



## U74AC14

CMOS IC

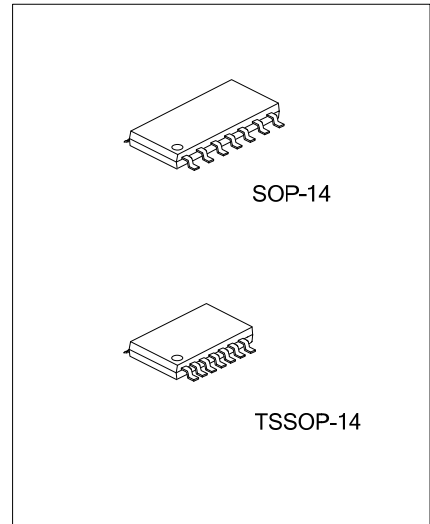
### HEX SCHMITT-TRIGGER INVERTER

#### DESCRIPTION

The **U74AC14** contains six independent inverter with Schmitt-trigger , provides the Function  $Y = \bar{A}$

#### FEATURES

- \* Operation voltage range: 2.0~6.0V
- \* Low power dissipation:  $I_{CC}=20\mu A(\text{Max})$

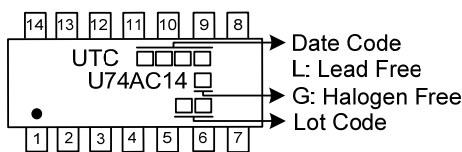


#### ORDERING INFORMATION

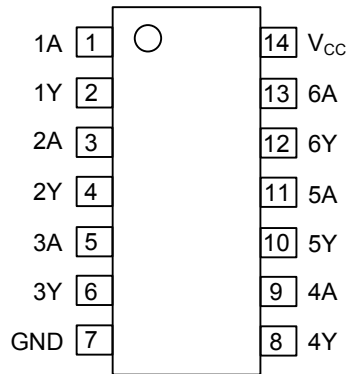
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AC14L-S14-R	U74AC14G-S14-R	SOP-14	Tape Reel
U74AC14L-P14-R	U74AC14G-P14-R	TSSOP-14	Tape Reel

<p>U74AC14G-S14-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S14: SOP-14, P14: TSSOP-14</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



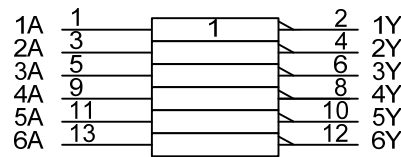
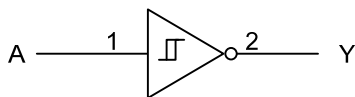
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT(A)	OUTPUT(Y)
L	H
H	L

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

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■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-0.5~7	V
Input Voltage	$V_{IN}$	-0.5~ $V_{CC}+0.5$	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	$I_{OUT}$	±50	mA
$V_{CC}$ or GND Current	$I_{CC}$	±200	mA
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

Note: 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	86	°C/W
		113	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$	2.0		6.0	V
Input Voltage	$V_{IN}$	0		$V_{CC}$	V
Output Voltage	$V_{OUT}$	0		$V_{CC}$	V
High-Level Output Current	$I_{OH}$			-12	mA
				-24	
				-24	
Low-Level Output Current	$I_{OL}$			12	mA
				24	
				24	
Operating Temperature	$T_A$	-40	25	85	°C

■ STATIC CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =3.0V	0.8	1.8	2.2	V
		V <sub>CC</sub> =4.5V	1.5	2.6	3.2	V
		V <sub>CC</sub> =5.5V	1.6	3.2	3.9	V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =3.0V	0.5	0.8	1	V
		V <sub>CC</sub> =4.5V	0.9	1.4	1.8	V
		V <sub>CC</sub> =5.5V	1.1	1.8	2.3	V
Hysteresis	V <sub>TH</sub>	V <sub>CC</sub> =3.0V	0.3	1	1.2	V
		V <sub>CC</sub> =4.5V	0.4	1.2	1.4	V
		V <sub>CC</sub> =5.5V	0.5	1.4	1.6	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-50μA	2.9			V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4			V
		V <sub>CC</sub> =5.5V, I <sub>OH</sub> =-50μA	5.4			V
		V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-12mA	2.56			V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-24mA	3.86			V
		V <sub>CC</sub> =5.5V, I <sub>OH</sub> =-24mA	4.86			V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =3.0V, I <sub>OL</sub> =50μA		0.002	0.1	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =50μA		0.001	0.1	V
		V <sub>CC</sub> =5.5V, I <sub>OL</sub> =50μA		0.001	0.1	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =12mA			0.36	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =24mA			0.36	V
		V <sub>CC</sub> =5.5V, I <sub>OL</sub> =24mA			0.36	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>IN</sub> =V <sub>CC</sub> or GND, V <sub>CC</sub> =5.5			±0.1	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0, V <sub>CC</sub> =5.5			2	μA
Input Capacitance	C <sub>IN</sub>	V <sub>IN</sub> =V <sub>CC</sub> or GND		4.5		pF

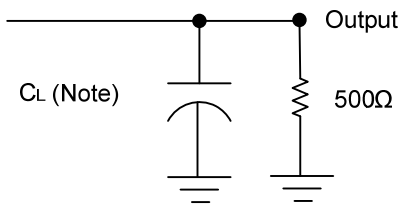
■ DYNAMIC CHARACTERISTICS (T<sub>A</sub>=25°C, Input: t<sub>R</sub>, t<sub>F</sub>≤2.5ns; PRR≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t <sub>PLH</sub>	V <sub>CC</sub> =3.3V, C <sub>L</sub> =50pF	1.5	6	13.5	ns
		V <sub>CC</sub> =5.0V, C <sub>L</sub> =50pF	1.5	5	10	ns
	t <sub>PHL</sub>	V <sub>CC</sub> =3.3V, C <sub>L</sub> =50pF	1.5	6	11.5	ns
		V <sub>CC</sub> =5.0V, C <sub>L</sub> =50pF	1.5	5	8.5	ns

■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>pd</sub>	C <sub>L</sub> =50 pF, f=1MHz, V <sub>CC</sub> =5		25		pF

■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

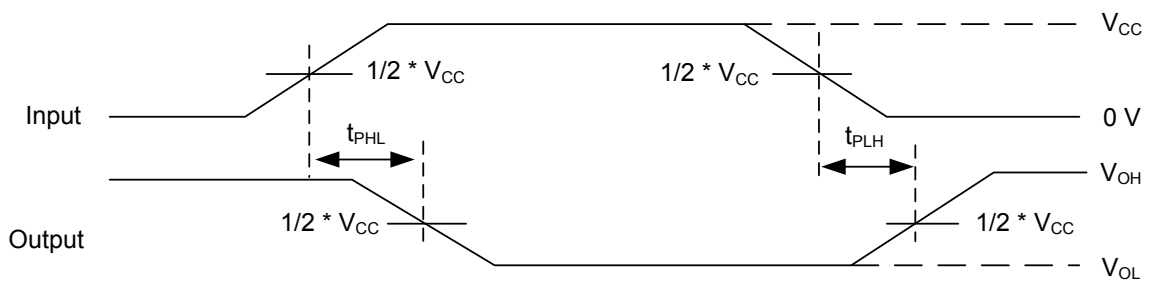


Fig.2 Propagation delay from input(A) to output(Y).

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