

XC74UL86AA



CMOS Logic

CMOS 2-Input Exclusive-OR Gate

High Speed Operation : $t_{pd} = 3.1\text{ns}$ (TYP.)

Operating Voltage Range : 2V ~ 5.5V

Low Power Consumption : 1 μA (MAX.)

■ APPLICATIONS

- Palmtops
- Digital equipment

■ GENERAL DESCRIPTION

The XC74UL86AA is a 2-input CMOS exclusive-OR 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 XC74UL86AA is integrated into mini molded, SSOT-25 and SOT-25 packages, high density mounting is possible.

■ FEATURES

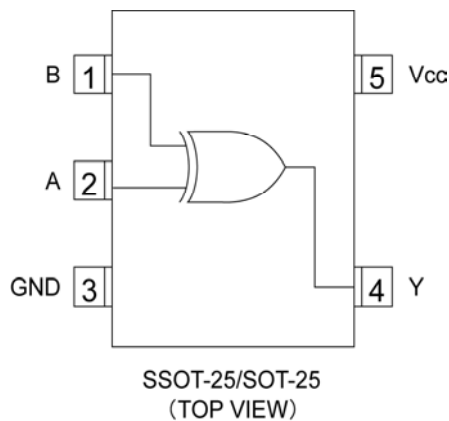
High Speed Operation : $t_{pd} = 3.1\text{ns}$ (TYP.)

Operating Voltage Range : 2V ~ 5.5V

Low Power Consumption: 1 μA (MAX.)

Ultra Small Packages : SSOT-25 and SOT-25

■ PIN CONFIGURATION



■ FUNCTIONS

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

H=High level

L=Low level

■ ABSOLUTE MAXIMUM RATINGS

$T_a = -40 \sim 85$

PARAMETER	SYMBOL	RATINGS	UNITS
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
Power Dissipation($T_a=55$)	P_d	150	mW
Storage Temperature Range	T_{stg}	-65~+150	

* Voltage is all ground standardized.

■ 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 Range	T _{opr}	-	-40~+85	
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,tf}	3.3	0~100	ns
		5.0	0~20	

■ DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	V _{CC} (V)	CONDITIONS		Ta=25			Ta=-40	~85	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} or V _{IL}	I _{OH} =-50 μ A	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}		2.0	V _{IN} =V _{IH} or V _{IL}	I _{OL} =50 μ A	-	-	0.1		-
	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
		I _{CC}	5.5	V _{IN} =V _{CC} or GND, I _{OUT} =0 μ A		-	-	1.0	-	10.0	

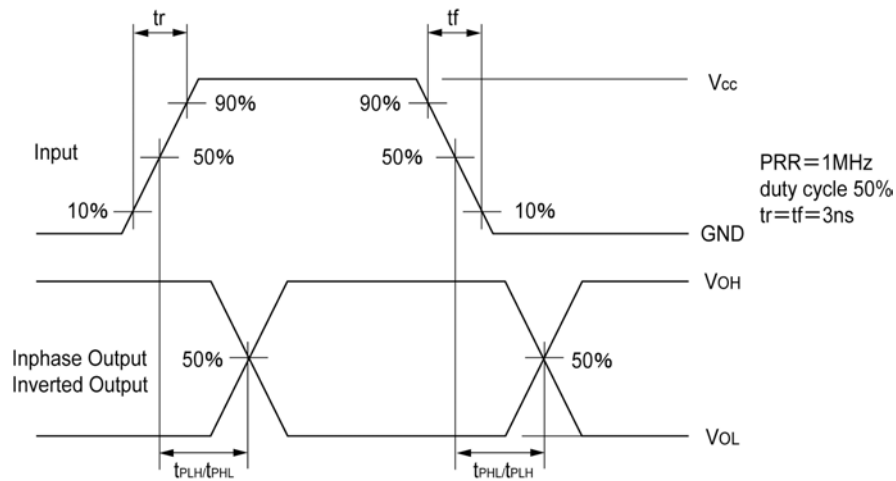
■ SWITCHING ELECTRICAL CHARACTERISTICS

t_r=t_f=3ns

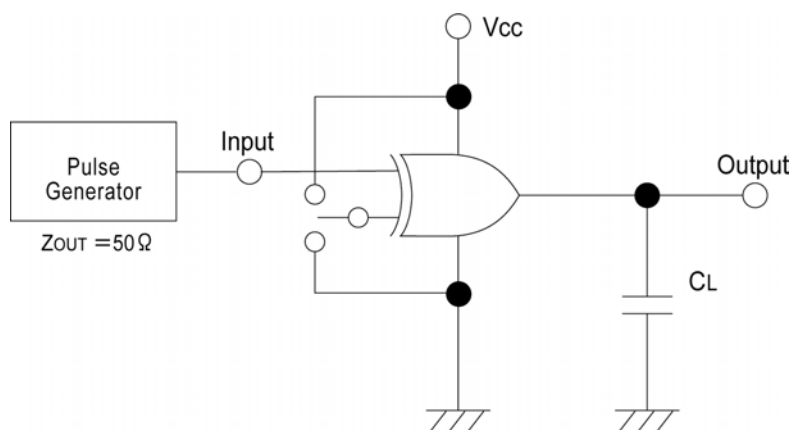
PARAMETER	SYMBOL	C _L	V _{CC} (V)	CONDITIONS	Ta=25			Ta=-40 ~85		UNITS
					MIN.	TYP.	MAX.	MIN.	MAX.	
Delay Time	t _{PLH}	15pF	3.3		-	4.4	11.0	1.0	13.0	ns
			5.0		-	3.3	6.8	1.0	8.0	
		50pF	3.3		-	6.1	14.5	1.0	16.5	ns
			5.0		-	4.4	8.8	1.0	10.0	
	t _{PHL}	15pF	3.3		-	4.0	11.0	1.0	13.0	ns
			5.0		-	2.9	6.8	1.0	8.0	
		50pF	3.3		-	5.6	14.5	1.0	16.5	ns
			5.0		-	4.1	8.8	1.0	10.0	
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			-	12	-	-	-	pF

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■ WAVEFORM



■ TEST CIRCUIT



Note: Open output when measuring supply current