

# XC74UL02AA



## CMOS Logic

### ◆CMOS 2-Input NOR Gate

◆High Speed Operation : tpd=2.65ns TYP

◆Operating Voltage Range : 2V~5.5V

◆Low Power Consumption : 1μA (max)

### ■General Description

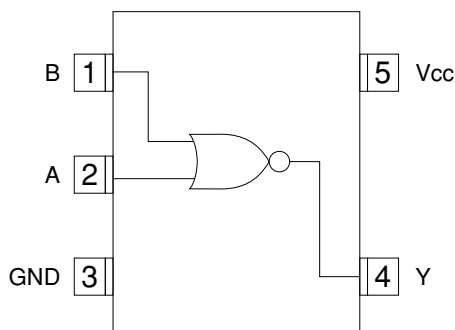
The XC74UL02AA is a 2-input CMOS NOR gate, manufactured using silicon gate CMOS fabrication.

CMOS low power circuit operation makes high speed LS-TTL operations achievable.

With a wave forming buffer connected internally, stabilized output can be achieved as the circuit offers high noise immunity.

As the XC74UL02AA is integrated into mini molded, SSOT-25 and SOT-25 packages, high density mounting is possible.

### ■Pin Configuration



SSOT-25/SOT-25  
(TOP VIEW)

### ■Applications

- Palmtops
- Digital Equipment

### ■Features

High Speed Operation : tpd=2.65ns TYP

Operating Voltage Range: 2V~5.5V

Low Power Consumption: 1μA (max)

Ultra Small Package : SSOT-25 and SOT-25

### ■Function

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

H=High level, L=Low level

### ■Absolute Maximum Ratings

Ta=-40°C~85°C

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	VCC	-0.5 ~ +6.0	V
Input Voltage	VIN	-0.5 ~ +6.0	V
Output Voltage	VOUT	-0.5 ~ VCC +0.5	V
Input Diode Current	IiK	-20	mA
Output Diode Current	IOK	±20	mA
Output Current	IOUT	±25	mA
VCC ,GND Current	ICC ,IGND	±50	mA
Continuous Total Power Dissipation (Ta=55°C)	Pd	150	mW
Storage Temperature	Tstg	-65 ~ +150	°C

Note: Voltage is all Ground standardized.

## Recommended Operating Conditions

PARAMETER	SYMBOL	V <sub>CC</sub> (V)	CONDITIONS	UNITS
Supply Voltage	V <sub>CC</sub>	-	2 ~ 5.5	V
Input Voltage	V <sub>IN</sub>	-	0 ~ 5.5	V
Output Voltage	V <sub>OUT</sub>	-	0 ~ V <sub>CC</sub>	V
Operating Temperature	T <sub>opr</sub>	-	-40 ~ +85	°C
Output Current	I <sub>OH</sub>	3.0	-4	mA
		4.5	-8	
	I <sub>OL</sub>	3.0	4	
		4.5	8	
Input Rise and Fall Time	t <sub>r</sub> , t <sub>f</sub>	3.3	0 ~ 100	ns
		5.0	0 ~ 20	

## DC Electrical Characteristics

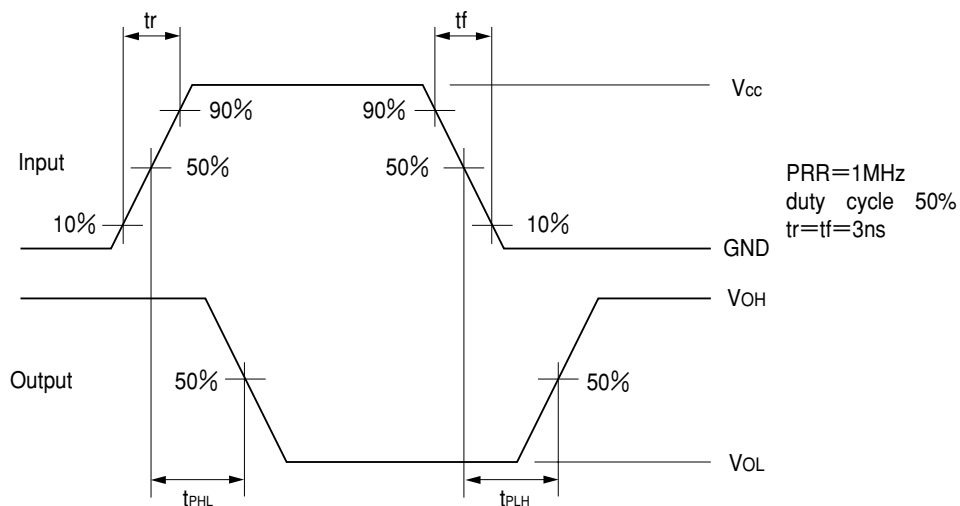
PARAMETER	SYMBOL	V <sub>CC</sub> (V)	CONDITIONS		Ta=25°C			Ta=-40-85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Input Voltage	V <sub>IH</sub>	2.0			1.5	-	-	1.5	-	V
		3.0			2.1	-	-	2.1	-	
		5.5			3.85	-	-	3.85	-	
	V <sub>IL</sub>	2.0			-	-	0.5	-	0.5	V
		3.0			-	-	0.9	-	0.9	
		5.5			-	-	1.65	-	1.65	
Output Voltage	V <sub>OH</sub>	2.0	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> =-50μA	1.9	2.0	-	1.9	-	V
		3.0			2.9	3.0	-	2.9	-	
		4.5		I <sub>OH</sub> =-4mA	4.4	4.5	-	4.4	-	
		3.0			2.58	-	-	2.48	-	
		4.5			3.94	-	-	3.80	-	
	V <sub>OL</sub>	2.0	V <sub>IN</sub> =V <sub>IH</sub>	I <sub>OL</sub> =50μA	-	-	0.1	-	0.1	V
		3.0			-	-	0.1	-	0.1	
		4.5			-	-	0.1	-	0.1	
		3.0		I <sub>OL</sub> =4mA	-	-	0.36	-	0.44	
		4.5		I <sub>OL</sub> =8mA	-	-	0.36	-	0.44	
Input Current	I <sub>IN</sub>	5.5	V <sub>IN</sub> =V <sub>CC</sub> or GND		-0.1	-	0.1	-1.0	1.0	μA
Quiescent Supply Current	I <sub>CC</sub>	5.5	V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0μA		-	-	1.0	-	10.0	

## Switching Electrical Characteristics

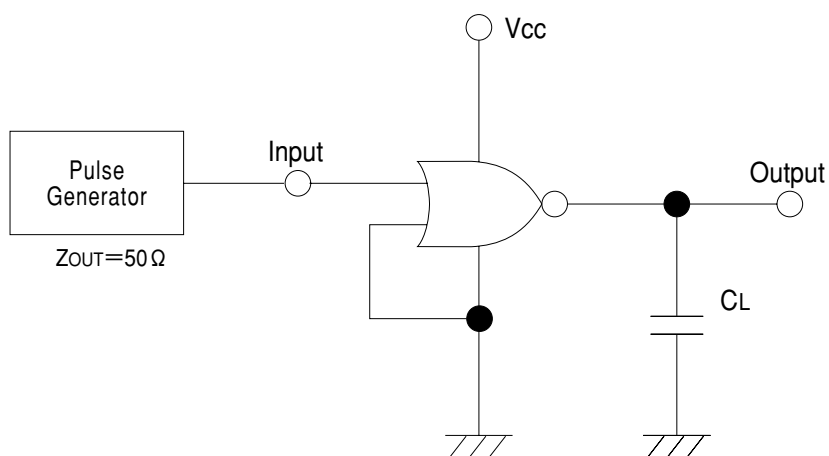
PARAMETER	SYMBOL	C <sub>L</sub>	V <sub>CC</sub> (V)	CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t <sub>PLH</sub>	15pF	3.3		-	3.9	7.9	1.0	9.5	ns
			5.0		-	2.7	5.5	1.0	6.5	
		50pF	3.3		-	5.5	11.4	1.0	13	ns
			5.0		-	3.9	7.5	1.0	8.5	
	t <sub>PHL</sub>	15pF	3.3		-	3.5	7.9	1.0	9.5	ns
			5.0		-	2.6	5.5	1.0	6.5	
		50pF	3.3		-	4.9	11.4	1.0	13	ns
			5.0		-	3.6	7.5	1.0	8.5	
Input Capacitance	C <sub>IN</sub>	-	5.0	V <sub>IN</sub> =V <sub>CC</sub> or GND	-	4	10	-	10	pF
Power Dissipation Capacitance	C <sub>pd</sub>	No Load, f=1MHz			-	9.7	-	-	-	pF

t<sub>r</sub>=t<sub>f</sub>=3ns

## Waveforms



## Typical Application Circuit



Note: Open output when measuring supply current