



# U74AHC07

**CMOS IC**

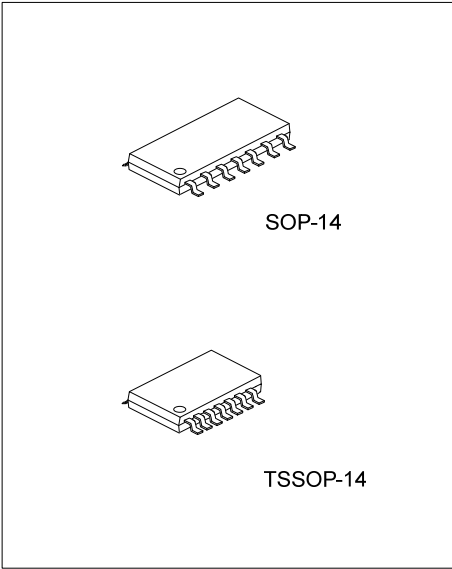
## NON-INVERT BUFFERS WITH OPEN-DRAIN OUTPUT

### DESCRIPTION

The **U74AHC07** is a device with six independent non-inverting buffers and the output of the buffer is an open drain. Each buffer provides the Function  $Y=A$ .

### FEATURES

- \* Operate From 2V to 5.5V
- \* High Noise Immunity
- \* Low Power Dissipation
- \* Balanced Propagation Delays
- \* Output Capability Standard (Open Drain)

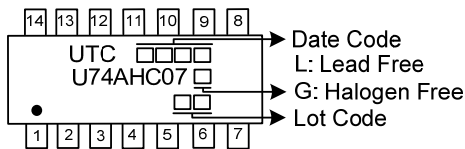


### ORDERING INFORMATION

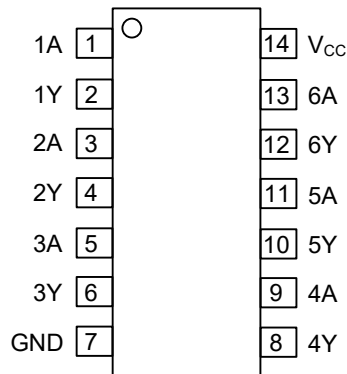
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC07L-S14-R	U74AHC07G-S14-R	SOP-14	Tape Reel
U74AHC07L-P14-R	U74AHC07G-P14-R	TSSOP-14	Tape Reel

<p>U74AHC07G-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, P14: TSSOP-14</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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### MARKING



■ PIN CONFIGURATION

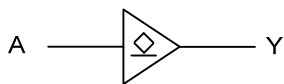


■ FUNCTION TABLE (Each Gate)

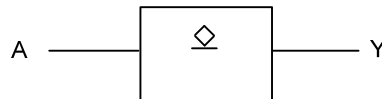
INPUT A	OUTPUT Y
H	Z
L	L

Note: H: High Voltage Level  
 L: Low Voltage Level  
 Z: High-Impedance OFF-State

■ LOGIC SYMBOL(each gate)



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	$V_{OUT}$	Active Mode	-0.5 ~ $V_{CC} + 0.5$
		High-Impedance Mode	-0.5 ~ +7
$V_{CC}$ 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
Operating Temperature	$T_{OPR}$	-40 ~ +125	°C
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

Note: 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 CONDITIONS (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	$\Delta t / \Delta v$	$V_{CC} = 3.3 \pm 0.3V$			100	ns/V
		$V_{CC} = 5.0 \pm 0.5V$			20	
Operating Temperature	$T_A$		-40		+125	°C

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-14	76	°C/W
	TSSOP-14	113	°C/W

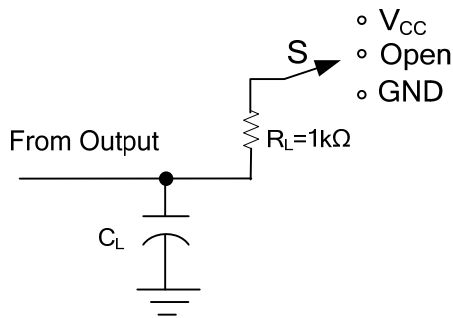
### ■ STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Low-Level Output Voltage	$V_{OL}$	$V_{CC} = 2.0V$			0.1	V
		$V_{CC} = 3.0V$	$I_{OL} = 50\mu A$		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	$I_Q$	$V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$ , $V_{CC} = 5.5V$			1	μA
Input Capacitance	$C_{IN}$			1.5	10	pF

■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

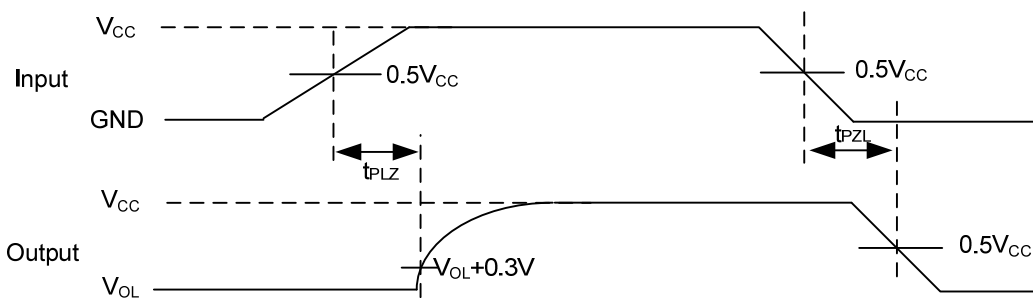
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay From Input(A) To Output(Y)	t <sub>PZL</sub>	V <sub>CC</sub> =3.3±0.3 V	C <sub>L</sub> =15 pF		3.5	5.6	ns
			C <sub>L</sub> =50 pF		5.0	8.0	
	t <sub>PLZ</sub>	V <sub>CC</sub> =3.3±0.3 V	C <sub>L</sub> =15 pF		5.8	7.9	
			C <sub>L</sub> =50 pF		8.3	11.5	
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		2.5	3.9	ns
			C <sub>L</sub> =50 pF		3.6	5.5	
	t <sub>PLZ</sub>	V <sub>CC</sub> =5±0.5 V	C <sub>L</sub> =15 pF		4.2	5.1	
			C <sub>L</sub> =50 pF		6.0	7.5	

## ■ 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: PRR  $\leq 1$ MHz,  $Z_o = 50\Omega$ ,  $t_r \leq 3$ ns,  $t_f \leq 3$ ns.

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