



U74AC14

CMOS IC

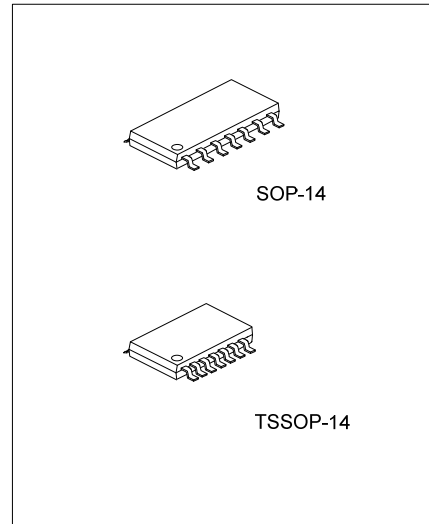
HEX SCHMITT-TRIGGER INVERTER

■ **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**

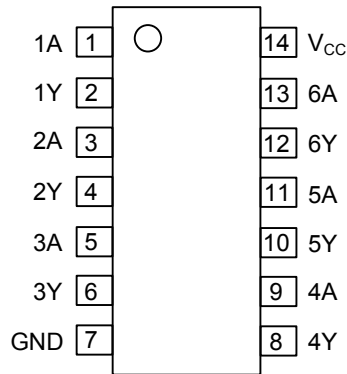
Ordering Number	Package	Packing
U74AC14G-S14-R	SOP-14	Tape Reel
U74AC14G-P14-R	TSSOP-14	Tape Reel

<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>
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■ **MARKING**

SOP-14	TSSOP-14
<p>14 13 12 11 10 9 8 → Date Code UTC □□□□ U74AC14G □□ → Lot Code 1 2 3 4 5 6 7</p>	<p>14 13 12 11 10 9 8 → Date Code UTC □□□□ U74AC14G □□ → Lot Code 1 2 3 4 5 6 7</p>

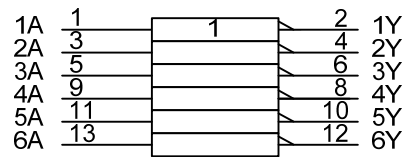
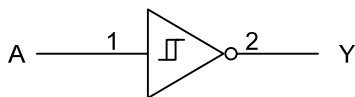
■ PIN CONFIGURATION



■ 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	θ_{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}	$V_{CC}=3V$		-12	mA
		$V_{CC}=4.5V$		-24	
		$V_{CC}=5.5V$		-24	
Low-Level Output Current	I_{OL}	$V_{CC}=3V$		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

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		$V_{CC}=4.5V, I_{OL}=24mA$			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, $V_{CC}=5.5$			± 0.1	μA
Quiescent Supply Current	I_Q	$V_{IN}=V_{CC}$ or GND, $I_{OUT}=0, V_{CC}=5.5$			2	μA
Input Capacitance	C_{IN}	$V_{IN}=V_{CC}$ or GND		4.5		pF

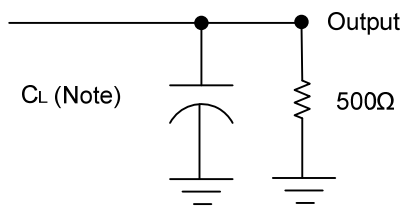
■ DYNAMIC CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, Input: $t_R, t_F \leq 2.5\text{ns}$; $\text{PRR} \leq 1\text{MHz}$)

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.

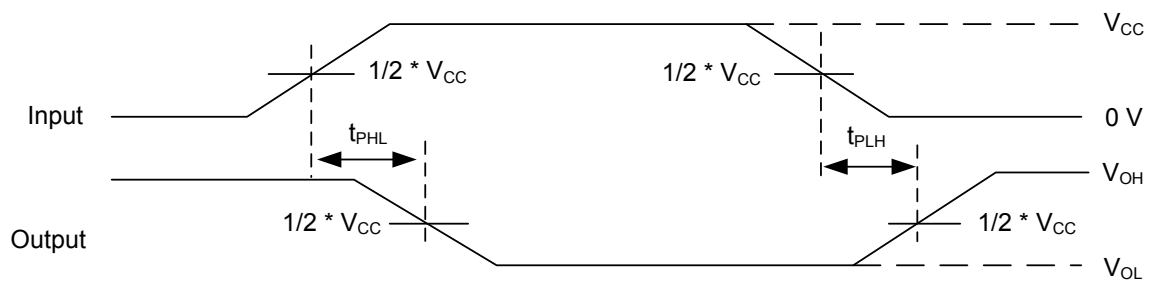


Fig.2 Propagation delay from input(A) to output(Y).

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