

# XC74UL14AA



## CMOS Logic

### ◆CMOS Schmitt Trigger Inverter

◆High Speed Operation :  $t_{pd}=2.3\text{ns}$  TYP

◆Operating Voltage Range :  $2\text{V}\sim 5.5\text{V}$

◆Low Power Consumption :  $1\mu\text{A}$  (max)

### ■General Description

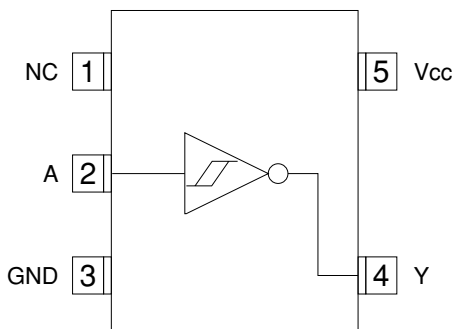
The XC74UL14AA is a CMOS Schmitt Trigger Inverter, manufactured using silicon gate CMOS fabrication.

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** :  $t_{pd}=2.3\text{ns}$  TYP

**Operating Voltage Range** :  $2\text{V}\sim 5.5\text{V}$

**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

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

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	IIK	-20	mA
Output Diode Current	IOK	$\pm 20$	mA
Output Current	IOUT	$\pm 25$	mA
VCC ,GND Current	ICC, IGND	$\pm 50$	mA
Continuous Total Power Dissipation ( $T_a=55^{\circ}\text{C}$ )	Pd	150	mW
Storage Temperature	Tstg	-65 ~ +150	$^{\circ}\text{C}$

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	

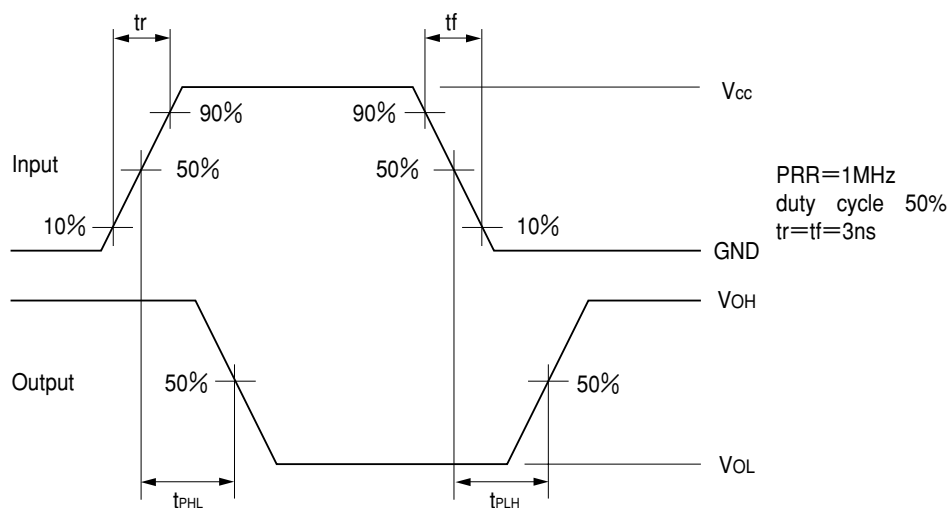
## ■ DC Electrical Characteristics

PARAMETER	SYMBOL		CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS		
		Vcc(V)		MIN	TYP	MAX	MIN	MAX			
Threshold Voltage	VT+	3.0		-	-	2.2	-	2.2	V		
		4.5		-	-	3.15	-	3.15			
		5.5		-	-	3.85	-	3.85			
	VT-	3.0		0.9	-	-	0.9	-	V		
		4.5		1.35	-	-	1.35	-			
		5.5		1.65	-	-	1.65	-			
Hysteresis Voltage	VH	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	VOH	2.0	VIN=VIL	IOH=-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			IOH=-4mA	2.58	-	2.48	-		
		4.5									IOH=-8mA
	VOL	2.0	VIN=VIH	IOL=50μA	-	-	0.1	-	0.1	V	
		3.0			-	-	0.1	-	0.1		
		4.5			-	-	0.1	-	0.1		
		3.0			IOL=4mA	-	0.36	-	0.44		
		4.5									IOL=8mA
Input Current	IIN	5.5	VIN=VCC or GND	-0.1	-	0.1	-1.0	1.0	μA		
Quiescent Supply Current	ICC	5.5	VIN=VCC or GND, IOUT=0μA	-	-	1.0	-	10.0			

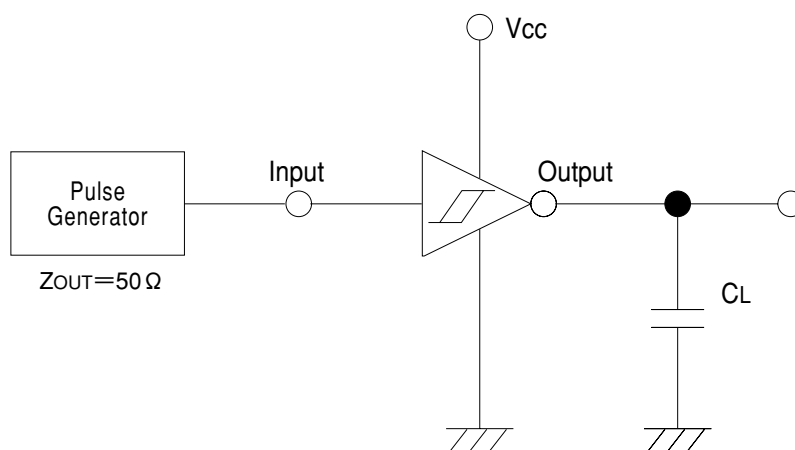
## ■ Switching Electrical Characteristics

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		-	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 <sub>PHL</sub>	15pF	3.3		-	3.1	12.8	1.0	15	ns
			5.0		-	2.5	8.6	1.0	10	
Input Capacitance	C <sub>IN</sub>	-	5.0	V <sub>IN</sub> =V <sub>CC</sub> or GND	-	4.4	16.3	1.0	18.5	ns
					-	3.4	10.6	1.0	12	
Input Capacitance	C <sub>IN</sub>	-	5.0	V <sub>IN</sub> =V <sub>CC</sub> or GND	-	2	10	-	10	pF
Power Dissipation Capacitance	C <sub>pd</sub>	No Load, f=1MHz			-	10	-	-	-	pF

## Waveforms



## Typical Application Circuit



Note: Open output when measuring supply current