

- ◆ CMOS 2-Input NOR Gate
- ◆ High Speed Operation  $t_{pd}=5.2ns$  TYP
- ◆ Operating Voltage Range 2V~5.5V
- ◆ Low Power Consumption  $1\mu A$  MAX

### Applications

- Palmtops
- Digital Equipment

### 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.

### Features

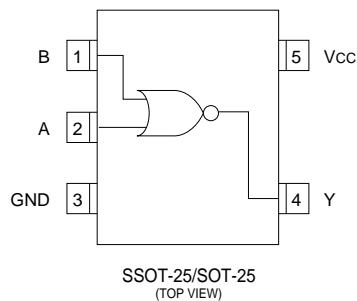
**High Speed Operation:**  $t_{pd}=5.2ns$  TYP

**Operating Voltage Range:** 2V~5.5V

**Low Power Consumption:**  $1\mu A$  MAX

**Space Saving Package:** SSOT-25 and SOT-25

### Pin Configuration



### 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

$T_a = -40^\circ C \sim 85^\circ C$

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	VCC	-0.5 ~ +6.0	V
Input Voltage	VIN	-0.5 ~ +6.0	V
Output Voltage	VOU	-0.5 ~ VCC +0.5	V
Input Diode Current	I <sub>IK</sub>	-20	mA
Output Diode Current	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±25	mA
VCC ,GND Current	I <sub>CC</sub> , I <sub>GND</sub>	±50	mA
Continuous Total Power Dissipation	P <sub>d</sub>	150	mW
Storage Temperature	T <sub>stg</sub>	-65 ~ +150	°C

Note: Voltage is all Ground standardized.

### Ordering Information

XC74UL xxxxxx

↑↑  
a b

DESIGNATOR	DESCRIPTION
a	Package Type N=SSOT-25 M=SOT-25
b	Device Orientation R=Embossed Tape (Orientation of Device:Right) L=Embossed Tape (Orientation of Device:Left)

## 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			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				-	-	0.36	-	0.44	
		4.5				-	-	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

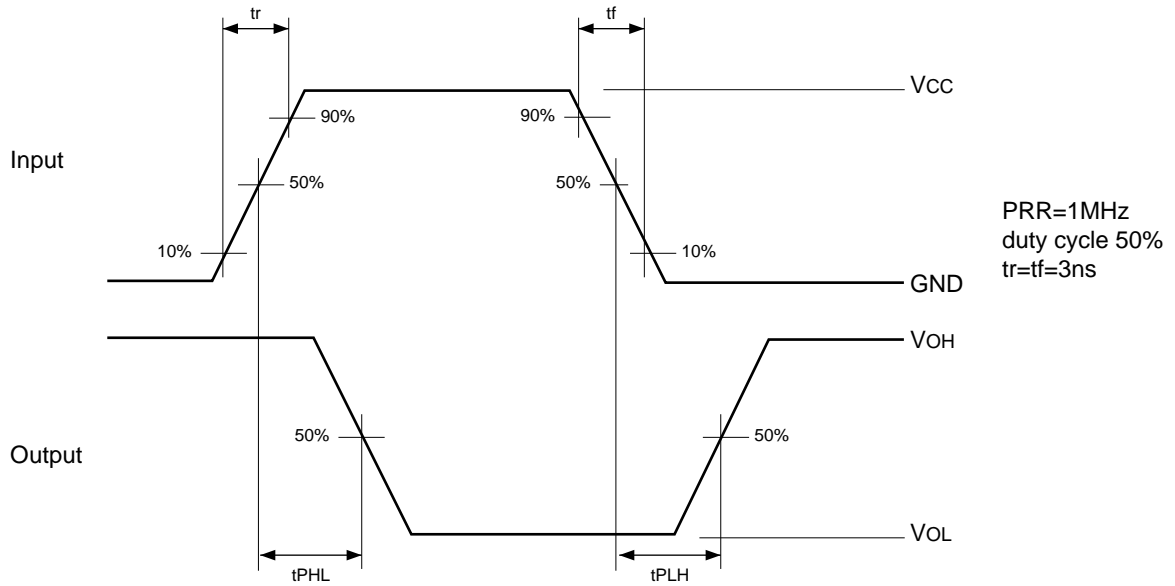
tr=tf=3ns

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	9.5	ns
			5.0		-	2.7	5.5	1	6.5	
		50pF	3.3		-	5.5	11.4	1	13	ns
			5.0		-	3.9	7.5	1	8.5	
	t <sub>PHL</sub>	15pF	3.3		-	3.5	7.9	1	9.5	ns
			5.0		-	2.6	5.5	1	6.5	
		50pF	3.3		-	4.9	11.4	1	13	ns
			5.0		-	3.6	7.5	1	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

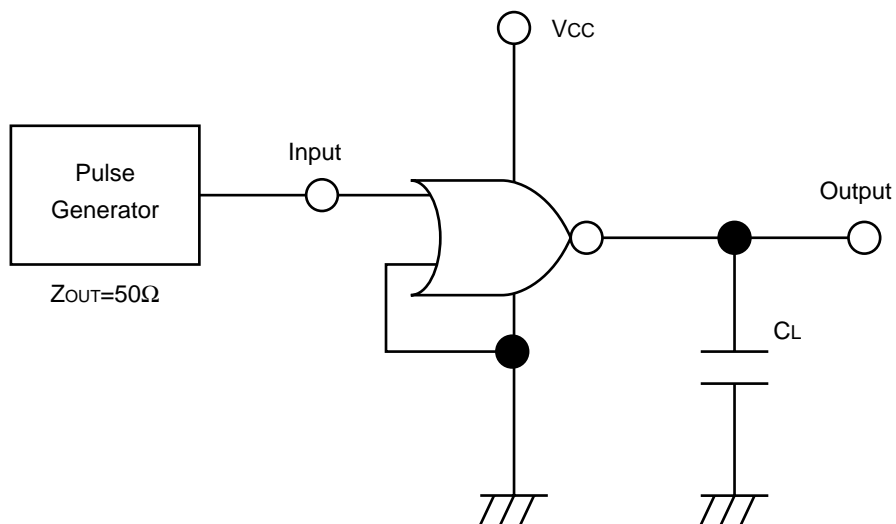
## Recommended Operating Conditions

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	tr, tf	3.3	0 ~ 100	ns/V
		5.0	0 ~ 20	

### Waveforms



### Typical Application Circuit



Note: open output when measuring supply current