



U74AHC1G14

CMOS IC

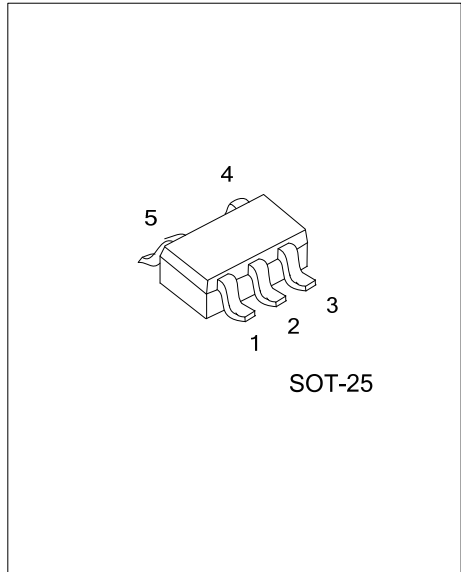
SINGLE SCHMITT-TRIGGER INVERTER GATE

DESCRIPTION

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

FEATURES

- * Operate from 2V to 5.5V
- * Max t_{pd} of 10ns at 5 V
- * Low power dissipation: $I_{CC}=10\mu A(\text{Max})$ at $T_a=25^\circ C$



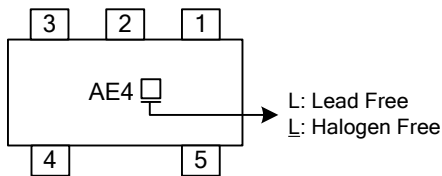
Lead-free: U74AHC1G14L
Halogen-free: U74AHC1G14G

ORDERING INFORMATION

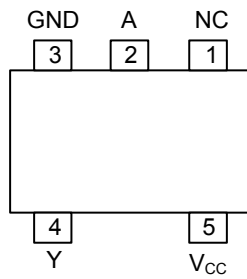
Ordering Number			Package	Packing
Normal	Lead Free Plating	Halogen Free		
U74AHC1G14-AF5-R	U74AHC1G14L-AF5-R	U74AHC1G14G-AF5-R	SOT-25	Tape Reel

<p>U74AHC1G14L-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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MARKING



■ PIN CONFIGURATION

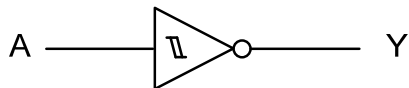


■ FUNCTION TABLE

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

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

■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING

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 ~ +85	°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	TEST 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
High-level Output Current	I_{OH}	$V_{CC}=2.0V$			-50	μA
		$V_{CC}=3.3V \pm 0.3V$			-4	mA
		$V_{CC}=5.0V \pm 0.5V$			-8	mA
Low-level Output Current	I_{OL}	$V_{CC}=2.0V$			50	μA
		$V_{CC}=3.3V \pm 0.3V$			4	mA
		$V_{CC}=5.0V \pm 0.5V$			8	mA

■ 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	
		$V_{CC}=5.5V$	2.15		3.85	
Negative-Going Threshold	V_{T-}	$V_{CC}=3.0V$	0.90		1.90	V
		$V_{CC}=4.5V$	1.35		2.75	
		$V_{CC}=5.5V$	1.65		3.35	
Negative-Going Threshold	ΔV_T	$V_{CC}=3.0V$	0.3		1.2	V
		$V_{CC}=4.5V$	0.4		1.4	
		$V_{CC}=5.5V$	0.5		1.6	
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2		V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3		
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			
Low-Level Output Voltage	V_{OL}	$V_{CC}=2.0V, I_{OH}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OH}=50\mu A$			0.1	
		$V_{CC}=4.5V, I_{OH}=50\mu A$			0.1	
		$V_{CC}=3.0V, I_{OH}=4mA$			0.36	
		$V_{CC}=4.5V, I_{OH}=8mA$			0.36	
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

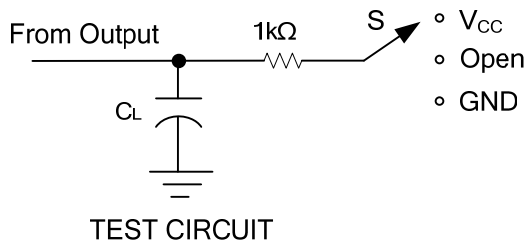
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	$V_{CC}=3.3V\pm 0.3V, C_L=15pF$		8.3	12.8	ns
	t_{PHL}			8.3	12.8	
	t_{PLH}	$V_{CC}=3.3V\pm 0.3V, C_L=50pF$		10.8	16.3	
	t_{PHL}			10.8	16.3	
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	$V_{CC}=5V\pm 0.5V, C_L=15pF$		5.5	8.6	ns
	t_{PHL}			5.5	8.6	
	t_{PLH}	$V_{CC}=5V\pm 0.5V, C_L=50pF$		7	10.6	
	t_{PHL}			7	10.6	

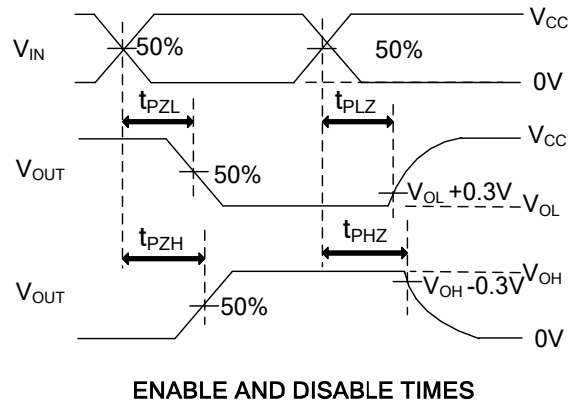
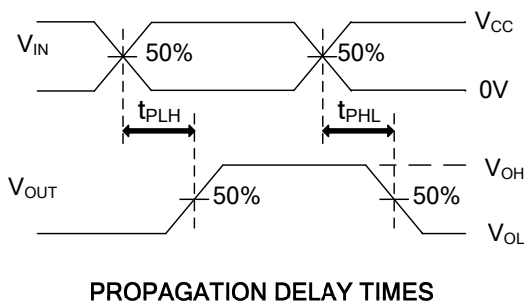
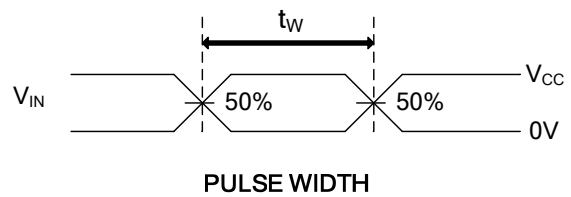
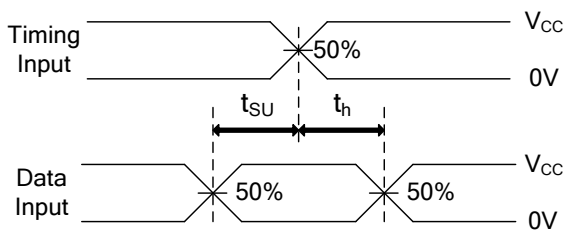
■ OPERATING CHARACTERISTICS ($T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	No load, $V_{CC}=5V, f=1MHz$		9		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.
 $PRR \leq 1\text{MHz}$, $Z_o = 50\Omega$, $t_R \leq 3\text{ns}$, $t_F \leq 3\text{ns}$

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