		V
		$V_{CC}=4.5V, V_{IN}=V_{IH}$ or $V_{IL}, I_{OH}=-8mA$	3.94			
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=4.5V, V_{IN}=V_{IH}$ or $V_{IL}, I_{OL}=50\mu A$		0	0.1	V
		$V_{CC}=4.5V, V_{IN}=V_{IH}$ or $V_{IL}, I_{OL}=8mA$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=V_{IH}$ or $V_{IL}$			$\pm 0.1$	$\mu A$
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	$\Delta I_Q$	$V_{CC}=5.5V, V_{IN} = 3.4 V$ ; other inputs at $V_{CC}$ or GND, $I_{OUT}=0$			1.35	mA
Input Capacitance	$C_{IN}$			1.5	10	pF

Note: All unused inputs of the device must be held at  $V_{CC}$  or GND to ensure proper device operation.

## ■ SWITCHING CHARACTERISTICS (Input signal: $P_{RR}\leq 1MHz, Z_0=50\Omega, t_R\leq 3ns, t_F\leq 3ns.$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Times	$t_{PLH}/ t_{PHL}$	$V_{CC}=4.5V\sim 5.5V, C_L = 15 pF$		3.5	5.5	ns
		$V_{CC}=4.5V\sim 5.5V, C_L = 50 pF$		4.9	7.5	ns

## ■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

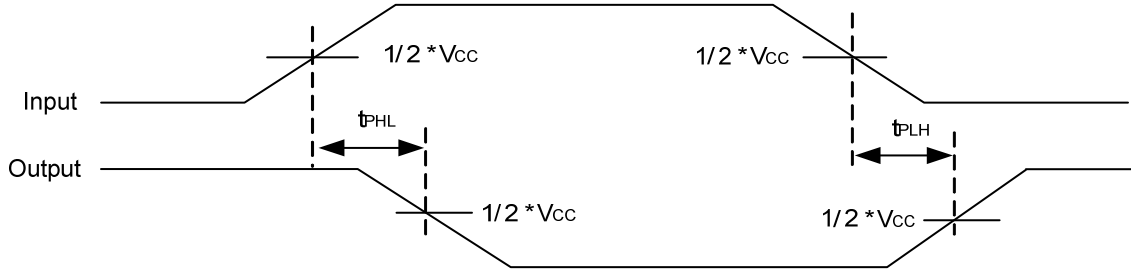


Fig. 2 Propagation delay from input(A and B) to output(Y)

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