

XC74UL86AA



CMOS Logic

- ◆CMOS 2-Input Exclusive-OR Gate
- ◆High Speed Operation : $t_{pd}=3.1\text{ns TYP}$
- ◆Operating Voltage Range : $2\text{V}\sim 5.5\text{V}$
- ◆Low Power Consumption : $1\mu\text{A (max)}$

General Description

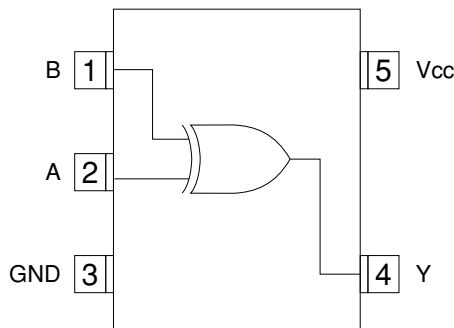
The XC74UL86AA is a 2-input CMOS exclusive-OR gate, manufactured using silicon gate CMOS fabrication.

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

Pin Configuration



SSOT-25/SOT-25
(TOP VIEW)

Applications

- Palmtops
- Digital Equipment

Features

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

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	H
H	L	H
H	H	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	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
Continuous Total Power Dissipation ($T_a=55^{\circ}\text{C}$)	Pd	150	mW
Storage Temperature	Tstg	-65 ~ +150	$^{\circ}\text{C}$

Note: 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	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	

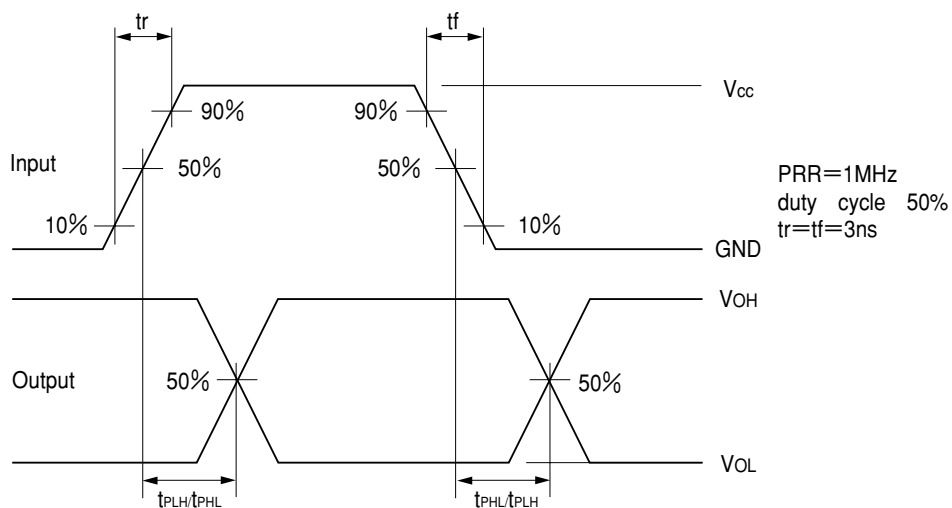
DC Electrical Characteristics

PARAMETER	SYMBOL		CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS	
		VCC(V)		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 or VIL	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	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=0μA	-	-	1.0	-	10.0		

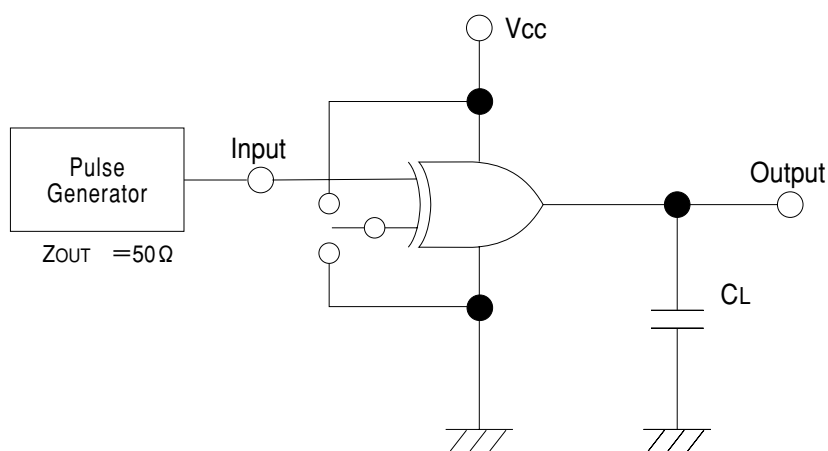
Switching Electrical Characteristics

PARAMETER	SYMBOL	C _L	V _{CC} (V)	CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t _{PLH}	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	
	t _{PHL}	15pF	3.3		-	4	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	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

Waveforms



Typical Application Circuit



Note: Open output when measuring supply current