



# U74AC14

**CMOS IC**

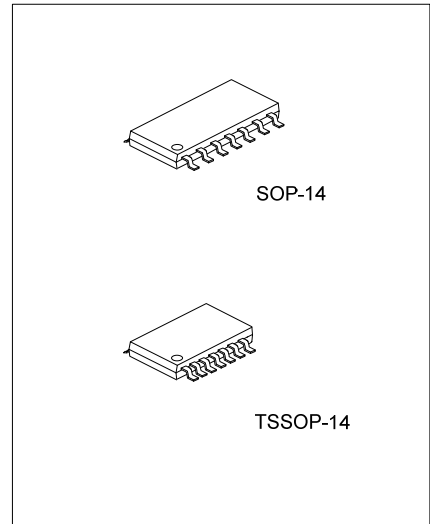
## HEX SCHMITT-TRIGGER INVERTER

■ **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**

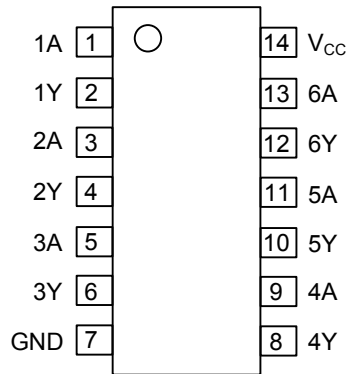
Ordering Number	Package	Packing
U74AC14G-S14-R	SOP-14	Tape Reel
U74AC14G-P14-R	TSSOP-14	Tape Reel

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

■ **MARKING**

SOP-14	TSSOP-14

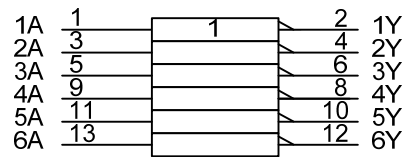
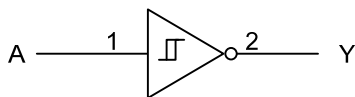
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

■ 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	SOP-14	86	°C/W
	TSSOP-14	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	$V_{CC}=3V$			-12	mA
	$V_{CC}=4.5V$			-24	
	$V_{CC}=5.5V$			-24	
Low-Level Output Current	$V_{CC}=3V$			12	
	$V_{CC}=4.5V$			24	
	$V_{CC}=5.5V$			24	
Operating Temperature	$T_A$	-40	25	85	°C

■ STATIC CHARACTERISTICS ( $T_A=25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}=3.0V$	0.8	1.8	2.2	V
		$V_{CC}=4.5V$	1.5	2.6	3.2	V
		$V_{CC}=5.5V$	1.6	3.2	3.9	V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=3.0V$	0.5	0.8	1	V
		$V_{CC}=4.5V$	0.9	1.4	1.8	V
		$V_{CC}=5.5V$	1.1	1.8	2.3	V
Hysteresis	$V_{TH}$	$V_{CC}=3.0V$	0.3	1	1.2	V
		$V_{CC}=4.5V$	0.4	1.2	1.4	V
		$V_{CC}=5.5V$	0.5	1.4	1.6	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9			V
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4			V
		$V_{CC}=5.5V, I_{OH}=-50\mu A$	5.4			V
		$V_{CC}=3.0V, I_{OH}=-12mA$	2.56			V
		$V_{CC}=4.5V, I_{OH}=-24mA$	3.86			V
		$V_{CC}=5.5V, I_{OH}=-24mA$	4.86			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=3.0V, I_{OL}=50\mu A$		0.002	0.1	V
		$V_{CC}=4.5V, I_{OL}=50\mu A$		0.001	0.1	V
		$V_{CC}=5.5V, I_{OL}=50\mu A$		0.001	0.1	V
		$V_{CC}=3.0V, I_{OL}=12mA$			0.36	V

# U74AC14

CMOS IC

		$V_{CC}=4.5V, I_{OL}=24mA$			0.36	V
		$V_{CC}=5.5V, I_{OL}=24mA$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{IN}=V_{CC}$ or GND, $V_{CC}=5.5$			$\pm 0.1$	$\mu A$
Quiescent Supply Current	$I_Q$	$V_{IN}=V_{CC}$ or GND, $I_{OUT}=0, V_{CC}=5.5$			2	$\mu A$
Input Capacitance	$C_{IN}$	$V_{IN}=V_{CC}$ or GND		4.5		pF

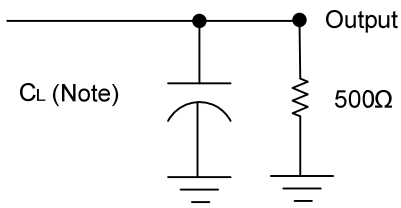
■ DYNAMIC CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , Input:  $t_R, t_F \leq 2.5\text{ns}$ ;  $\text{PRR} \leq 1\text{MHz}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	$t_{PLH}$	$V_{CC}=3.3\text{V}, C_L=50\text{pF}$	1.5	6	13.5	ns
		$V_{CC}=5.0\text{V}, C_L=50\text{pF}$	1.5	5	10	ns
	$t_{PHL}$	$V_{CC}=3.3\text{V}, C_L=50\text{pF}$	1.5	6	11.5	ns
		$V_{CC}=5.0\text{V}, C_L=50\text{pF}$	1.5	5	8.5	ns

■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	$C_L=50\text{ pF}, f=1\text{MHz}, V_{CC}=5$		25		pF

■ TEST CIRCUIT AND WAVEFORMS



Note:  $C_L$  includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

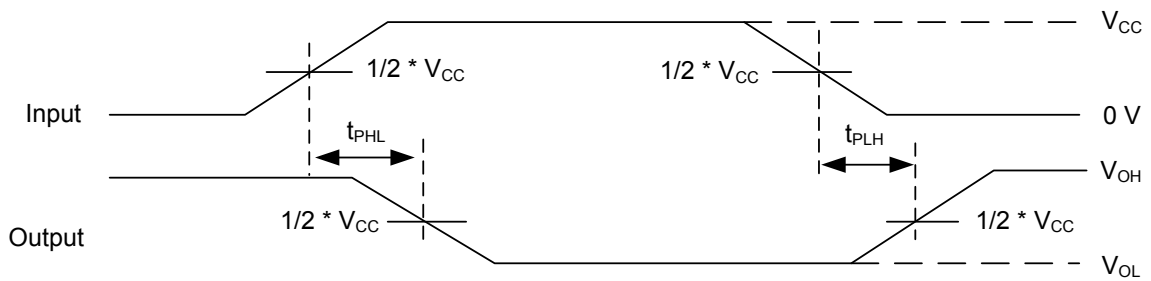


Fig.2 Propagation delay from input(A) to output(Y).

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.