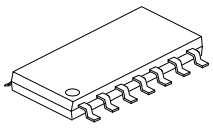
U74AHC17

CMOS IC

HEX SCHMITT-TRIGGER BUFFERS



SOP-14

■ DESCRIPTION

The **U74AHC17** contains hex Schmitt-trigger buffers and each buffer provides the function $Y=\overline{A}$.

■ FEATURES

* Operate From 2V to 5.5V
* Max t_{PD} of 8.6ns at 5 V(C_L=15pF)
* High Noise Immunity
* Low Power Dissipation

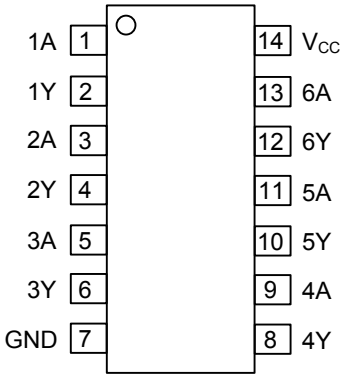
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC17L-S14-R	U74AHC17G-S14-R	SOP-14	Tape Reel

U74AHC17L-S14-R
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) R: Tape Reel
(2) S14: SOP-14
(3) G: Halogen Free, L:Lead Free

■ PIN CONFIGURATION

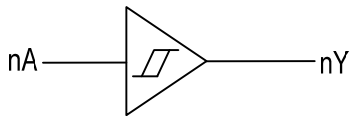


■ FUNCTION TABLE (Each Gate)

INPUT A	OUTPUT Y
L	L
H	H

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

■ 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}	-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±50	mA
Output Sink Current	I_{OUT}	±25	mA
Input Clamp Current (V_{IN}<0)	I_{IK}	-20	mA
Output Clamp Current (V_{OUT}<0 or V_{OUT}> V_{CC})	I_{OK}	±20	mA
Storage Temperature	T_{STG}	-65 ~ + 150	°C

Note 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	θ_{JA}	76	°C/W

■ 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 Current	I_{OH}	V_{CC}=2V			-50	μA
		V_{CC}=3.3V±0.3V			-4	mA
		V_{CC}=5V±0.5V			-8	mA
Low-Level Input Current	I_{OL}	V_{CC}=2V			50	μA
		V_{CC}=3.3V±0.3V			4	mA
		V_{CC}=5V±0.5V			8	mA
Operating Temperature	T_A		-40	+25	+85	°C

■ STATIC CHARACTERISTICS (T_A=25℃)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	V_{T+}	V_{CC} =3.0V		1.2		2.2	V
		V_{CC} =4.5V		1.75		3.15	
		V_{CC} =5.5V		2.15		3.85	
Negative-Going Input Threshold Voltage	V_{T-}	V_{CC} =3.0V		0.9		1.9	V
		V_{CC} =4.5V		1.35		2.75	
		V_{CC} =5.5V		1.65		3.35	
Hysteresis(V_{T+}-V_{T-})	ΔV_T	V_{CC} =3.0V		0.3		1.2	V
		V_{CC} =4.5V		0.4		1.4	
		V_{CC} =5.5V		0.5		1.6	
High-Level Output Voltage	V_{OH}	I_{OH}=-50μA	V_{CC} =2.0V	1.9			V
			V_{CC} =3.0V	2.9			
			V_{CC} =4.5V	4.4			
		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}=50μA	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_{CC} =0V to 5.5V,V_{IN}=5.5V or GND				±0.1	μA
Quiescent Supply Current	I_Q	V_{CC} =5.5V,V_{IN}=V_{CC} or GND, I_{OUT}=0				2	μA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND			2	10	pF

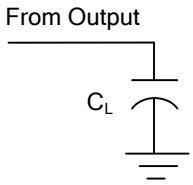
■ SWITCHING CHARACTERISTICS(T_A=25℃)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay, From Input(A) To Output(Y)	t_{PLH}/ t_{PHL}	V_{CC} =3.3±0.3 V	C_L=15 pF		8.3	12.8	ns
			C_L=50 pF		10.8	16.3	
	t_{PLH}/ t_{PHL}	V_{CC} =5.0±0.5 V	C_L=15 pF		5.5	8.6	
			C_L=50 pF		7	10.6	

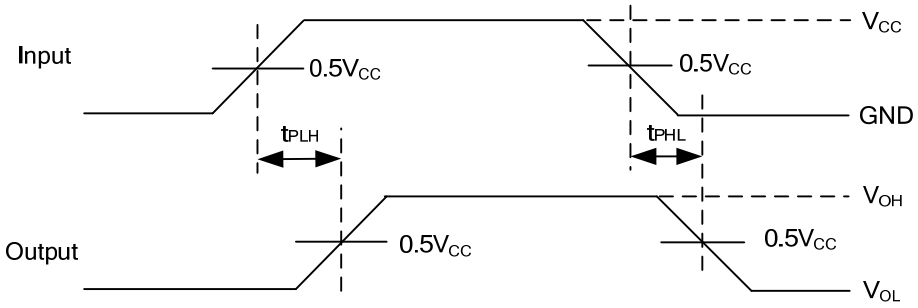
■ OPERATING CHARACTERISTICS(T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No Load,f=1MHz		9		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 ≤1MHz, Zo = 50Ω, t_R ⩽3ns, t_F ⩽3ns.