

# XC74WL86AASR



## CMOS Logic

### ◆CMOS Logic Dual 2-input Exclusive OR Gate

◆Operating Voltage Range : 2V ~ 5.5V

◆High Speed Operations :  $t_{pd} = 3.1\text{ns TYP}$

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

◆MSOP-8B Package

### ■Description

XC74WL86AASR is Dual 2-input Exclusive OR 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

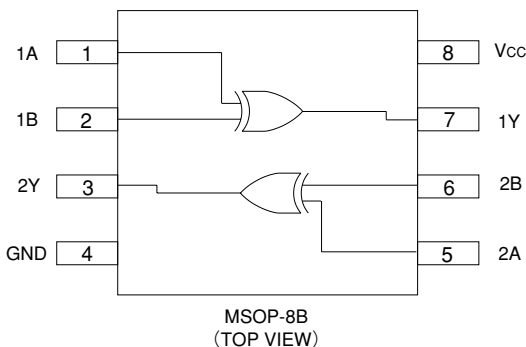
**High Speed Operations** :  $t_{pd} = 3.1\text{ns TYP}$  ( $V_{CC}=5\text{V}$ )

**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	L

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	$V_{CC}$	$-0.5 \sim +6.0$	V
Input Voltage	$V_{IN}$	$-0.5 \sim +6.0$	V
Output Voltage	$V_{OUT}$	$-0.5 \sim V_{CC} + 0.5$	V
Input Diode Current	$I_{IK}$	-20	mA
Output Diode Current	$I_{OK}$	$\pm 20$	mA
Switch Output Current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ , GND Current	$I_{CC}$ , $I_{GND}$	$\pm 50$	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 and Fall Time	tr, tf	0~200 (VCC=3.3V)	ns
		0~100 (VCC=5V)	

## DC Electrical Characteristics

PARAMETER	SYMBOL	VCC (V)	CONDITIONS	Ta=25°C			Ta=−40~85°C		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	3.94	—	—	3.80	
		5.5		IOH=−8mA	—	—	—	—	
	VOL	2.0	VIN=VIL or VIH	IOL=50 μA	—	—	0.1	—	V
		3.0			—	—	0.1	—	
		4.5			—	—	0.1	—	
		3.0		IOL=4mA	—	—	0.36	—	
		4.5		IOL=8mA	—	—	0.36	—	
		5.5		IOL=8mA	—	—	—	—	
Input Current	IIN	0~5.5	VIN=VCC or GND	−0.1	—	0.1	−1.0	1.0	μA
Quiescent Supply Current	ICC	5.5	VIN=VCC or GND, IOUT=0 μA	—	—	1.0	—	10.0	μA

## Switching Electrical Characteristics

(tr=tf=3ns)

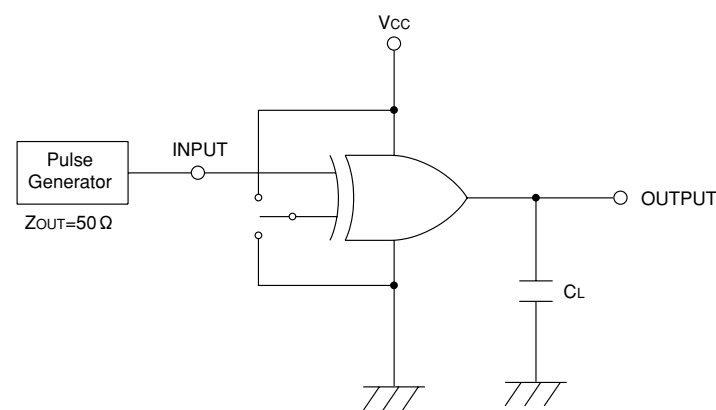
PARAMETER	SYMBOL	CL	VCC (V)	CONDITIONS	Ta=25°C			Ta=−40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	tPLH	15pF	3.3		—	4.4	11	1	13	ns
			5.0		—	3.3	6.8	1	8	
		50pF	3.3		—	6.1	14.5	1	16.5	ns
			5.0		—	4.4	8.8	1	10	
	tPHL	15pF	3.3		—	4.0	11	1	13	ns
			5.0		—	2.9	6.8	1	8	
		50pF	3.3		—	5.6	14.5	1	16.5	ns
			5.0		—	4.1	8.8	1	10	
Input Capacitance	CIN	—	5.0	VIN=VCC or GND	—	4	10	—	10	pF
Power Dissipation Capacitance	Cpd	No Load, f=1MHz			—	12	—	—	—	pF

Noise Characteristics

(  $t_r=t_f=3\text{ns}$  )

PARAMETER	SYMBOL			CONDITIONS	Ta=25°C			UNITS
		CL	Vcc(V)		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

