

XC74WL00AASR



CMOS Logic

◆CMOS Dual-Input NAND Gate

◆Operating Voltage Range : 2V ~ 5.5V

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

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

◆MSOP-8B Package

■Description

XC74WL00AASR is a dual 2-input CMOS NAND gate, manufactured using silicon gate CMOS processes. The small quiescent current, which is one of the features of the CMOS logic, gives way to high speed operations which enables LS-TTL.

With wave forming buffers connected internally, stabilized output can be achieved as the series offers high noise immunity.

As the series is integrated into a mini molded, MSOP-8B package, high density mounting is possible.

■Applications

- Palmtops
- Digital Equipment

■Features

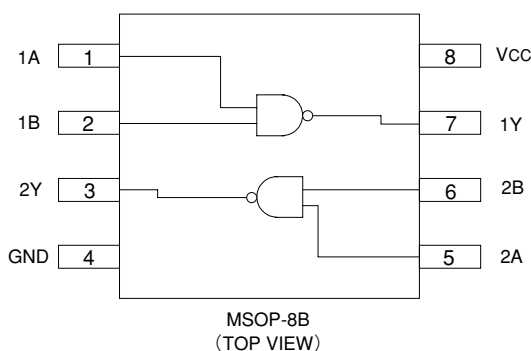
High Speed Operations : $t_{pd} = 2.6\text{ns}$ TYP ($V_{CC}=5\text{V}$)

Operating Voltage Range: 2V ~ 5.5V

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

Small Package : MSOP-8B

■Pin Configuration



■Functions

INPUT		OUTPUT
A	B	Y
H	H	L
H	L	H
L	H	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	$-0.5 \sim +6.0$	V
Input Voltage	VIN	$-0.5 \sim +6.0$	V
Output Voltage	VOU	$-0.5 \sim V_{CC} + 0.5$	V
Input Diode Current	I _{IK}	-20	mA
Output Diode Current	I _{OK}	± 20	mA
Switch Output Current	I _{OUT}	± 25	mA
VCC, GND Current	I _{CC} , I _{GND}	± 50	mA
Power Dissipation ($T_a = 25^\circ\text{C}$)	P _d	300	mW
Storage Temperature	T _{stg}	$-65 \sim +150$	$^\circ\text{C}$

Note : Voltage is all Ground standardized.

Recommended Operating Conditions

PARAMETER	SYMBOL	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	°C
Input Rise/Fall Time	tr, tf	0~200 (VCC=3.3V)	ns
		0~100 (VCC=5V)	

DC Electrical Characteristics

PARAMETER	SYMBOL	VCC (V)	CONDITIONS		Ta=25℃			Ta=-40~85℃		UNITS	
					MIN	TYP	MAX	MIN	MAX		
Input Voltage	VIH	2.0			1.5	—	—	1.5	—	V	
		3.0			2.1	—	—	2.1	—		
		5.5			3.85	—	—	3.85	—		
	VIL	2.0			—	—	0.5	—	0.5	V	
		3.0			—	—	0.9	—	0.9		
		5.5			—	—	1.65	—	1.65		
Output Voltage	VOH	2.0	VIN=VIL or VIH	IOH=-50 μA	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=50 μA	—	—	0.1	—	0.1	V	
		3.0			—	—	0.1	—	0.1		
		4.5			—	—	0.1	—	0.1		
		3.0		IOL=4mA	—	—	0.36	—			
		4.5									IOL=8mA
	Input Voltage	IIN	0~5.5	VIN=VCC or GND		-0.1	—	0.1	-1.0	1.0	
Quiscent Supply Current	ICC	5.5	VIN=VCC or GND, IOUT=0 μA		—	—	1.0	—	10.0	μA	

Switching Electrical Characteristics

(tr=tf=3ns)

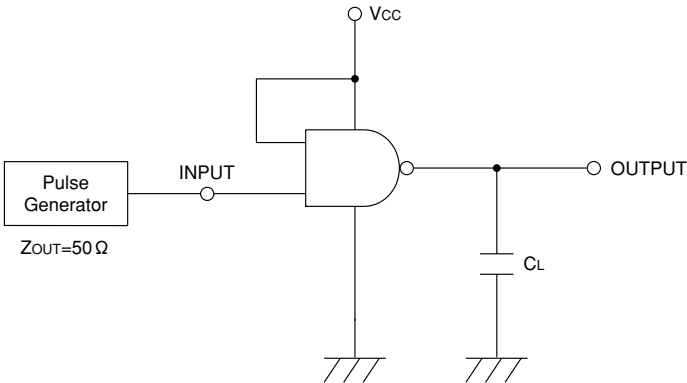
PARAMETER	SYMBOL	CL	VCC (V)	CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	tPLH	15pF	3.3		—	3.7	7.9	1	9.5	ns
			5.0		—	2.7	5.5	1	6.5	
		50pF	3.3		—	5.4	11.4	1	13	ns
			5.0		—	3.6	7.5	1	8.5	
	tPHL	15pF	3.3		—	3.3	7.9	1	9.5	ns
			5.0		—	2.5	5.5	1	6.5	
		50pF	3.3		—	4.6	11.4	1	13	ns
			5.0		—	3.5	7.5	1	8.5	
Input Capacitance	CIN	—	5.0	VIN=VCC or GND	—	2	10	—	10	pF
Power Dissipation Capacitance	Cpd	No Load, f=1MHz			—	9.3	—	—	—	pF

Noise Characteristics

(tr=tf=3ns)

PARAMETER	SYMBOL				Ta=25°C			UNITS
		CL	VCC(V)	CONDITIONS	MIN	TYP	MAX	
Not functioning output maximum dynamic VOL	VOLP	50pF	5.0		—	0.3	0.8	V
Not functioning output minimum dynamic VOL	VOLV	50pF	5.0		−0.8	−0.3	—	V
Minimum dynamic VIH	VIHD	50pF	5.0		—	—	3.5	V
Maximum dynamic VIL	VILD	50pF	5.0		—	—	1.5	V

Typical Application Circuit



Waveforms

