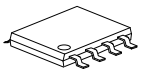
U74AHCT3G14

CMOS IC

SCHMITT-TRIGGER INVERTER



TSSOP-8

■ DESCRIPTION

The **U74AHCT3G14G** is a triple Schmitt-trigger inverter providing the function $Y = \overline{A}$.

The gates of this device have different input threshold levels for positive-going (V_{T+}) and negative-going(V_{T-}) signals because of the Schmitt-trigger action. The device is capable of transforming slowly changing input signals into sharply defined, jitter-free output signals.

■ FEATURES

* Low Power Dissipation
* TTL voltage compatiable
* Symmetrical output impedance
* Balanced propagation delays
* High noise immunity

■ APPLICATIONS

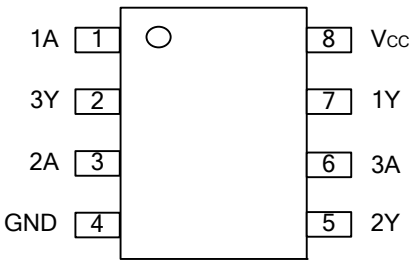
* Wave and pulse shapers
* Astable multivibrators
* Monostable multivibrators

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT3G14L-P08-R	U74AHCT3G14G-P08-R	TSSOP-8	Tape Reel
U74AHCT3G14L-P08-T	U74AHCT3G14G-P08-T	TSSOP-8	Tube

U74AHCT3G14L-P08-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel, T: Tube (2) P08: TSSOP-8 (3) G:Halogen Free, L: Lead Free

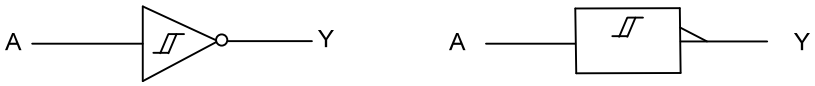
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (each gate)



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 7.0	V
Input Voltage	V_{IN}	-0.5 ~ 7.0	V
Output Voltage	V_{OUT}	-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±75	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 ~ + 85	℃
Storage Temperature	T_{STG}	-65 ~ + 150	℃

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	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5	5.0	5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V

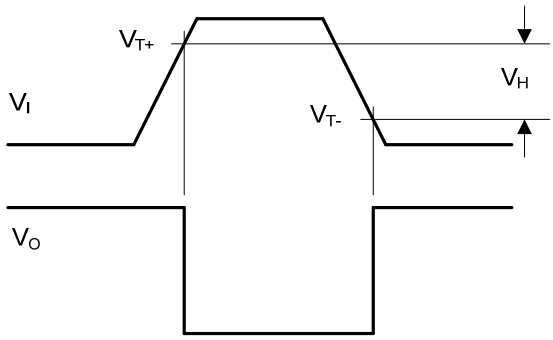
■ ELECTRICAL CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-going threshold	V_{T+}	V_{CC}=4.5 V			2.0	V
		V_{CC}=5.5 V			2.0	
Negative-going threshold	V_{T-}	V_{CC}=4.5 V	0.5			V
		V_{CC}=5.5 V	0.6			
Hysteresis (V_{T+} - V_{T-})	ΔV_T	V_{CC}=4.5 V	0.4		1.4	V
		V_{CC}=5.5 V	0.4		1.6	
High-Level Output Voltage	V_{OH}	I_{OH}=-50μA, V_{CC}=4.5 V	4.4	4.5		V
		I_{OH}=-8mA, V_{CC}=4.5 V	3.94			
Low-Level Output Voltage	V_{OL}	I_{OL}=50μA, V_{CC}=4.5 V		0	0.1	V
		I_{OL}=8mA, V_{CC}=4.5 V			0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{IN}=V_{IH} or V_{IL},			0.1	μA
Quiescent Supply Current	I_{CC}	V_{IN}=V_{CC} or GND, I_{OUT}=0, V_{CC}=5.5 V			1.0	μA
Additional quiescent supply current per input pin	ΔI_{CC}	V_{IN}=3.4V, V_{CC}=5.5 V, I_{OUT}=0, other inputs at V_{CC} or GND			1.35	mA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND, V_{CC}=5 V		1.5	10	pF

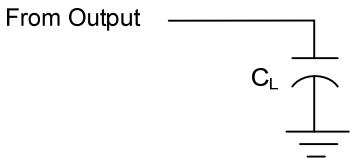
■ SWITCHING CHARACTERISTICS (T_A=25°C, t_R = t_F ≤ 3.0 ns)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) to output(nY)	t_{PHL} /t_{PLH}	V_{CC}=5.0V, C_L = 15pF		4.1		ns
		V_{CC}=5.0V, C_L = 50pF		5.9		
		V_{CC}=4.5 to 5.5V, C_L = 15pF			7.0	
		V_{CC}=4.5 to 5.5V, C_L = 50pF			8.5	

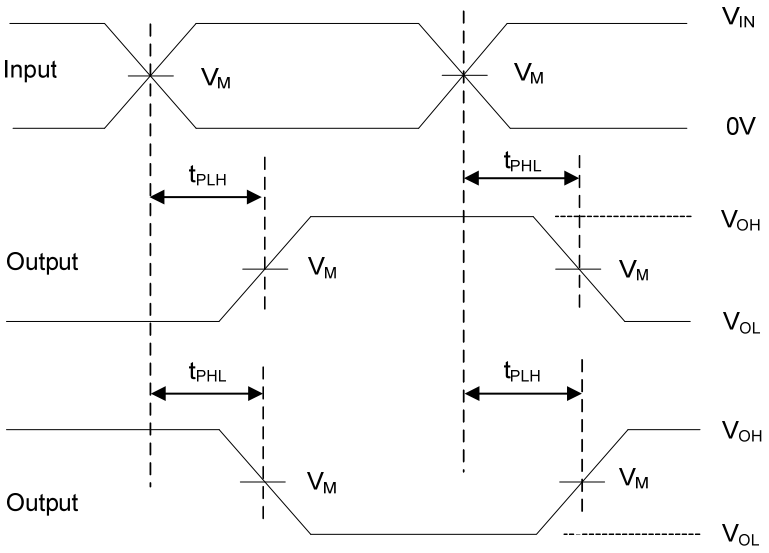
■ TEST CIRCUIT AND WAVEFORMS



Definitions of V_{T+} , V_{T-} and V_H



Propagation delay times test circuit



Propagation delay times Inverting and noninverting outputs

Note: CL includes probe and jig capacitance.
P_{RR} ≤1MHz, Z_O = 50Ω, t_R ≤3ns, t_F ≤3ns.