



U74AHCT1G86

CMOS IC

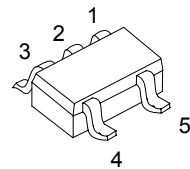
2-INPUT EXCLUSIVE-OR GATE

DESCRIPTION

The U74AHCT1G86 is a 2-input EXCLUSIVE-OR gate, it provides the Function $Y=A \oplus B$.

FEATURES

- * Low Power Dissipation: $I_{CC}=1.0\mu A(\text{Max})$
- * High Speed: $t_{pd}=5\text{ns}(\text{Typ})$
- * High Noise Immunity



SOT-353

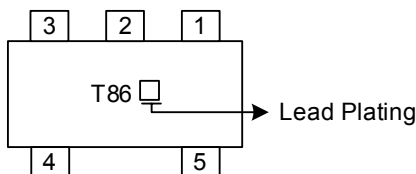
*Pb-free plating product number:
U74AHCT1G86L

ORDERING INFORMATION

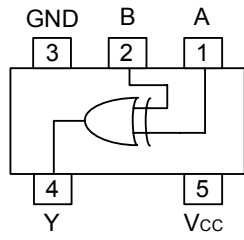
Order Number		Package	Packing
Normal	Lead Free Plating		
U74AHCT1G86-AL5-R	U74AHCT1G86L-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G86L-AL5-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) R: Tape Reel (2) AL5: SOT-353 (3) L: Lead Free Plating, Blank: Pb/Sn</p>
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MARKING



■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5~7	V
Input Voltage	V _{IN}	-0.5~7	V
Output Voltage	V _{OUT}	-0.5~V _{CC} +0.5	V
Input Clamp Current	I _{IK}	-20	mA
Output Clamp Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±25	mA
V _{CC} or GND Current	I _{CC}	±50	mA
Power Dissipation	P _D	200	mW
Storage Temperature	T _{STG}	-65 ~ +150	

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		4.5		5.5	V
Input Voltage	V _{IN}		0		5.5	V
Output Voltage	V _{OUT}		0		V _{CC}	V
High-Level Output Current	I _{OH}				-8	mA
Low-Level Output Current	I _{OL}				8	mA
Input Transition Rise or Fall Rate	dt/dv	V _{CC} =5.0+0.5V			20	ns/V
Operating Temperature	T _A		-40		85	

■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25			-40~85		UNIT
			MIN	TYP	MAX	MIN	MAX	
High-Level Input Voltage	V _{IH}		2.0			2.0		V
Low-Level Input Voltage	V _{IL}				0.8		0.8	V
High-Level Output Voltage	V _{OH}	V _{CC} =4.5V, I _{OH} =-50μA	4.4	4.5		4.4		V
		V _{CC} =4.5V, I _{OH} =-8mA	3.94			3.8		
Low-Level Output Voltage	V _{OL}	V _{CC} =4.5V, I _{OL} =50μA			0.1		0.1	V
		V _{CC} =4.5V, I _{OL} =8mA			0.36		0.44	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =5.5V, V _{IN} =V _{CC} or GND			±0.1		±1	μA
Quiescent Supply Current	I _{CC}	V _{CC} =5.5V, V _{IN} =V _{CC} or GND I _{OUT} =0			1		10	μA
Additional Quiescent Supply Current	Δ I _{CC}	V _{CC} =5.5V, V _{IN} =3.4V; other input at V _{CC} or GND; I _{OUT} =0			1.35		1.5	mA
Input Capacitance	C _{IN}	V _{IN} =V _{CC} or GND		4	10		10	pF

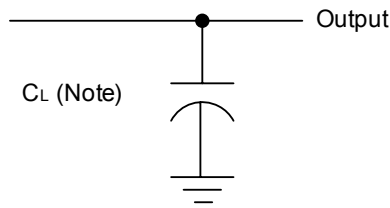
■ DYNAMIC CHARACTERISTICS (t_R, t_F≤3ns;)

PARAMETER	SYMBOL	V _{CC} (V)	T _A =25			-40~85		UNIT
			MIN	TYP	MAX	MIN	MAX	
Propagation delay from input (A or B) to output(Y)	t _{PLH}	V _{CC} =5 ± 0.5V, C _L =15pF		5	6.9	1	8	ns
	t _{PHL}			5	6.9	1	8	
	t _{PLH}	V _{CC} =5 ± 0.5V, C _L =15pF		5.5	7.9	1	9	
	t _{PHL}			5.5	7.9	1	9	

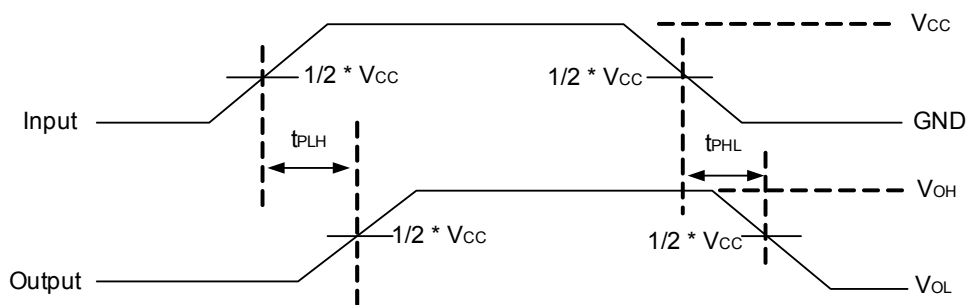
■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{pd}	No load, f=1MHz		18		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



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