



U74AHCT1G14

CMOS IC

SINGLE SCHMITT-TRIGGER INVERTER

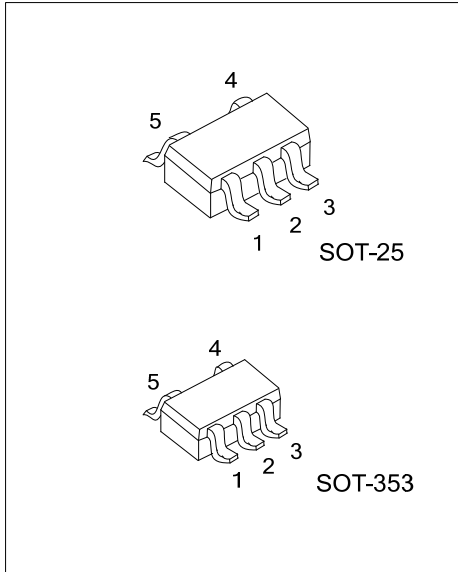
DESCRIPTION

The **U74AHCT1G14** is a single schmitt-trigger inverter providing the function $Y = \overline{A}$.

The gates of device have different input threshold levels for positive-going (V_{T+}) and negative-going (V_{T-}) signals because of the schmitt-trigger action in the input.

FEATURES

- * Operation voltage range: 4.5V ~5.5V
- * Low Power Current: $I_{CC}=1\mu A$ (Max.)
- * $\pm 8mA$ Output Drive at 5V
- * Inputs are TTL-Voltage Compatible

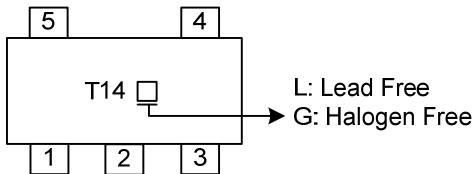


ORDERING INFORMATION

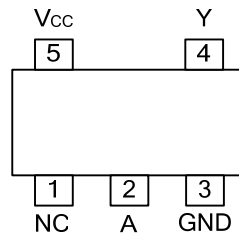
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G14L-AF5-R	U74AHCT1G14G-AF5-R	SOT-25	Tape Reel
U74AHCT1G14L-AL5-R	U74AHCT1G14G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G14G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



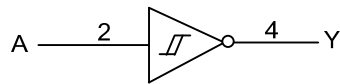
■ PIN CONFIGURATION



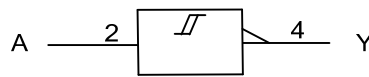
■ FUNCTION TABLE (each gate)

INPUT(A)	OUTPUT(Y)
L	H
H	L

■ LOGIC DIAGRAM (positive logic)



Logic symbol



IEC logic symbol

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■ ABSOLUTE MAXIMUM RATING (T_A=25°C, 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 Current	I _{OUT}	±25	mA
Input Clamp Current	I _{IK}	-20	mA
Output Clamp Current	I _{OK}	±20	mA
Operating Temperature	T _{OPR}	-40 ~ + 125	°C
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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		4.5		5.5	V
Input Voltage	V _{IN}		0		5.5	V
Output Voltage	V _{OUT}		0		V _{CC}	V
Input Transition Rise or Fall Rate	Δt/ΔV	V _{CC} =5.0+0.5V			20	ns/V
Operating Temperature	T _A		-40		125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-going threshold	V _{T+}	V _{CC} =4.5V	0.9		2	V
		V _{CC} =5.5V	1.1		2	
Negative-going threshold	V _{T-}	V _{CC} =4.5V	0.5		1.6	V
		V _{CC} =5.5V	0.6		1.5	
Negative-going threshold	ΔV _T	V _{CC} =4.5V	0.4		1.4	V
		V _{CC} =5.5V	0.5		1.6	
High-Level Output Voltage	V _{OH}	V _{CC} =4.5V	I _{OH} =-50μA	4.4	4.5	V
			I _{OH} =-8mA	3.94		
Low-Level Output Voltage	V _{OL}	V _{CC} =4.5V	I _{OL} =50μA		0.1	V
			I _{OL} =8mA		0.36	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 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			1	μA
Additional Quiescent Supply Current	Δ I _Q	V _{CC} =5.5V, V _{IN} =3.4V; other input at V _{CC} or GND; I _{OUT} =0			1.35	mA
Input Capacitance	C _{IN}	V _{CC} =5V, V _{IN} =V _{CC} or GND		2	10	pF

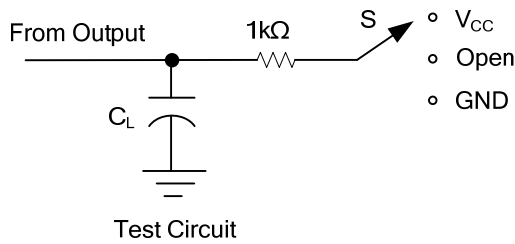
■ SWITCHING CHARACTERISTICS (T_A=25°C, see TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) and (nB) to output(nY)	t _{PHL} /t _{PLH}	V _{CC} =5.5V, C _L = 15pF		4	7	ns
		V _{CC} =5.5V, C _L = 50pF		5.5	8	

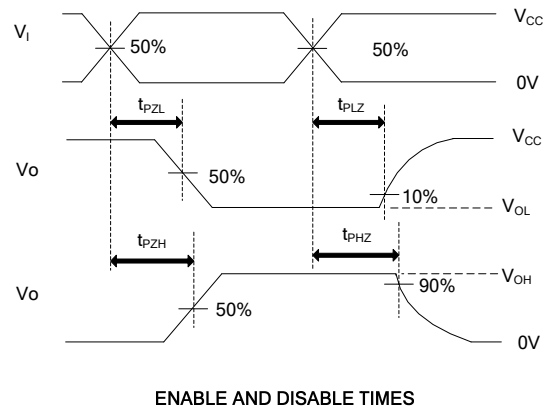
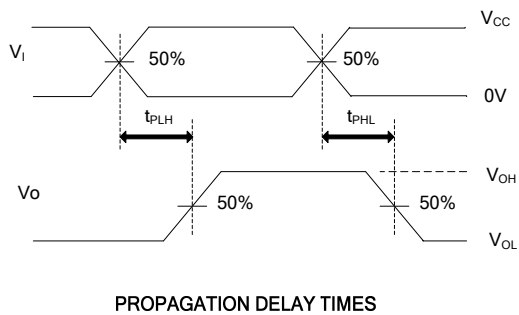
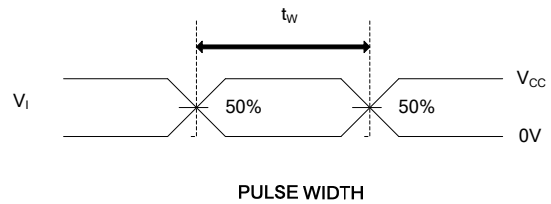
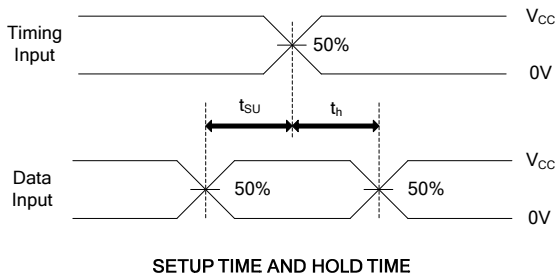
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =5V, f=1MHz, No load		12		pF

TEST CIRCUIT AND WAVEFORMS



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



Note: C_L includes probe and jig capacitance.
 $P_{RR} \leq 1\text{MHz}$, $Z_O = 50\Omega$, $t_R \leq 3\text{ns}$, $t_F \leq 3\text{ns}$.

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