

- ◆ CMOS Schmitt Trigger Inverter
- ◆ High Speed Operation $t_{pd}=12\text{ns TYP}$
- ◆ Operating Voltage Range 2V~6V
- ◆ Low Power Consumption $1\mu\text{A MAX}$

Applications

- Palmtops
- Digital Equipment

General Description

The XC74UH14AAM 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 XC74UH14AAM is integrated into a mini molded, SOT-25 package, high density mounting is possible.

Features

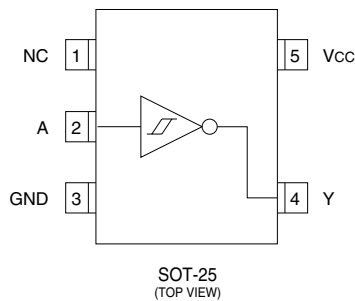
High Speed Operation: $t_{pd}=12\text{ns TYP}$

Operating Voltage Range: 2V~6V

Low Power Consumption: $1\mu\text{A MAX}$

Space Saving Package: SOT-25

Pin Configuration



Function

INPUT	OUTPUT
A	Y
H	L
L	H

H=High level, L=Low level

Absolute Maximum Ratings

$T_a=25^\circ\text{C}$

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	VCC	-0.5 ~ +7.0	V
Input Voltage	V _{IN}	-0.5 ~ VCC +0.5	V
Output Voltage	V _{OUT}	-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}	±25	mA
Continuous Total Power Dissipation	P _d	200	mW
Storage Temperature	T _{stg}	-65 ~ +150	°C

Note: Voltage is all Ground standardized.

DC Electrical Characteristics

PARAMETER	SYMBOL	V _{CC} (V)	CONDITIONS	Ta=25°C			Ta=-40-85°C		UNITS		
				MIN	TYP	MAX	MIN	MAX			
Threshold Voltage	VT+	2.0		-	-	1.5	-	1.5	V		
		4.5		-	-	3.15	-	3.15			
		6.0		-	-	4.2	-	4.2			
	VT-	2.0		0.3	-	-	0.3	-	V		
		4.5		0.9	-	-	0.9	-			
		6.0		1.2	-	-	1.2	-			
Hysteresis Voltage	VH	2.0	0.2	-	1.2	0.2	1.2	V			
		4.0	0.4	-	2.25	0.4	2.25				
		6.0	0.6	-	3.0	0.6	3.0				
Output Voltage	VOH	2.0	VIN=VIH or VIL	IOH=-20μA	1.9	2.0	-	1.9	-	V	
		4.5			4.4	4.5	-	4.4	-		
		6.0			5.9	6.0	-	5.9	-		
		4.5		IOH=-2mA	4.18	4.31	-	4.13	-		
		6.0			IOH=-2.6mA	5.68	5.80	-	5.63		-
		6.0									
	VOL	VIN=VIH	2.0	IOL=20μA	-	0.0	0.1	-	0.1	V	
			4.5		-	0.0	0.1	-	0.1		
			6.0		-	0.0	0.1	-	0.1		
			4.5		IOL=2mA	-	0.17	0.26	-		0.33
6.0	IOL=2.6mA	-	0.18	0.26		-	0.33				
Input Current		IIN	6.0	VIN=VCC or GND	-	-	±0.1	-	±1.0	μA	
Quiescent Supply Current	ICC	6.0	VIN=VCC or GND, IOUT=0μA	-	-	1.0	-	10.0			

Switching Electrical Characteristics

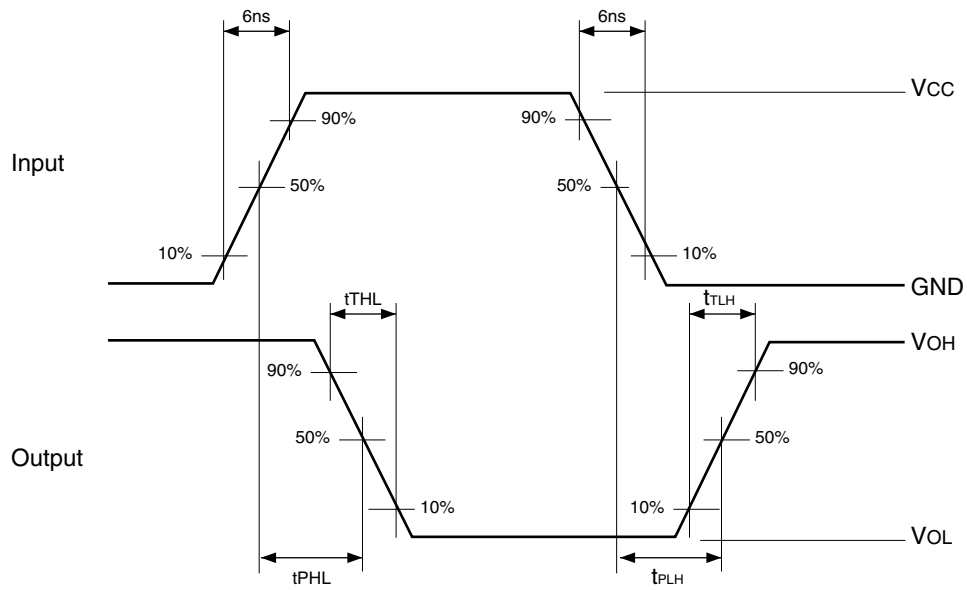
CL=15pF, tr=6ns, VCC=5V

PARAMETER	SYMBOL	CONDITIONS	Ta=25°C			UNITS
			MIN	TYP	MAX	
Output Transition Time	tTLH		-	5	10	ns
	tTHL		-	5	10	ns
Propagation Delay Time	tPLH		-	7	15	ns
	tPHL		-	7	15	ns

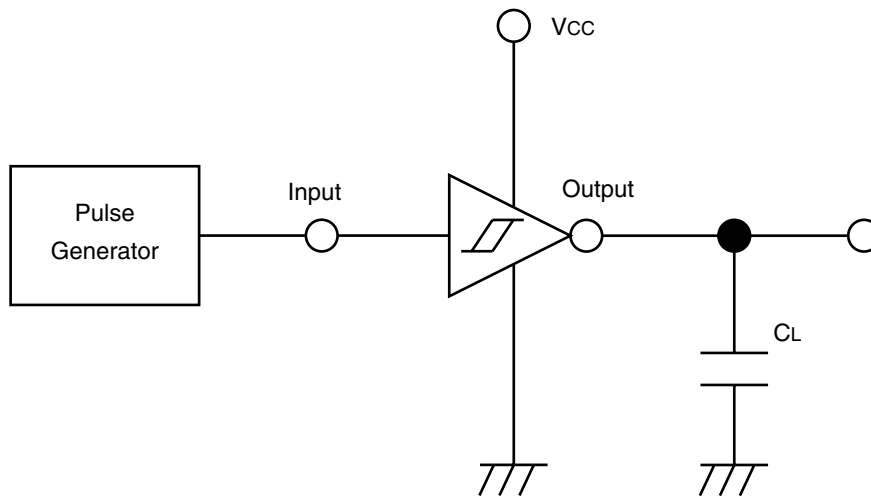
CL=50pF, tr=tf=6ns

PARAMETER	SYMBOL	V _{CC} (V)	CONDITIONS	Ta=25°C			Ta=-40-85°C		UNITS
				MIN	TYP	MAX	MIN	MAX	
Output Transition Time	tTLH	2.0		-	50	125	-	155	ns
		4.5		-	14	25	-	31	
		6.0		-	12	21	-	26	
	tTHL	2.0		-	50	125	-	155	ns
		4.5		-	14	25	-	31	
		6.0		-	12	21	-	26	
Propagation Delay Time	tPLH	2.0		-	48	100	-	125	ns
		4.5		-	12	20	-	25	
		6.0		-	9	17	-	21	
	tPHL	2.0		-	48	100	-	125	ns
		4.5		-	12	20	-	25	
		6.0		-	9	17	-	21	
Input Capacitance	CIN	-		-	5	10	-	10	pF

Waveforms



Typical Application Circuit



Note: open output when measuring supply current

Recommended Operating Conditions

PARAMETER	SYMBOL	CONDITIONS	UNITS
Supply Voltage	V_{CC}	2 ~ 6	V
Input Voltage	V_{IN}	0 ~ V_{CC}	V
Output Voltage	V_{OUT}	0 ~ V_{CC}	V
Operating Temperature	T_{opr}	-40 ~ +85	°C