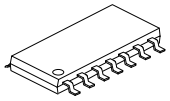
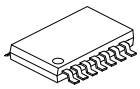
U74AC14

CMOS IC

HEX SCHMITT-TRIGGER INVERTER



SOP-14



TSSOP-14

■ DESCRIPTION

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

■ FEATURES

* Operation voltage range: 2.0~6.0V
* Low power dissipation: I_{CC}=20μA(Max)

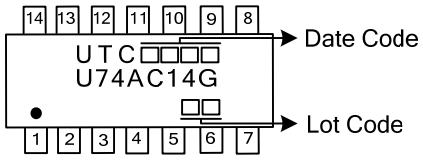
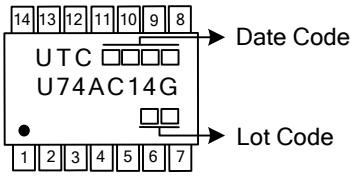
■ ORDERING INFORMATION

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

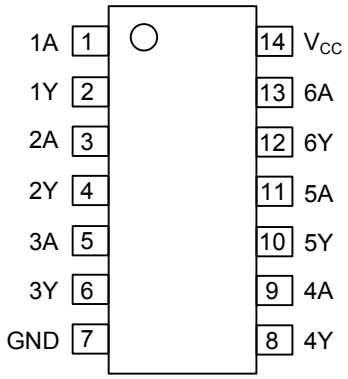
U74AC14G-P14-R
- (1)Packing Type
- (2)Package Type
- (3)Green Package

(1) R: Tape Reel
(2) P14: TSSOP-14, S14: SOP-14
(3) G: Halogen Free and Lead Free

■ MARKING

SOP-14	TSSOP-14
	

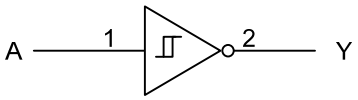
■ PIN CONFIGURATION

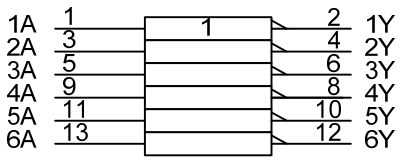


■ FUNCTION TABLE (each gate)

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~Vcc+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	θ_{JA}	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	I_{OH}			-12	mA
	V_{CC}=4.5V				-24	
	V_{CC}=5.5V				-24	
Low-Level Output Current	V_{CC}=3V	I_{OL}			12	
	V_{CC}=4.5V				24	
	V_{CC}=5.5V				24	
Operating Temperature		T_A	-40	25	85	°C

■ STATIC CHARACTERISTICS (T_A=25°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}=-50μA	2.9			V
		V_{CC}=4.5V, I_{OH}=-50μA	4.4			V
		V_{CC}=5.5V, I_{OH}=-50μA	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}=50μA		0.002	0.1	V
		V_{CC}=4.5V, I_{OL}=50μA		0.001	0.1	V
		V_{CC}=5.5V, I_{OL}=50μA		0.001	0.1	V
		V_{CC}=3.0V, I_{OL}=12mA			0.36	V

		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

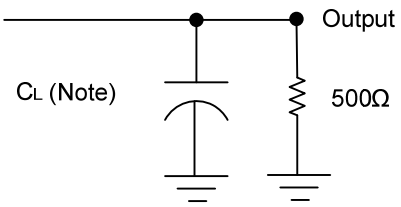
■ DYNAMIC CHARACTERISTICS (T_A=25°C, Input: t_R,t_F≤2.5ns;PRR≤1MHz)

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

■ OPERATING CHARACTERISTICS

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

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

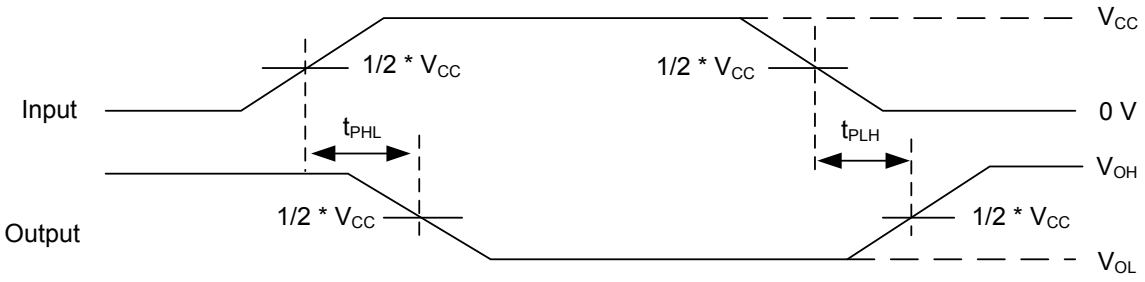


Fig.2 Propagation delay from input(A) to output(Y).