

XC74UL08AA



CMOS Logic

- ◆ CMOS 2-Input AND Gate
- ◆ High Speed Operation : $t_{pd}=2.6\text{ns TYP}$
- ◆ Operating Voltage Range : $2\text{V}\sim 5.5\text{V}$
- ◆ Low Power Consumption : $1\mu\text{A (max)}$

General Description

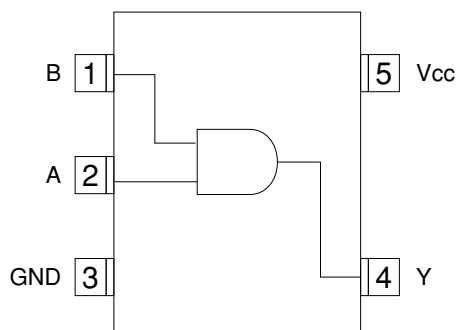
The XC74UL08AA is a 2-input CMOS AND gate, manufactured using silicon gate CMOS fabrication.

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 XC74UL08AA is integrated into mini molded, SSOT-25 and SOT-25 packages, high density mounting is possible.

Pin Configuration



SSOT-25/SOT-25
(TOP VIEW)

Absolute Maximum Ratings

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

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	V _{CC}	-0.5 ~ +6.0	V
Input Voltage	V _{IN}	-0.5 ~ +6.0	V
Output Voltage	V _{OUT}	-0.5 ~ V _{CC} +0.5	V
Input Diode Current	I _{IK}	-20	mA
Output Diode Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
V _{CC} , 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.

Applications

- Palmtops
- Digital Equipment

Features

High Speed Operation : $t_{pd}=2.6\text{ns TYP}$

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	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

H=High level, L=Low level

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

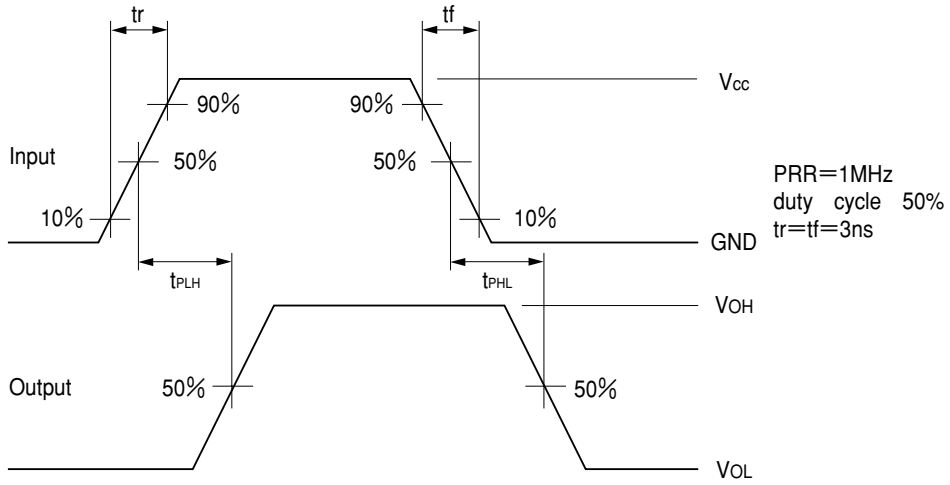
PARAMETER	SYMBOL	V _{CC} (V)	CONDITIONS	T _a =25°C			T _a =-40~85°C		UNITS	
				MIN	TYP	MAX	MIN	MAX		
Input Voltage	V _{IH}	2.0		1.5	-	-	1.5	-	V	
		3.0		2.1	-	-	2.1	-		
		5.5		3.85	-	-	3.85	-		
	V _{IL}	2.0		-	-	0.5	-	0.5	V	
		3.0		-	-	0.9	-	0.9		
		5.5		-	-	1.65	-	1.65		
Output Voltage	V _{OH}	2.0	V _{IN} =V _{IH}	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	-			
	V _{OL}	V _{IN} =V _{IH} or V _{IL}	2.0	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	-	0.44				
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

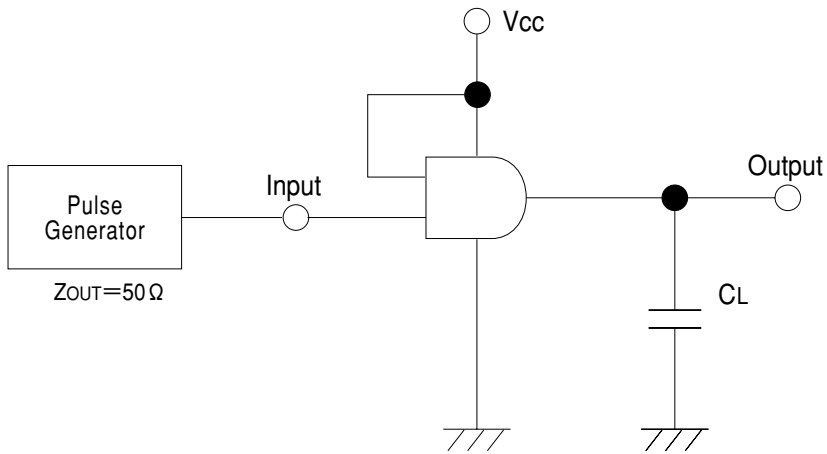
PARAMETER	SYMBOL	C _L	V _{CC} (V)	CONDITIONS	T _a =25°C			T _a =-40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t _{PLH}	15pF	3.3		-	3.7	8.8	1.0	10.5	ns
			5.0		-	2.8	5.9	1.0	7	
		50pF	3.3		-	5.2	12.3	1.0	14	ns
			5.0		-	3.7	7.9	1.0	9	
	t _{PHL}	15pF	3.3		-	3.2	8.8	1.0	10.5	ns
			5.0		-	2.4	5.9	1.0	7	
50pF		3.3	-	4.5	12.3	1.0	14	ns		
		5.0	-	3.4	7.9	1.0	9			
Input Capacitance	C _{IN}	-	5.0	V _{IN} =V _{CC} or GND	-	4	10	-	10	pF
Power Dissipation Capacitance	C _{pd}	No Load, f=1MHz			-	9.3	-	-	-	pF

t_r=t_f=3ns

Waveforms



Typical Application Circuit



Note: Open output when measuring supply current