



U74AHC04

CMOS IC

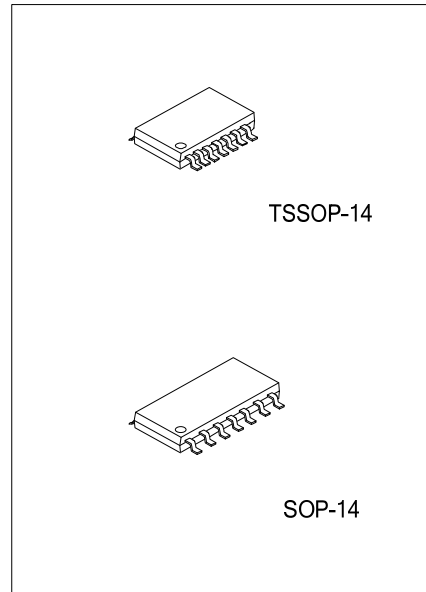
HEX INVERTER

DESCRIPTION

The **U74AHC04** is six independent inverters and each inverter provides the Function $Y = \bar{A}$

FEATURES

- * Operation Voltage Range: 2V~5.5V
- * High Noise Immunity
- * Low Power Dissipation
- * Balanced Propagation Delays

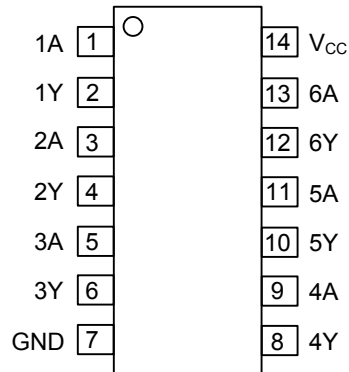


ORDERING INFORMATION

Ordering Number	Package	Packing
U74AHC04G-S14-R	SOP-14	Tape Reel
U74AHC04G-P14-R	TSSOP-14	Tape Reel

<p>U74AHC04G-S14-R</p> <p>(1) Packing Type (2) Package Type (3) Halogen Free</p>	<p>(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free</p>
--	--

■ PIN CONFIGURATION

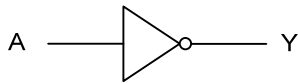


■ FUNCTION TABLE (Each Gate)

INPUT A	OUTPUT Y
H	L
L	H

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

■ LOGIC DIAGRAM (Each Gate)



Logic Symbol



IEC Logic Symbol

■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~+7.0	V
Input Voltage	V_{IN}	-0.5~+7.0	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}	±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
Junction to Ambient	SOP-14	76	°C/W
	TSSOP-14	113	

■ 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 Voltage	V_{IH}	$V_{CC} = 2.0V$	1.5			V
		$V_{CC} = 3.0V$	2.1			
		$V_{CC} = 5.5V$	3.85			
Low-Level Input Voltage	V_{IL}	$V_{CC} = 2.0V$			0.5	V
		$V_{CC} = 3.0V$			0.9	
		$V_{CC} = 5.5V$			1.65	
High-Level Output Current	I_{OH}	$V_{CC} = 2.0V$			-50	μA
		$V_{CC} = 3.3V \pm 0.3V$			-4	mA
		$V_{CC} = 5V \pm 0.5V$			-8	mA
Low-Level Output Current	I_{OL}	$V_{CC} = 2.0V$			50	μA
		$V_{CC} = 3.3V \pm 0.3V$			4	mA
		$V_{CC} = 5V \pm 0.5V$			8	mA
Input Transition Rise or Fall Rate	t_R / t_F	$V_{CC} = 3.3 \pm 0.3V$			100	ns/V
		$V_{CC} = 5.0 \pm 0.5V$			20	
Operating Temperature	T_A		-40		+85	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	$I_{OH} = -50\mu A$	$V_{CC} = 2.0V$	1.9	2.0	V
			$V_{CC} = 3.0V$	2.9	3.0	
			$V_{CC} = 4.5V$	4.4	4.5	
		$I_{OH} = -4 mA$	$V_{CC} = 3.0V$	2.58		
		$I_{OH} = -8mA$	$V_{CC} = 4.5V$	3.94		
Low-Level Output Voltage	V_{OL}	$I_{OL} = 50\mu A$	$V_{CC} = 2.0V$		0.1	V
			$V_{CC} = 3.0V$		0.1	
			$V_{CC} = 4.5V$		0.1	
		$I_{OL} = 4 mA$	$V_{CC} = 3.0V$		0.36	
		$I_{OL} = 8mA$	$V_{CC} = 4.5V$		0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{IN} = 5.5V$ or GND, $V_{CC} = 0V$ to 5.5V			0.1	μA
Quiescent Supply Current	I_Q	$V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$, $V_{CC} = 5.5V$			2	μA
Input Capacitance	C_I	$V_{IN} = V_{CC}$ or GND, $V_{CC} = 5V$		2	10	pF

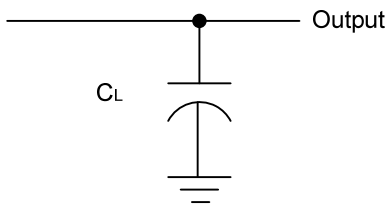
■ SWITCHING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay, From Input(A) To Output(Y)	t _{PHL} / t _{PLH}	V _{CC} =3.3±0.3 V	C _L =15 pF		5	8.9	ns
			C _L =50 pF		7.5	11.4	
Propagation Delay, From Input(A) To Output(Y)	t _{PHL} / t _{PLH}	V _{CC} =5±0.5 V	C _L =15 pF		3.8	5.5	ns
			C _L =50 pF		5.3	7.5	

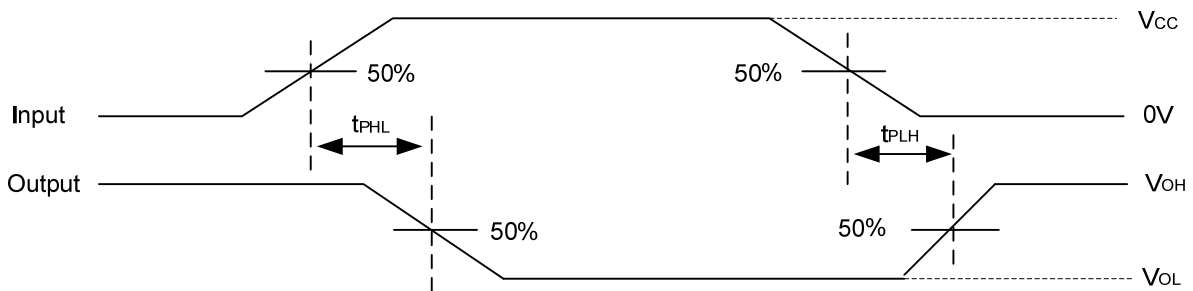
■ OPERATING CHARACTERISTICS (V_{CC}=5V; T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	NO Load, f=1MHz		12		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 ≤ 1 MHz, $Z_o = 50\Omega$, $t_R \leq 3$ ns, $t_F \leq 3$ 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. 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.