



U74AHC04

CMOS IC

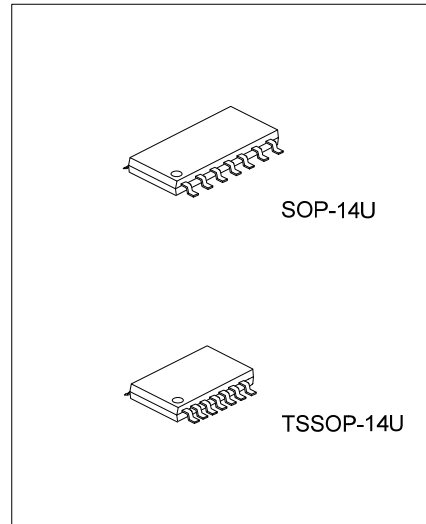
HEX INVERTER

DESCRIPTION

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

FEATURES

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

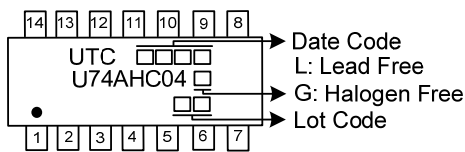


ORDERING INFORMATION

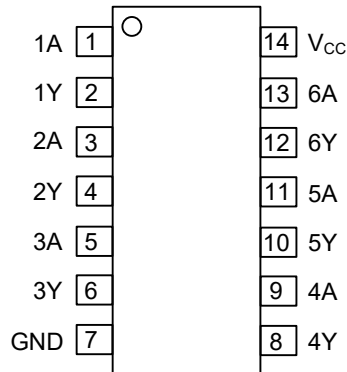
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC04L-UEA-R	U74AHC04G-UEA-R	SOP-14U	Tape Reel
U74AHC04L-UEB-R	U74AHC04G-UEB-R	TSSOP-14U	Tape Reel

<p>U74AHC04G-UEA-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) UEA: SOP-14U, UEB: TSSOP-14U</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

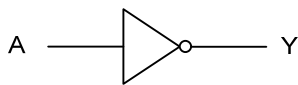


■ FUNCTION TABLE (Each Gate)

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.

■ RECOMMENDED OPERATING CONDITIONS (Unless otherwise specified)

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±0.3V			-4	mA
		V _{CC} = 5V±0.5V			-8	
Low-Level Output Current	I _{OL}	V _{CC} = 2.0V			50	μA
		V _{CC} = 3.3V±0.3V			4	mA
		V _{CC} = 5V±0.5V			8	
Input Transition Rise or Fall Rate	Δt/Δv	V _{CC} = 3.3V±0.3V			100	ns/V
		V _{CC} = 5V±0.5V			20	ns/V
Operating Temperature	T _A		-40		+125	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-14U	125	°C/W
	TSSOP-14U	150	°C/W

■ STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Output Voltage	V _{OH}	V _{CC} =2.0V	I _{OH} =-50μA	1.9	2.0		V
		V _{CC} =3.0V		2.9	3.0		
		V _{CC} =4.5V		4.4	4.5		
		V _{CC} =3.0V, I _{OH} =-4mA	2.58				
		V _{CC} =4.5V, I _{OH} =-8mA	3.94				
Low-Level Output Voltage	V _{OL}	V _{CC} =2.0V	I _{OL} =50μA			0.1	V
		V _{CC} =3.0V				0.1	
		V _{CC} =4.5V				0.1	
		V _{CC} =3.0V, I _{OL} =4mA			0.36		
		V _{CC} =4.5V, I _{OL} =8mA			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 _{IN}	V _{IN} =V _{CC} or GND, V _{CC} =5V		2	10	pF	

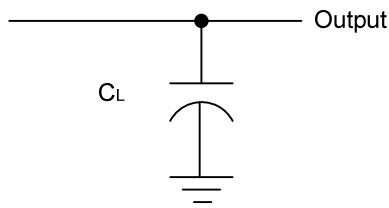
■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

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

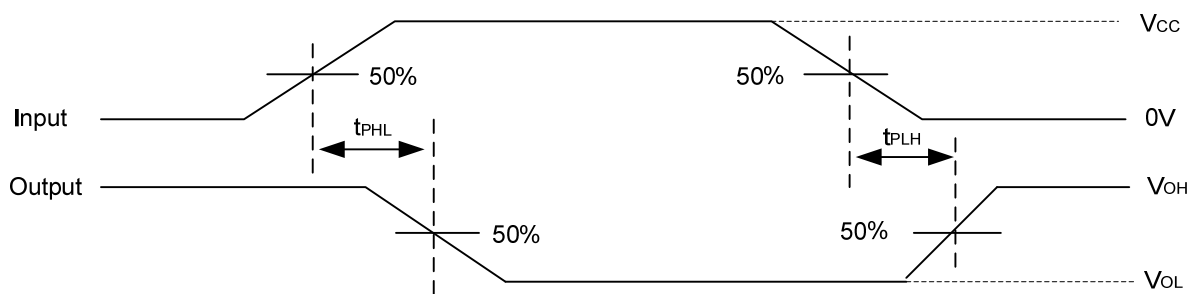
■ OPERATING CHARACTERISTICS (V_{CC}=5V, unless otherwise specified)

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 \leq 1MHz, $Z_o = 50\Omega$, $t_R \leq 3ns$, $t_F \leq 3ns$.

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