



U74HCT3G14

Preliminary

CMOS IC

TRIPLE INVERTER SCHMITT-TRIGGER

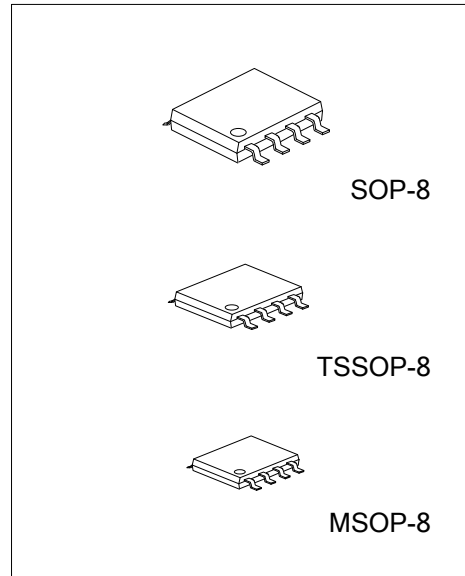
DESCRIPTION

The **U74HCT3G14** is a high-speed Si-gate CMOS device.

The **U74HCT3G14** provides three inverting buffers with Schmitt trigger action. This device is capable of transforming slowly changing input signals into sharply defined, jitter-free output signals.

FEATURES

- * High Noise Immunity
- * Low Power Dissipation
- * Balanced Propagation Delays
- * Unlimited input rise and fall times



ORDERING INFORMATION

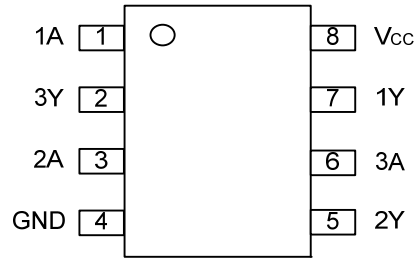
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT3G14L-P08-R	U74HCT3G14G-P08-R	TSSOP-8	Tape Reel
U74HCT3G14L-S08-R	U74HCT3G14G-S08-R	SOP-8	Tape Reel
U74HCT3G14L-SM1-R	U74HCT3G14G-SM1-R	MSOP-8	Tape Reel

<p>U74HCT3G14G-P08-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) P08: TSSOP-8, S08: SOP-8, SM1: MSOP-8 (3) G: Halogen Free and Lead Free</p>
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MARKING

SOP-8 / MSOP-8	TSSOP-8
<p>Date Code: 8 7 6 5 UTC □ □ □ □ HCT3G14 □ □ □ □ Lot Code: 1 2 3 4</p> <p>L: Lead Free G: Halogen Free</p>	<p>Date Code: 8 7 6 5 UTC □ □ □ □ HCT3G14 □ □ □ □ Lot Code: 1 2 3 4</p> <p>L: Lead Free G: Halogen Free</p>

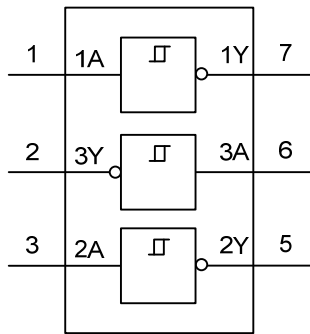
■ PIN CONFIGURATION



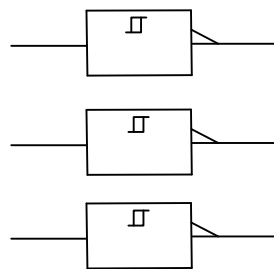
■ FUNCTION TABLE (each gate)

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

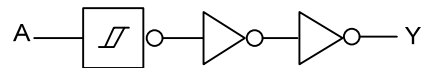
■ LOGIC DIAGRAM (each gate)



Logic symbol



IEC logic symbol



Logic diagram

■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ 7.0	V
Input Voltage	V_{IN}		-0.5 ~ $V_{CC}+0.5$	V
V_{CC} or GND Current	I_{CC}		±50	mA
Output Current	I_{OUT}	$V_{OUT}=-0.5V\sim V_{CC}+0.5V$	±25	mA
Input Clamp Current	I_{IK}	$V_{OUT}<-0.5V$ or $V_{IN}>V_{CC}+0.5V$	±20	mA
Output Clamp Current	I_{OK}	$V_{OUT}<-0.5V$ or $V_{OUT}>V_{CC}+0.5V$	±20	mA
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	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5	5.0	5.5	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Operating Temperature	T_A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Threshold Voltage	V_{T+}	$V_{CC}=4.5V$	1.2	1.58	1.9	V
		$V_{CC}=5.5V$	1.4	1.78	2.1	V
Negative-Going Threshold Voltage	V_{T-}	$V_{CC}=4.5V$	0.5	0.87	1.2	V
		$V_{CC}=5.5V$	0.6	1.11	1.4	V
Hysteresis Voltage	ΔV_T	$V_{CC}=4.5V$	0.40	0.71		V
		$V_{CC}=5.5V$	0.40	0.67		V
High-Level Output Voltage	V_{OH}	$V_{CC}=4.5V$, $V_I=V_{T+}$ or V_{T-} , $I_{OH}=-20\mu A$	4.4	4.5		V
		$I_{OH}=-4mA$	4.18	4.32		V
Low-Level Output Voltage	V_{OL}	$V_{CC}=4.5V$, $V_I=V_{T+}$ or V_{T-} , $I_{OL}=20\mu A$		0	0.1	V
		$I_{OL}=4mA$		0.15	0.26	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V$, $V_{IN}=V_{CC}$ or GND			±0.1	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=5.5V$, $V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$,			1.0	μA
Additional Quiescent Supply Current	ΔI_{CC}	$V_{CC}=5.5V$, $V_{IN}=V_{CC}-2.1V$, $I_{OUT}=0A$ Per input			300	μA

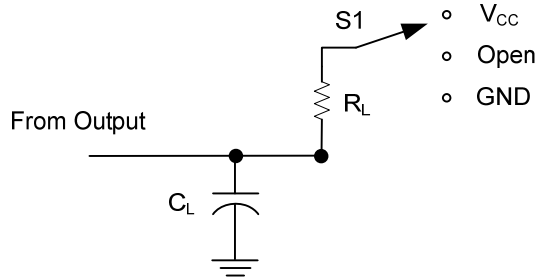
■ SWITCHING CHARACTERISTICS ($t_r = t_f \leq 3.0ns$, $T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) to output (nY)	t_{PD} (t_{PHL}/t_{PLH})	$V_{CC}=4.5V$		21	32	ns
Transition Time	t_t	$V_{CC}=4.5V$		6	15	ns

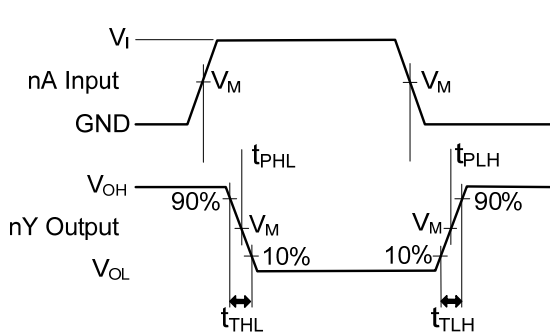
■ OPERATING CHARACTERISTIC ($C_L=0$, $f=10MHz$, $t_r=t_f=1ns$, $T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{IN}=GND$ to $V_{CC}-1.5V$		10		pF

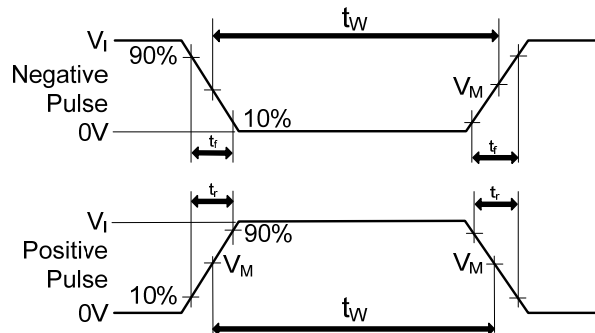
■ TEST CIRCUIT AND WAVEFORMS



Output	Input		Load		S1 Position
V_M	V_I	t_R, t_F	C_L	R_L	t_{PHL} / t_{PLH}
1.3V	GND to 3.0V	$\leq 6nS$	50pF	1k Ω	Open



PROPAGATION DELAY TIMES



MEASURING SWITCHING TIMES

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR $\leq 1MHz$, $Z_0 = 50\Omega$, $t_r \leq 6ns$, $t_f \leq 6ns$.

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