

# XC74UL04AA



CMOS Logic

- ◆ CMOS Inverter
- ◆ High Speed Operation : tpd=2.05ns TYP
- ◆ Operating Voltage Range : 2V~5.5V
- ◆ Low Power Consumption : 1μA (max)

## General Description

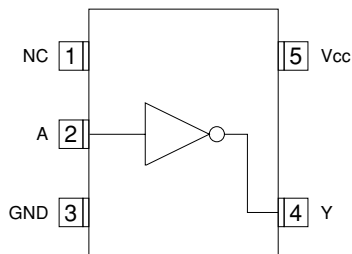
The XC74UL04AA is a CMOS Inverter, manufactured using silicon gate CMOS fabrication.

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

The internal circuit is composed of inverter and buffer, which provide high noise immunity and stable output.

As the XC74UL04AA 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

- Crystal Oscillators
- Palmtops
- Digital Equipment

## Features

- High Speed Operation : tpd=2.05ns TYP
- Operating Voltage Range: 2V~5.5V
- Low Power Consumption: 1μA (max)
- Ultra Small Package : SSOT-25 and SOT-25

## Function

INPUT	OUTPUT
A	Y
H	L
L	H

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.

## XC74ULO4AA

### 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	T <sub>a</sub> =25°C			T <sub>a</sub> =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	-			
Input Voltage	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		-
	V <sub>OL</sub>	3.0	V <sub>IN</sub> =V <sub>IH</sub>	I <sub>OL</sub> =50μA	-	-	0.1	-	0.1		
					4.5	-	-	0.1	-		0.1
					3.0	-	-	0.36	-		0.44
Output Voltage	V <sub>OL</sub>	4.5	V <sub>IN</sub> =V <sub>IH</sub>	I <sub>OL</sub> =8mA	-	-	0.36	-	0.44		
					3.0	-	-	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			

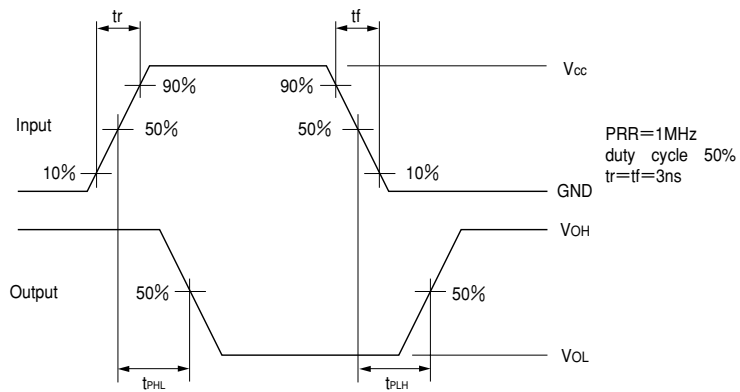
### Switching Electrical Characteristics

PARAMETER	SYMBOL	CL		V <sub>CC</sub> (V)	CONDITIONS	T <sub>a</sub> =25°C			T <sub>a</sub> =40-85°C		UNITS
		MIN	MAX			MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t <sub>PLH</sub>	15pF	3.3	5.0		-	2.7	7.1	1.0	8.5	ns
						-	2.1	5.5	1.0	6.5	
	t <sub>PHL</sub>	50pF	3.3	5.0		-	4.1	10.6	1.0	12	ns
						-	3.2	7.5	1.0	8.5	
		50pF	3.3	5.0		-	2.5	7.1	1.0	8.5	ns
						-	2.0	5.5	1.0	6.5	
Input Capacitance	C <sub>IN</sub>	-	5.0	V <sub>IN</sub> =V <sub>CC</sub> or GND	-	2	10	-	10	pF	
					-	8.9	-	-	-		
Power Dissipation Capacitance	C <sub>pd</sub>	No Load, f=1MHz			-	8.9	-	-	-	pF	

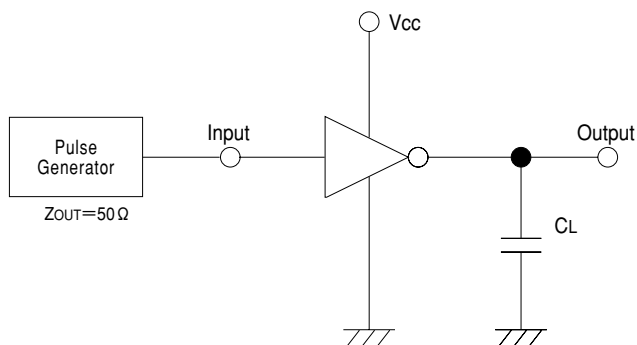
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## Waveforms



## Typical Application Circuit



Note: Open output when measuring supply current