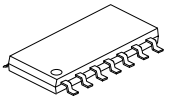
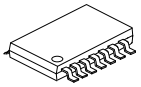
U74AHCT14

CMOS IC

HEX SCHMITT-TRIGGER INVERTER



SOP-14



TSSOP-14

■ DESCRIPTION

The **U74AHCT14** is a high speed Si-gate CMOS device which contains six independent Schmitt-trigger inverters and they perform the function $Y=\overline{A}$.

The device have different input threshold levels for positive-going (V_{T+}) and negative-going(V_{T-}) signals because of the Schmitt-trigger action in the input.

■ FEATURES

* All inputs have Schmitt-trigger action
* Inputs are TTL-Voltage compatible
* Balanced propagation delays

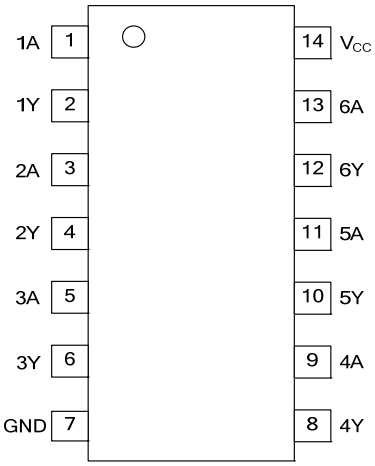
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT14L-S14-R	U74AHCT14G-S14-R	SOP-14	Tape Reel
U74AHCT14L-P14-R	U74AHCT14G-P14-R	TSSOP-14	Tape Reel

U74AHCT14G-S14-R (1)Packing Type (2)Package Type (3)Halogen Free	(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) L: Lead Free, G:Halogen Free

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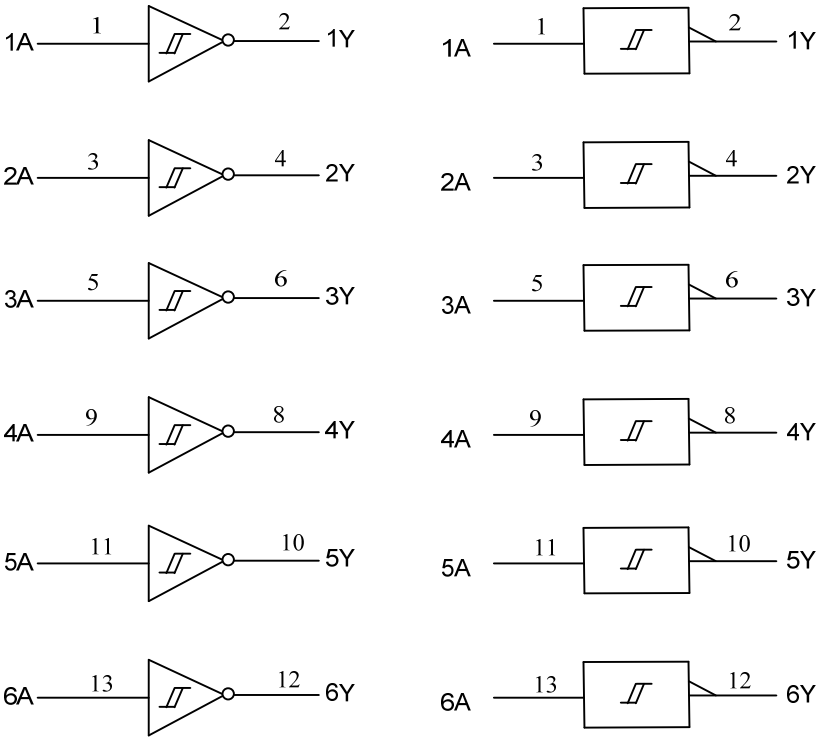
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT	OUTPUT
A	Y
L	H
H	L

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, 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(active mode)	V_{OUT}	-0.5~V_{CC}+0.5	V
Input Clamp Current(V_{IN}<0)	I_{IK}	-20	mA
Output Clamp Current(V_{OUT}<0)	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	°C

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 COMDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	4.5		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Operating Temperature	T_A		-40		+85	°C

■ STATIC CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	V_{T+}	V_{CC} =4.5V	0.9		1.9	V
		V_{CC} =5.5V	1		2.1	
Negative-Going Input Threshold Voltage	V_{T-}	V_{CC} =4.5V	0.5		1.5	V
		V_{CC} =5.5V	0.6		1.7	
Hysteresis Voltage (V_{T+}-V_{T-})	$\triangle V_T$	V_{CC} =4.5V	0.4		1.4	V
		V_{CC} =5.5V	0.4		1.5	
High-Level Output Voltage	V_{OH}	V_{CC} =4.5V, I_{OH}=-50μA	4.4			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} =0V ~ 5.5V, V_{IN}=V_{CC} or GND			±0.1	μA
Quiescent Supply Current	I_{CC}	V_{CC} = 5.5V, V_{IN}=5.5V or GND, I_{OUT}=0		0.1	2	μA
Additional Quiescent Supply Current	ΔI_{CC}	V_{CC} = 5.5V, One input at 3.4V, other inputs at V_{CC} or GND			1.35	mA
Input Capacitance	C_{IN}	V_{CC} =3.3V, V_{IN}=V_{CC} or GND		2	10	pF

■ DYNAMIC CHARACTERISTICS (Input: t_R, t_F≤3ns; PRR≤1MHz)

See Fig. 1 and Fig. 2 for test circuit and waveforms.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	t_{PLH}/t_{PHL}	V_{CC}=5V±0.5V, C_L =15pF		4	7	ns
		V_{CC}=5V±0.5V, C_L =50pF		5.5	8	

■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	No load, f=1MHz, V_{CC}=5V		12		pF

■ TEST CIRCUIT AND WAVEFORMS

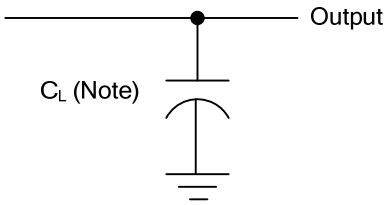
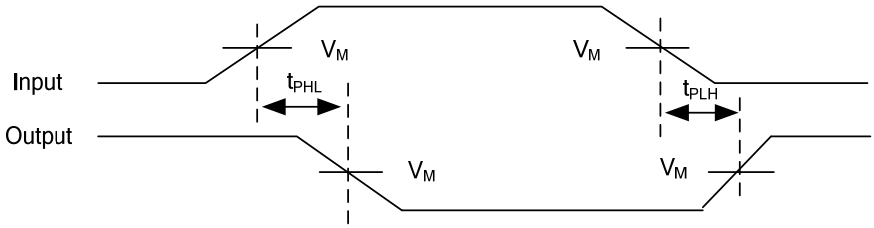


Fig. 1 Load circuitry for switching times.

Note: CL includes probe and jig capacitance.



PROPAGATION DELAY TIMES

Fig. 2 Propagation delay from input(A) to output(Y) and Output transition time.

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