



# U74AHC06

CMOS IC

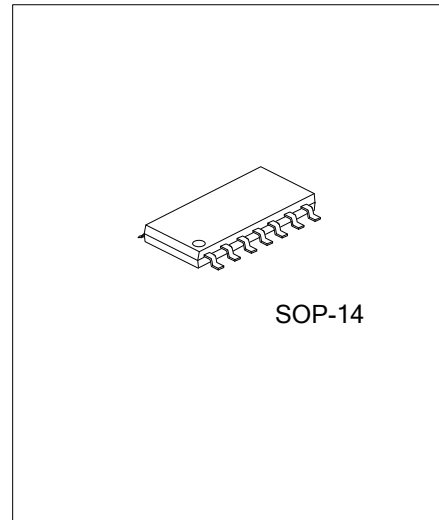
## INVERTER WITH OPEN-DRAIN OUTPUT

### 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)

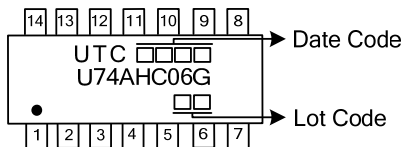


### ORDERING INFORMATION

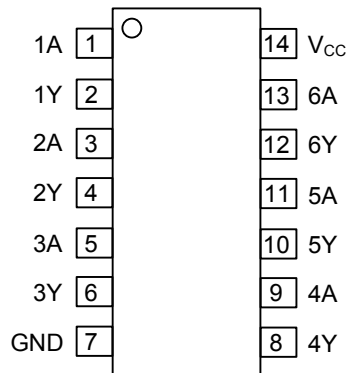
Ordering Number	Package	Packing
U74AHC06G-S14-R	SOP-14	Tape Reel

<p>U74AHC06G-S14-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) S14: SOP-14</li> <li>(3) G: Halogen Free and Lead Free</li> </ul>
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### MARKING



■ PIN CONFIGURATION

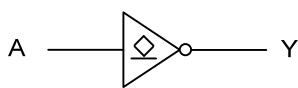


■ FUNCTION TABLE

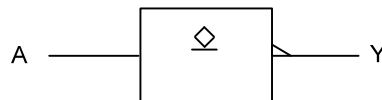
INPUT A	OUTPUT Y
H	L
L	Z

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

■ LOGIC SYMBOL



Logic symbol



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 ~ +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. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.  
 2. 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	$\theta_{JA}$	76	°C/W

■ RECOMMENDED OPERATING CONDITIONS

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	V
High-Level Input Voltage	$V_{IH}$	$V_{CC} = 2.0V$	1.5			V
		$V_{CC} = 3.0V$	2.1			V
		$V_{CC} = 5.5V$	3.85			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC} = 2.0V$			0.5	V
		$V_{CC} = 3.0V$			0.9	V
		$V_{CC} = 5.5V$			1.65	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta V$	$V_{CC} = 3.3 \pm 0.3V$			100	ns/V
		$V_{CC} = 5.0 \pm 0.5V$			20	ns/V
Operating Temperature	$T_A$		-40	+25	+85	°C

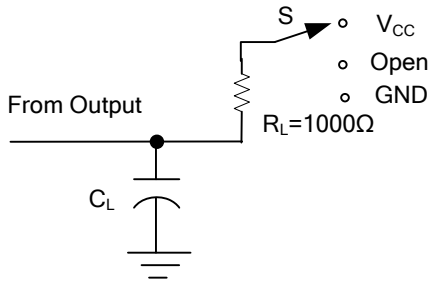
■ STATIC CHARACTERISTICS ( $T_A = 25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
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	$\mu A$	
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	$\mu A$	
Quiescent Supply Current	$I_{CC}$	$V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$ , $V_{CC} = 5.5V$			2	$\mu A$	
Input Capacitance	$C_{IN}$			1.5	10	pF	

■ SWITCHING CHARACTERISTICS (T<sub>A</sub>=25°C)

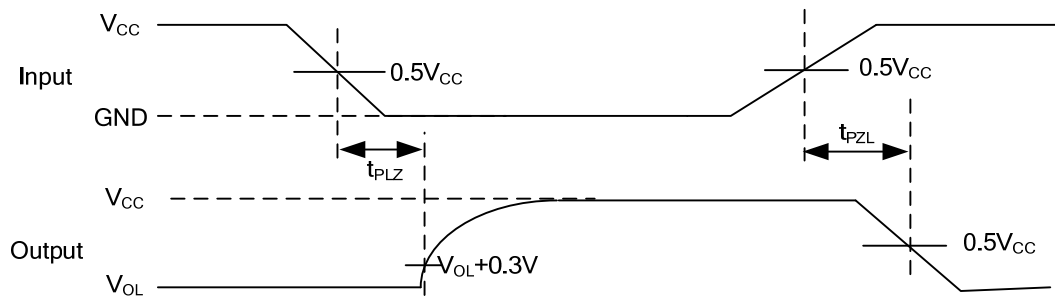
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay, From Input(A) To Output(Y)	t <sub>PZL</sub>	V <sub>CC</sub> =3.3±0.3 V	C <sub>L</sub> =15 pF		3.7	7.0	ns
			C <sub>L</sub> =50 pF		5.2	10.0	
	t <sub>PLZ</sub>	V <sub>CC</sub> =3.3±0.3 V	C <sub>L</sub> =15 pF		4.8	6.4	
			C <sub>L</sub> =50 pF		6.9	10.0	
Propagation Delay, From Input(A) To Output(Y)	t <sub>PZL</sub>	V <sub>CC</sub> =5±0.5 V	C <sub>L</sub> =15 pF		2.7	4.9	ns
			C <sub>L</sub> =50 pF		3.8	7.0	
	t <sub>PLZ</sub>	V <sub>CC</sub> =5±0.5 V	C <sub>L</sub> =15 pF		3.0	4.1	
			C <sub>L</sub> =50 pF		4.3	6.5	

## ■ TEST CIRCUIT AND WAVEFORMS



TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PHZ}/t_{PZH}$	GND
$t_{PLZ}/t_{PZL}$	$V_{CC}$

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:  $P_{RR} \leq 1\text{MHz}$ ,  $Z_o = 50\Omega$ ,  $t_R \leq 3\text{ns}$ ,  $t_F \leq 3\text{ns}$ .

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