UTC **UNISONIC TECHNOLOGIES CO., LTD**
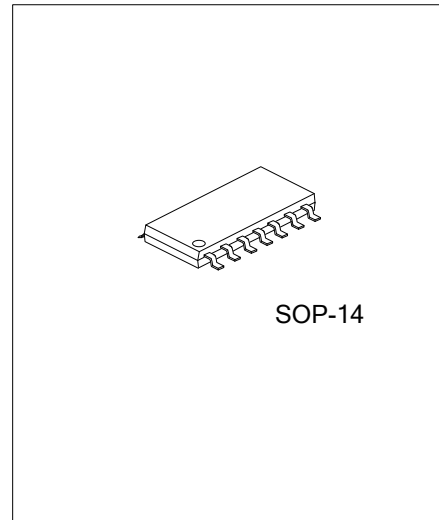
U74AHC06

CMOS IC

INVERTER WITH OPEN-DRAIN OUTPUT

SOP-14

■ DESCRIPTION

The **U74AHC06** is six independent inverters, and the output of the inverter is an open drain. Each inverter provides the Function $Y = \overline{A}$.

■ FEATURES

* Operate from 2V to 5.5V
* High noise immunity
* Low power dissipation
* Balanced propagation delays
* Output capability standard (open drain)

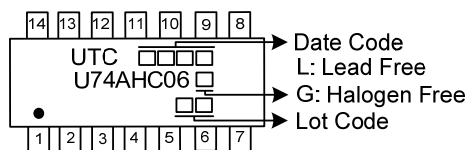## ■ ORDERING INFORMATION

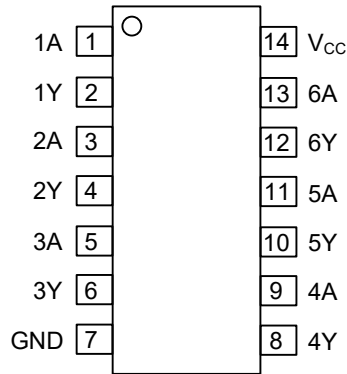| Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC06L-S14-R	U74AHC06G-S14-R	SOP-14	Tape Reel

U74AHC06G-S14-R

— (1)Packing Type
— (2)Package Type
— (3)Green Package

(1) R: Tape Reel

(2) S14: SOP-14

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

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14 13 12 11 10 9 8
     UTC  □□□□
     U74AHC06□
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 1  2  3  4  5  6  7
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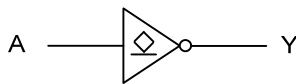
→ Date Code
L: Lead Free
→ G: Halogen Free
→ Lot Code

■ **PIN CONFIGURATION**

1A	1	14	V_CC
1Y	2	13	6A
2A	3	12	6Y
2Y	4	11	5A
3A	5	10	5Y
3Y	6	9	4A
GND	7	8	4Y

■ **FUNCTION TABLE**

INPUT A	OUTPUT Y
H	L
L	Z

Note: H: HIGH voltage level; L: LOW voltage level, Z: HIGH impedance OFF-state.

■ **LOGIC SYMBOL**

A ——▷o—— Y

Logic symbol

A ——[◇]—— Y

IEC logic symbol

U74AHC06 *CMOS IC*
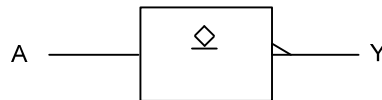
■ **ABSOLUTE MAXIMUM RATING** (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ +7	V
Input Voltage	V_{IN}	-0.5 ~ +7	V
Output Voltage (Active Mode)	V_{OUT}	V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±75	mA
Output Sink Current (V_{OUT}>-0.5V)	I_{OUT}	±25	mA
Input Clamp Current (V_{IN}<-0.5V)	I_{IK}	-20	mA
Output Clamp Current (V_{OUT}<-0.5V)	I_{OK}	±20	mA
Storage Temperature	T_{STG}	-65 ~ + 150	°C

Notes: 1. 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.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ **RECOMMENDED OPERATING COMDITIONS** (Unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2.0	5.0	5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	Active Mode	0		V_{CC}	V
		High-impedance Mode	0		6.0	
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	
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	V_{CC}=3.3±0.3V			100	ns/V
		V_{CC}=5.0±0.5V			20	
Operating Temperature	T_A		-40		+125	°C

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	76	°C/W

■ **STATIC CHARACTERISTICS** (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
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
3-state Output OFF-state Current	I_{OZ}	V_{IN}=V_{IH} or V_{IL},V_{OUT}=V_{CC} or GND,V_{CC} =5.5V				±0.25	µA
Quiescent Supply Current	I_{CC}	V_{IN}=V_{CC} or GND,I_{OUT}=0,V_{CC} =5.5V				2	µA
Input Capacitance	C_{IN}				1.5	10	pF

■ **SWITCHING CHARACTERISTICS** (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay, From Input(A) To Output(Y)	t_{PZL}	$V_{CC} =3.3\pm0.3$ V	C_L=15 pF		3.7	7.0	ns
			C_L=50 pF		5.2	10.0	
	t_{PLZ}	$V_{CC} =3.3\pm0.3$ V	C_L=15 pF		4.8	6.4	
			C_L=50 pF		6.9	10.0	
Propagation Delay, From Input(A) To Output(Y)	t_{PZL}	$V_{CC} =5\pm0.5$ V	C_L=15 pF		2.7	4.9	ns
			C_L=50 pF		3.8	7.0	
	t_{PLZ}	$V_{CC} =5\pm0.5$ V	C_L=15 pF		3.0	4.1	
			C_L=50 pF		4.3	6.5	

■ **TEST CIRCUIT AND WAVEFORMS**

Test circuit for measuring propagation delay
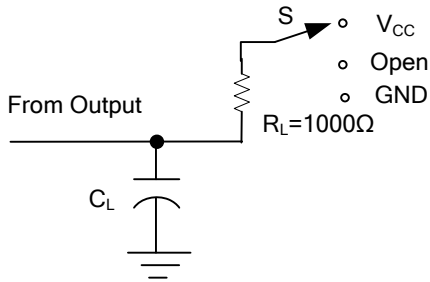
TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{CC}
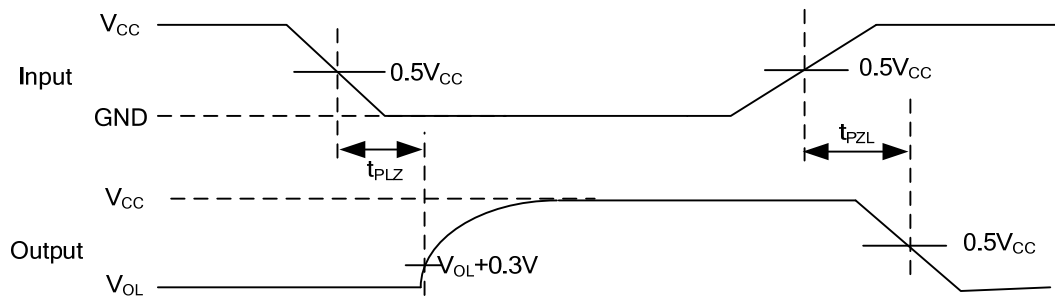
Waveforms showing the Input(A) to Output(Y) propagation delays.

Note: CL includes probe and jig capacitance.
All input pulses are supplied by generators having the following characteristics: P_{RR} ≤1MHz, Zo = 50Ω, t_R ≤3ns, t_F ≤3ns.