



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

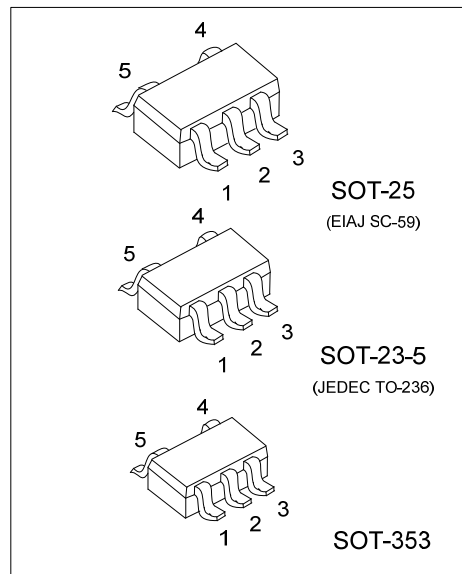
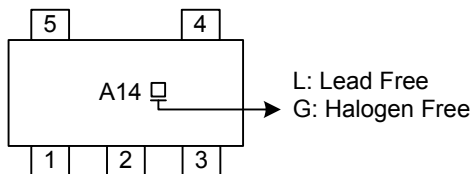
- * Operation Voltage Range: 2V ~ 5.5V
- * Low power consumption, $I_{CC} = 1\mu A$ (Max) at 5.5V
- * $\pm 8mA$ output driver at 5V

ORDERING INFORMATION

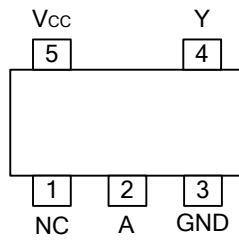
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC1G14L-AE5-R	U74AHC1G14G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G14L-AF5-R	U74AHC1G14G-AF5-R	SOT-25	Tape Reel
U74AHC1G14L-AL5-R	U74AHC1G14G-AL5-R	SOT-353	Tape Reel

<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



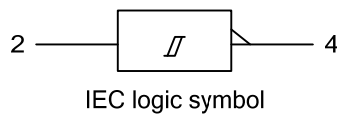
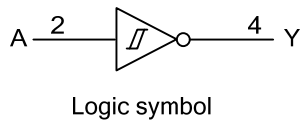
■ FUNCTION TABLE

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

H: high voltage level

L: low voltage level

■ LOGIC DIAGRAM



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■ ABSOLUTE MAXIMUM RATING

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
Input Transition Rise or Fall Rate	$\Delta t/\Delta V$	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	T_A		-40		125	°C

■ ELECTRICAL CHARACTERISTICS

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
Negative-Going Threshold	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}	$V_{CC}=2.0V$	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}	$V_{CC}=2.0V$			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	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V,$ $V_{IN}=5.5V$ 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

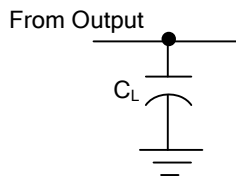
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay Time Input(A) to Output(Y)	t _{PLH}	V _{CC} =3.3V±0.3V		8.3	12.8	ns	
		V _{CC} =5V±0.5V		5.5	8.6	ns	
	t _{PHL}	V _{CC} =3.3V±0.3V		C _L =15pF	8.3	12.8	ns
		V _{CC} =5V±0.5V			5.5	8.6	ns
	t _{PLH}	V _{CC} =3.3V±0.3V		C _L =50pF	10.8	16.3	ns
		V _{CC} =5V±0.5V			7	10.6	ns
	t _{PHL}	V _{CC} =3.3V±0.3V			10.8	16.3	ns
		V _{CC} =5V±0.5V			7	10.6	ns

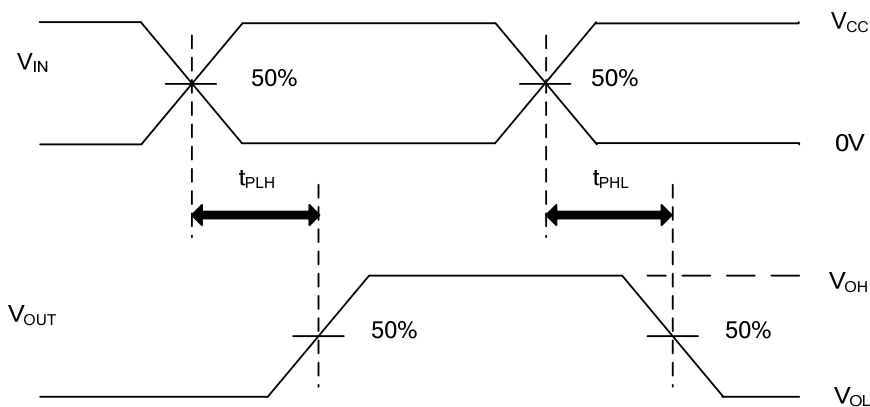
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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