

XC74UL04AA



CMOS Logic

- ◆ CMOS Inverter
- ◆ High Speed Operation : $t_{pd}=2.05\text{ns TYP}$
- ◆ Operating Voltage Range : 2V~5.5V
- ◆ Low Power Consumption : $1\mu\text{A (max)}$

General Description

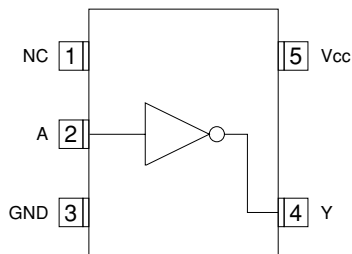
The XC74UL04AA is a CMOS Inverter, manufactured using silicon gate CMOS fabrication.

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 : $t_{pd}=2.05\text{ns TYP}$
- Operating Voltage Range: 2V~5.5V
- Low Power Consumption: $1\mu\text{A (max)}$
- 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

$T_a=-40^{\circ}\text{C}-85^{\circ}\text{C}$

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	I _{IK}	-20	mA
Output Diode Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
VCC ,GND Current	I _{CC} , I _{GND}	±50	mA
Continuous Total Power Dissipation (T _a =55°C)	P _d	150	mW
Storage Temperature	T _{stg}	-65 ~ +150	°C

Note: Voltage is all Ground standardized.

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Recommended Operating Conditions

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

DC Electrical Characteristics

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

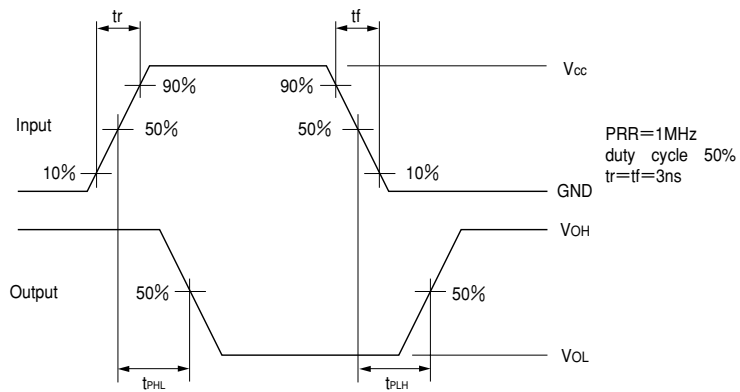
Switching Electrical Characteristics

PARAMETER	SYMBOL	CL		V _{CC} (V)	CONDITIONS	T _a =25°C			T _a =40-85°C		UNITS
						MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t _{PLH}	15pF	3.3	V _{IN} =V _{CC} or GND	-	2.7	7.1	1.0	8.5	ns	
					5.0	-	2.1	5.5	1.0		6.5
		50pF	3.3		-	4.1	10.6	1.0	12		
	5.0		-		3.2	7.5	1.0	8.5			
	t _{PHL}	15pF	3.3		-	2.5	7.1	1.0	8.5		
					5.0	-	2.0	5.5	1.0		6.5
50pF		3.3	-	3.9	10.6	1.0	12				
	5.0	-	3.0	7.5	1.0	8.5					
Input Capacitance	C _{IN}	-	5.0	V _{IN} =V _{CC} or GND	-	2	10	-	10	pF	
Power Dissipation Capacitance	C _{pd}	No Load, f=1MHz			-	8.9	-	-	-	pF	

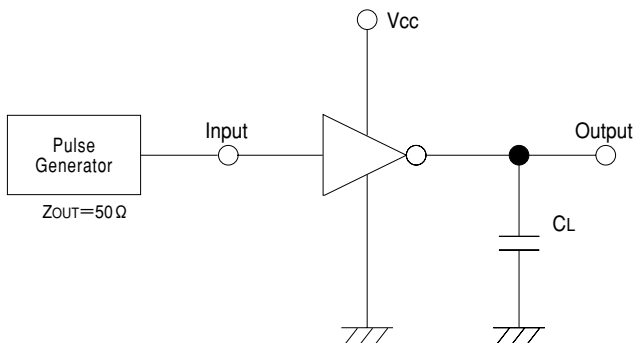
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Waveforms



Typical Application Circuit



Note: Open output when measuring supply current