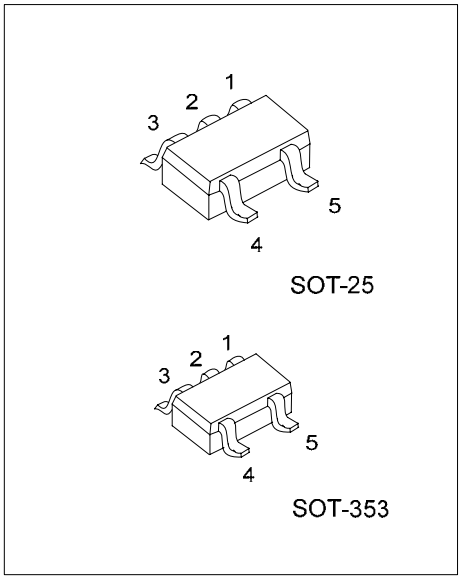
U74AHCT1G86

CMOS IC

2-INPUT EXCLUSIVE-OR GATE



*Pb-free plating product number:
U74AHCT1G86L

■ DESCRIPTION

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

■ FEATURES

* Low Power Dissipation: I_{CC}=1.0μA(Max)
* High Speed: tpd=5ns(Typ)
* High Noise Immunity

■ ORDERING INFORMATION

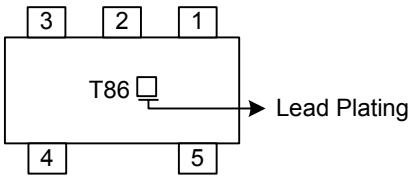
Ordering Number		Package	Packing
Normal	Lead Free Plating		
U74AHCT1G86-AF5-R	U74AHCT1G86L-AF5-R	SOT-25	Tape Reel
U74AHCT1G86-AL5-R	U74AHCT1G86L-AL5-R	SOT-353	Tape Reel

U74AHCT1G86L-AF5-R

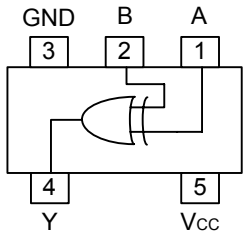
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel
(2) AF5: SOT-25, AL5: SOT-353
(3) L: Lead Free Plating, Blank: Pb/Sn

■ MARKING



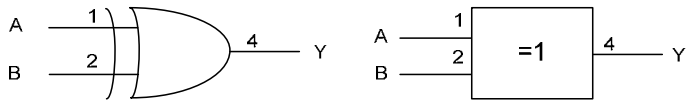
■ PIN CONFIGURATION



■ 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 RATINGS (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
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
Input Transition Rise or Fall Rate	t_R, t_F	V_{CC}=5.0+0.5V			20	ns/V
Operating Temperature	T_A		-40		85	℃

■ STATIC CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	V_{CC}=4.5V~5.5V	2.0			V
Low-Level Input Voltage	V_{IL}	V_{CC}=4.5V~5.5V			0.8	V
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V, I_{OH}=-50μA	4.4	4.5		V
		V_{CC}=4.5V, I_{OH}=-8mA	3.94			
Low-Level Output Voltage	V_{OL}	V_{CC}=4.5V, I_{OL}=50μA			0.1	V
		V_{CC}=4.5V, I_{OL}=8mA			0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=5.5V, V_{IN}=V_{CC} or GND			±0.1	μA
Quiescent Supply Current	I_Q	V_{CC}=5.5V, V_{IN}=V_{CC} or GND I_{OUT}=0			1	μA
Additional Quiescent Supply Current	ΔI_Q	V_{CC}=5.5V, V_{IN}=3.4V;other input at V_{CC} or GND; I_{OUT}=0			1.35	mA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND		4	10	pF

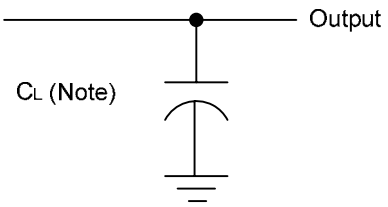
■ DYNAMIC CHARACTERISTICS (T_A=25°C, t_R, t_F≤3ns; PRR≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	t_{PLH}	V_{CC}=5±0.5V, C_L=15pF		5	6.9	ns
	t_{PHL}			5	6.9	
	t_{PLH}	V_{CC}=5±0.5V, C_L=50pF		5.5	7.9	
	t_{PHL}			5.5	7.9	

■ OPERATING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	No load, f=1MHz, V_{CC}=5V		18		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.