



U74AHC14

CMOS IC

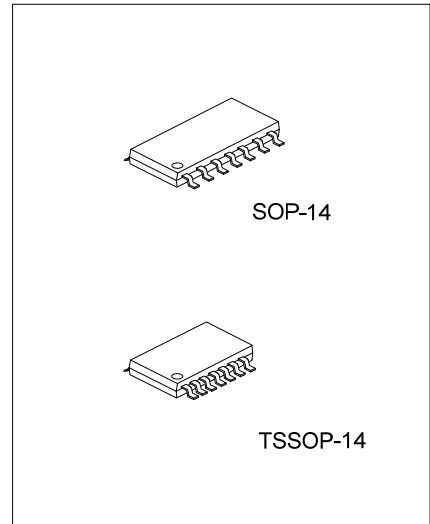
HEX SCHMITT-TRIGGER INVERTERS

DESCRIPTION

The **U74AHC14** is hex Schmitt-trigger inverters and each inverter provides the function $Y = \overline{A}$.

FEATURES

- * Operation Voltage Range: 2V~5.5V
- * Max t_{pd} of 8.6ns at 5 V($C_L=15pF$)
- * High Noise Immunity
- * Low Power Dissipation

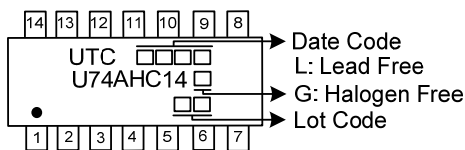


ORDERING INFORMATION

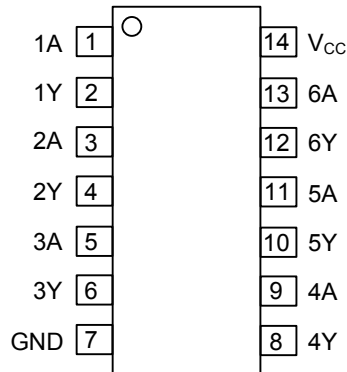
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC14L-S14-R	U74AHC14G-S14-R	SOP-14	Tape Reel
U74AHC14L-P14-R	U74AHC14G-P14-R	TSSOP-14	Tape Reel

<p>U74AHC14G-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>
---	--

MARKING



■ PIN CONFIGURATION

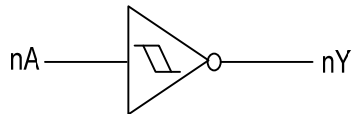


■ FUNCTION TABLE (each gate)

INPUT A	OUTPUT Y
L	H
H	L

Note: H: HIGH voltage level; L: LOW voltage level.

■ 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 ~ +7	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 Sink Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	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
Thermal Resistance Junction-Ambient	SOP-14	86	°C/W
	TSSOP-14	113	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2.0		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
High-Level Input Current	I_{OH}	$V_{CC}=2V$			-50	μA
		$V_{CC}=3.3V\pm 0.3V$			-4	mA
		$V_{CC}=5V\pm 0.5V$			-8	mA
Low-Level Input Current	I_{OL}	$V_{CC}=2V$			50	μA
		$V_{CC}=3.3V\pm 0.3V$			4	mA
		$V_{CC}=5V\pm 0.5V$			8	mA
Operating Temperature	T_A		-40		+85	°C

■ STATIC CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Positive-going Input Threshold Voltage	V _{T+}	V _{CC} =3.0V		1.2		2.2	V
		V _{CC} =4.5V		1.75		3.15	V
		V _{CC} =5.5V		2.15		3.85	V
Negative-going Input Threshold Voltage	V _{T-}	V _{CC} =3.0V		0.9		1.9	V
		V _{CC} =4.5V		1.35		2.75	V
		V _{CC} =5.5V		1.65		3.35	V
Hysteresis(V _{T+} -V _{T-})	ΔV _T	V _{CC} =3.0V		0.3		1.2	V
		V _{CC} =4.5V		0.4		1.4	V
		V _{CC} =5.5V		0.5		1.6	V
High-Level Output Voltage	V _{OH}	I _{OH} =-50μA	V _{CC} =2.0V	1.9			V
			V _{CC} =3.0V	2.9			V
			V _{CC} =4.5V	4.4			V
		I _{OH} =-4 mA	V _{CC} =3.0V	2.58			V
		I _{OH} =-8mA	V _{CC} =4.5V	3.94			V
Low-Level Output Voltage	V _{OL}	I _{OL} =50μA	V _{CC} =2.0V			0.1	V
			V _{CC} =3.0V			0.1	V
			V _{CC} =4.5V			0.1	V
		I _{OL} =4 mA	V _{CC} =3.0V			0.36	V
		I _{OL} =8mA	V _{CC} =4.5V			0.36	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0V to 5.5V, V _{IN} =5.5V or GND				±0.1	μA
Quiescent Supply Current	I _Q	V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0				2	μA
Input Capacitance	C _I	V _{IN} =V _{CC} or GND			2	10	pF

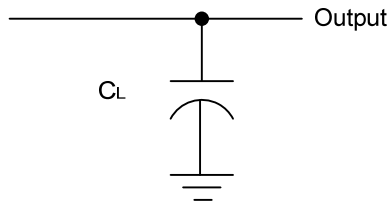
■ SWITCHING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay, From Input(A) To Output(Y)	t _{PLH} /t _{PHL}	V _{CC} =3.3±0.3 V	C _L =15 pF		8.3	12.8	ns
			C _L =50 pF		10.8	16.3	ns
	t _{PLH} /t _{PHL}	V _{CC} =5.0±0.5 V	C _L =15 pF		5.5	8.6	ns
			C _L =50 pF		7	10.6	ns

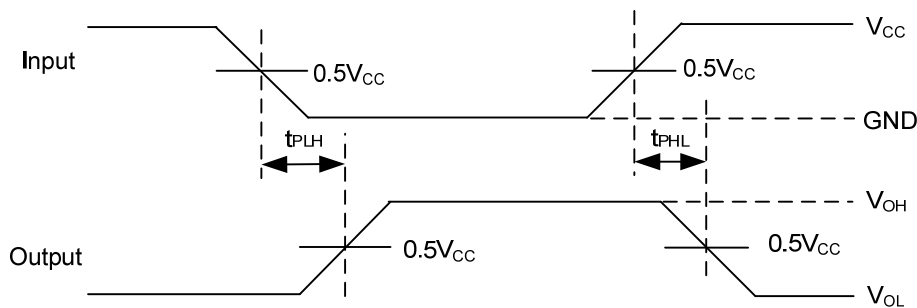
■ OPERATING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	No Load, f=1MHz		9		pF

■ TEST CIRCUIT AND WAVEFORMS



Test circuit for measuring propagation delay



Waveforms showing the Input(A) to Output(Y) propagation delays

Note: C_L includes probe and jig capacitance.

All input pulses are supplied by generators having the following characteristics: PRR $\leq 1\text{MHz}$, $Z_o = 50\Omega$, $t_r \leq 3\text{ns}$, $t_f \leq 3\text{ns}$.

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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.