XC74UL02AA

CMOS Logic

■GENERAL DESCRIPTION

The XC74UL02AA is a 2-input CMOS NOR Gate, manufactured using silicon gate CMOS fabrication.

CMOS low power circuit operation makes high speed LS-TTL operation achievable.

With a wave forming buffer connected internally, stabilized output can be achieved as the circuit offers high noise immunity.

As the XC74UL02AA is integrated into mini molded, SSOT-25 and SON-6 package, high density mounting is possible.

■APPLICATIONS

●Palmtops

●Digital equipment

■FEATURES

High Speed Operation : tpd = 2.65ns (TYP.)
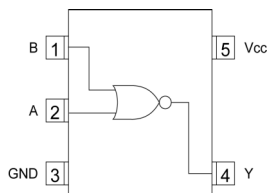
Operating Voltage Range : 2V ~ 5.5V

Low Power Consumption: 1 μ A (MAX.)
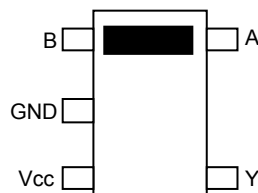
CMOS 2-Input NOR Gate

Ultra Small Packages : SSOT-25, SON-6*

* Under Development

■PIN CONFIGURATION

SSOT-25
（TOP VIEW）
XC74UL02AAN

SON-6
（TOP VIEW）
XC74UL02AAR

■FUNCTIONS

INPUT		OUTPUT
A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

H=High level

L=Low level

■ABSOLUTE MAXIMUM RATINGS

Ta=-40℃~85℃

PARAMETER		SYMBOL	RATINGS	UNITS
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
Power Dissipation	SSOT-25*1	Pd	150	mW
	SON-6*2		200	
Storage Temperature Range		Tstg	-65~+150	℃

Voltage is all ground standardized.

＊1）Ta=55℃

＊2）Ta=25℃

■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 Range	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
		5.0	0~20	

■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=VIH	IOH=-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		IOH=-4mA	2.58	—	—	2.48	—	
		4.5		IOH=-8mA	3.94	—	—	3.80	—	
	VOL	2.0	VIN=VIH	IOL=50μA	—	—	0.1	—	0.1	V
		3.0			—	—	0.1	—	0.1	
		4.5			—	—	0.1	—	0.1	
		3.0		IOL=4mA	—	—	0.36	—	0.44	
		4.5		IOL=8mA	—	—	0.36	—	0.44	
Input Current	IIN	0~5.5	VIN=Vcc or GND		-0.1	—	0.1	-1.0	1.0	μA
Static Supply Current	ICC	5.5	VIN=Vcc or GND,IOUT=0μA		—	—	1.0	—	10.0	

■SWITCHING ELECTRICAL CHARACTERISTICS

tr=tf=3ns

PARAMETER	SYMBOL	CL	Vcc(V)	CONDITIONS	Ta=25℃			Ta=-40℃~85℃		UNITS
					MIN.	TYP.	MAX.	MIN.	MAX.	
Delay Time	tPLH	15pF	3.3		—	3.9	7.9	1.0	9.5	ns
			5.0		—	2.7	5.5	1.0	6.5	
		50pF	3.3		—	5.5	11.4	1.0	13.0	ns
			5.0		—	3.9	7.5	1.0	8.5	
	tPHL	15pF	3.3		—	3.5	7.9	1.0	9.5	ns
			5.0		—	2.6	5.5	1.0	6.5	
		50pF	3.3		—	4.9	11.4	1.0	13.0	ns
			5.0		—	3.6	7.5	1.0	8.5	
Input Capacitance	CIN	—	5.0	VIN=Vcc or GND	—	4	10	—	10	pF
Power Dissipation Capacitance	Cpd	No Load, f=1MHz			—	9.7	—	—	—	pF

■WAVEFORM

Input

tr

90%

50%

10%

tf

90%

50%

10%

Vcc

GND

PRR＝1MHz
duty cycle 50%
tr＝tf＝3ns

Output

VOH

50%

50%

VOL

t_{PHL}

t_{PLH}

■TEST CIRCUIT

Vcc

Pulse
Generator

$Z_{OUT}＝50Ω$

Input

Output

CL
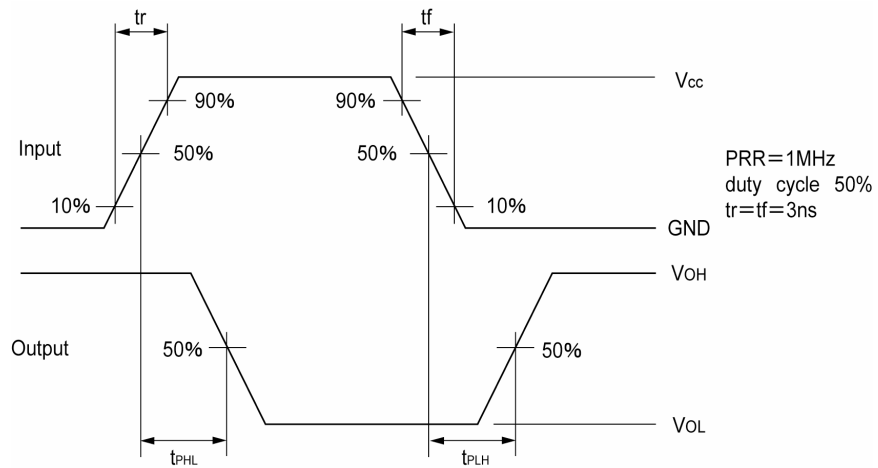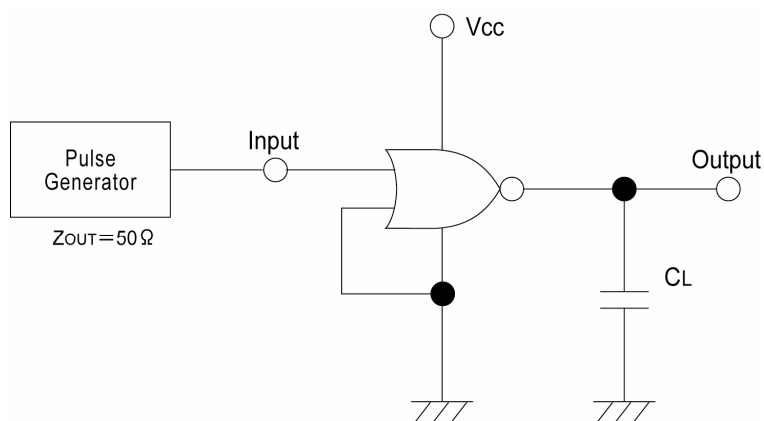
Note: Open output when measuring supply current

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