



U74AHC1G14

CMOS IC

SINGLE SCHMITT-TRIGGER INVERTER GATE

DESCRIPTION

The **U74AHC1G14** contains one inverter with Schmitt-trigger, which provides the Function $Y = \overline{A}$.

They provide an inverting buffer function with Schmitt trigger action. These devices are capable of transforming slowly changing input signals into sharply defined, jitter-free output signals.

FEATURES

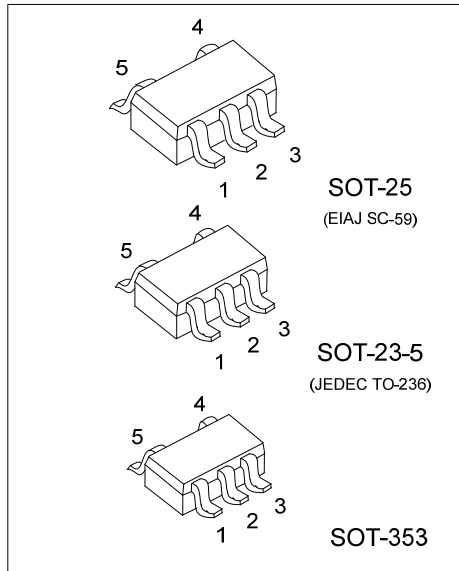
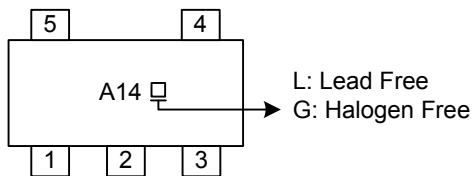
- * Operation Voltage Range: 2V ~ 5.5V
- * Low power consumption, $I_{CC} = 1\mu A$ (Max) at 5.5V
- * $\pm 8mA$ output driver at 5V

ORDERING INFORMATION

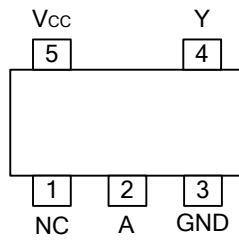
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC1G14L-AE5-R	U74AHC1G14G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G14L-AF5-R	U74AHC1G14G-AF5-R	SOT-25	Tape Reel
U74AHC1G14L-AL5-R	U74AHC1G14G-AL5-R	SOT-353	Tape Reel

<p>U74AHC1G14G-AE5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

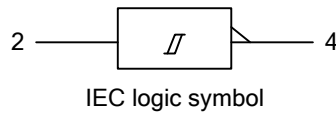
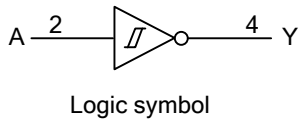


■ FUNCTION TABLE

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

Note: H: high voltage level; L: low voltage level

■ LOGIC DIAGRAM



■ 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
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}		2		5.5	V
Input Voltage	V _{IN}		0		5.5	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°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Positive-Going Threshold	V _{T+}	V _{CC} =3.0V	1.2		2.2	V	
		V _{CC} =4.5V	1.75		3.15	V	
		V _{CC} =5.5V	2.15		3.85	V	
Negative-Going Threshold	V _{T-}	V _{CC} =3.0V	0.90		1.90	V	
		V _{CC} =4.5V	1.35		2.75	V	
		V _{CC} =5.5V	1.65		3.35	V	
Hysteresis Voltage (V _{T+} -V _{T-})	ΔV _T	V _{CC} =3.0V	0.3		1.2	V	
		V _{CC} =4.5V	0.4		1.4	V	
		V _{CC} =5.5V	0.5		1.6	V	
High-Level Output Voltage	V _{OH}	V _{CC} =2.0V	I _{OH} =-50μA	1.9	2	V	
		V _{CC} =3.0V		2.9	3	V	
		V _{CC} =4.5V	4.4	4.5	V		
		V _{CC} =3.0V, I _{OH} =-4mA	2.58		V		
		V _{CC} =4.5V, I _{OH} =-8mA	3.94		V		
Low-Level Output Voltage	V _{OL}	V _{CC} =2.0V	I _{OL} =50μA			0.1	V
		V _{CC} =3.0V				0.1	V
		V _{CC} =4.5V				0.1	V
		V _{CC} =3.0V, I _{OL} =4mA			0.36	V	
		V _{CC} =4.5V, I _{OL} =8mA			0.36	V	
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} =0A			1	μA	
Input Capacitance	C _I	V _{CC} =5.0V, V _{IN} =V _{CC} or GND		2	10	pF	

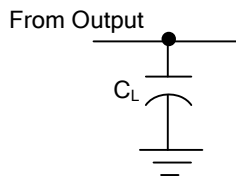
■ DYNAMIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	$V_{CC}=3.3V\pm 0.3V$		8.3	12.8	ns	
		$V_{CC}=5V\pm 0.5V$		5.5	8.6	ns	
	t_{PHL}	$V_{CC}=3.3V\pm 0.3V$		8.3	12.8	ns	
		$V_{CC}=5V\pm 0.5V$		5.5	8.6	ns	
	t_{PLH}	$V_{CC}=3.3V\pm 0.3V$		$C_L=50\text{pF}$	10.8	16.3	ns
		$V_{CC}=5V\pm 0.5V$			7	10.6	ns
	t_{PHL}	$V_{CC}=3.3V\pm 0.3V$			10.8	16.3	ns
		$V_{CC}=5V\pm 0.5V$			7	10.6	ns

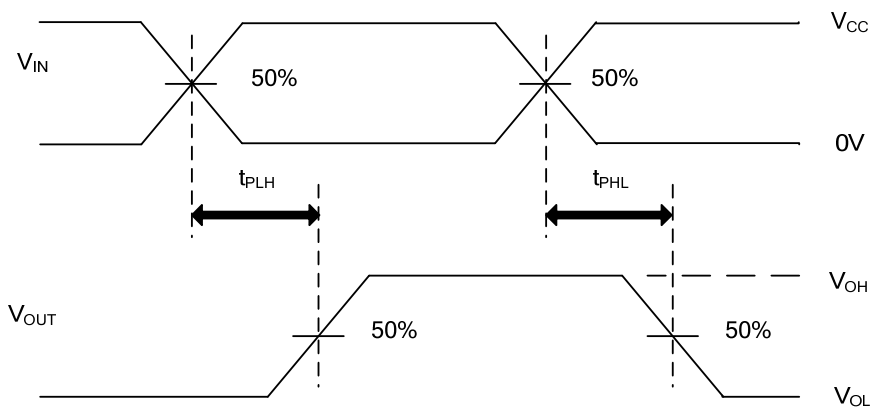
■ OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=5V$, $f=1\text{MHz}$, No load		9		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT



PROPAGATION DELAY TIMES

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

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