

XC74UL14AA



CMOS Logic

- ◆ CMOS Schmitt Trigger Inverter
- ◆ High Speed Operation : $t_{pd}=2.3ns$ TYP
- ◆ Operating Voltage Range : 2V~5.5V
- ◆ Low Power Consumption : $1\mu A$ (max)

General Description

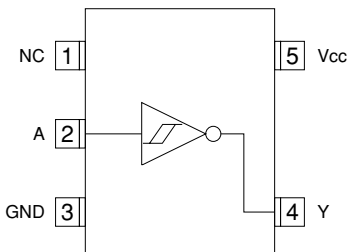
The XC74UL14AA is a CMOS Schmitt Trigger Inverter, manufactured using silicon gate CMOS fabrication.

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 XC74UL14AA 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 : $t_{pd}=2.3ns$ TYP
- Operating Voltage Range : 2V~5.5V
- Low Power Consumption : $1\mu A$ (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

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

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	VCC	-0.5 ~ +6.0	V
Input Voltage	VIN	-0.5 ~ +6.0	V
Output Voltage	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	

DC Electrical Characteristics

PARAMETER	SYMBOL	V _{CC} (V)	CONDITIONS	T _a =25°C			T _a =-40-85°C		UNITS	
				MIN	TYP	MAX	MIN	MAX		
Threshold Voltage	V _{T+}	3.0		-	-	2.2	-	2.2	V	
		4.5		-	-	3.15	-	3.15		
		5.5		-	-	3.85	-	3.85		
	V _{T-}	3.0		0.9	-	-	0.9	-	V	
		4.5		1.35	-	-	1.35	-		
		5.5		1.65	-	-	1.65	-		
Hysteresis Voltage	V _H	3.0	0.25	-	1.2	0.25	1.2			
		4.5	0.30	-	1.4	0.30	1.4			
		5.5	0.35	-	1.6	0.35	1.6			
Output Voltage	V _{OH}	2.0	V _{IN} =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			2.58	-	-	2.48	-	
		4.5			3.94	-	-	3.80	-	
		3.0			2.58	-	-	2.48	-	
	V _{OL}	V _{IN} =V _{IH}	I _{OL} =50μA	-	-	0.1	-	0.1	V	
				-	-	0.1	-	0.1		
				-	-	0.1	-	0.1		
				-	-	0.36	-	0.44		
Input Current	I _{IN}	5.5	V _{IN} =V _{CC} or GND	-0.1	-	0.1	-1.0	1.0	μA	
		5.5	V _{IN} =V _{CC} or GND, I _{OUT} =0μA	-	-	1.0	-	10.0		

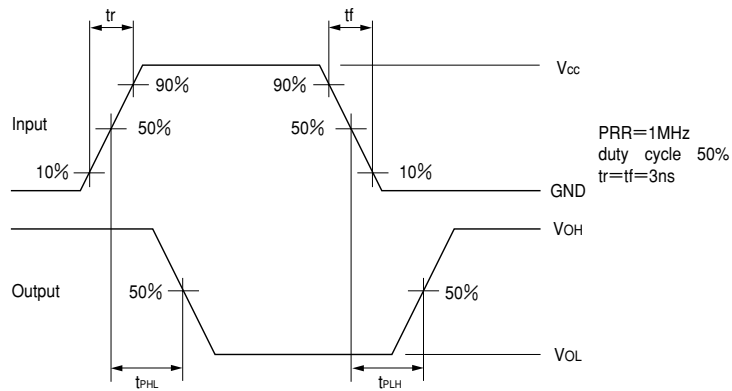
Switching Electrical Characteristics

PARAMETER	SYMBOL	C _L	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		-	2.8	12.8	1.0	15	ns
			5.0		-	2.1	8.6	1.0	10	
		50pF	3.3		-	4.3	16.3	1.0	18.5	ns
			5.0		-	3.1	10.6	1.0	12	
	t _{PHL}	15pF	3.3		-	3.1	12.8	1.0	15	ns
			5.0		-	2.5	8.6	1.0	10	
50pF		3.3	-	4.4	16.3	1.0	18.5	ns		
		5.0	-	3.4	10.6	1.0	12			
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	-	10	-	-	-	pF

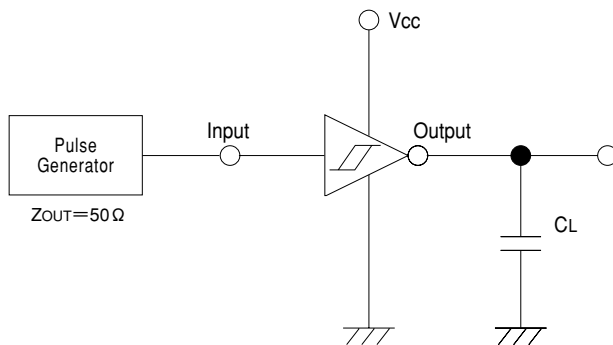
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Waveforms



Typical Application Circuit



Note: Open output when measuring supply current