- **CMOS Inverter**
- **Unbuffered Type**
- **High Speed Operation tpd=4.35ns TYP**
- **Operating Voltage Range 2V~5.5V**
- **Low Power Consumption 1μA MAX**

Applications

- Crystal Oscillators
- Palmtops
- Digital Equipment

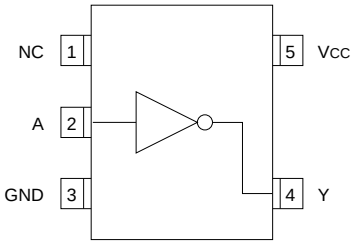
General Description

The XC74ULU04A is a CMOS Inverter, manufactured using silicon gate CMOS fabrication.
CMOS low power circuit operation makes high speed LS-TTL operations achieveable.
The internal unbuffered, single-step composition makes the XC74ULU04A suitable to use with crystal oscillators.
As the XC74ULU04A is integrated into mini molded, SSOT-25 and SOT-25 packages, high density mounting is possible.

Features

High Speed Operation: tpd=4.35ns TYP
Operating Voltage Range: 2V~5.5V
Low Power Consumption: 1μA MAX
Space Saving Package: SSOT-25 and SOT-25

Pin Configuration



SSOT-25/SOT-25
(TOP VIEW)

Function

INPUT	OUTPUT
A	Y
H	L
L	H

H=High level, L=Low level

Absolute Maximum Ratings

Ta=-40℃~85℃

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	Pd	150	mW
Storage Temperature	Tstg	-65 ~ +150	℃

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	CONDITIONS			Ta=25℃			Ta=-40~85℃		UNITS
		VCC(V)			MIN	TYP	MAX	MIN	MAX	
Input Voltage	VIH	2.0			1.7	–	–	1.7	–	V
		3.0			2.4	–	–	2.4	–	
		5.5			4.4	–	–	4.4	–	
	VIL	2.0			–	–	0.3	–	0.3	V
		3.0			–	–	0.6	–	0.6	
		5.5			–	–	1.1	–	1.1	
Output Voltage	VOH	2.0	VIN=VIL	IOH=-50μA	1.8	2.0	–	1.8	–	V
		3.0			2.7	3.0	–	2.7	–	
		4.5			4.0	4.5	–	4.0	–	
		3.0		IOH=-4mA	2.58	–	–	2.48	–	
		4.5		IOH=-8mA	3.94	–	–	3.80	–	
	VOL	2.0	VIN=VIH	IOL=50μA	–	–	0.2	–	0.2	V
		3.0			–	–	0.3	–	0.3	
		4.5			–	–	0.5	–	0.5	
		3.0		IOL=4mA	–	–	0.36	–	0.44	
		4.5		IOL=8mA	–	–	0.36	–	0.44	
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

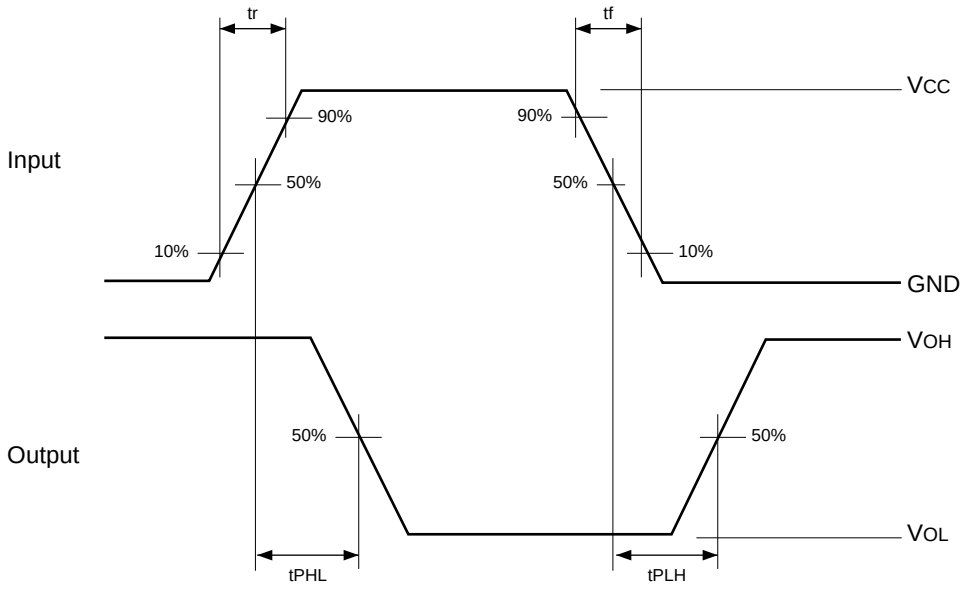
tr=tf=3ns

PARAMETER	SYMBOL	CONDITIONS			Ta=25℃			Ta=-40~85℃		UNITS
		CL	VCC(V)		MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	tPLH	15pF	3.3		–	2.8	8.9	1	10.5	ns
			5.0		–	2.4	5.5	1	6.5	
		50pF	3.3		–	4.5	11.4	1	13	ns
			5.0		–	3.6	7	1	8	
	tPHL	15pF	3.3		–	2.7	8.9	1	10.5	ns
			5.0		–	2.2	5.5	1	6.5	
		50pF	3.3		–	4.2	11.4	1	13	ns
			5.0		–	3.5	7	1	8	
Input Capacitance	CIN	–	5.0	VIN=VCC or GND	–	2	10	–	10	pF
Power Dissipation Capacitance	Cpd	No Load, f=1MHz			–	16	–	–	–	pF

Recommended Operating Conditions

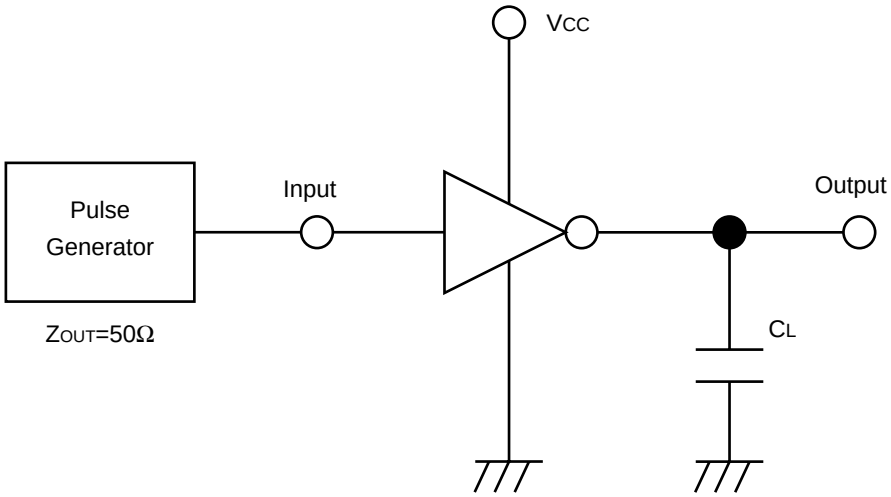
PARAMETER	SYMBOL	VCC(V)	CONDITIONS	UNITS
Supply Voltage	VCC	–	2 ~ 5.5	V
Input Voltage	VIN	–	0 ~ 5.5	V
Output Voltage	VOUT	–	0 ~ VCC	V
Operating Temperature	Topr	–	-40 ~ +85	℃
Output Current	IOH	3.0	-4	mA
		4.5	-8	
	IOL	3.0	4	
		4.5	8	
Input Rise and Fall Time	tr, tf	3.3	0 ~ 100	ns/V
		5.0	0 ~ 20	

■ Waveforms



PRR=1MHz
duty cycle 50%
tr=tf=3ns

■ Typical Application Circuit



Note: open output when measuring supply current