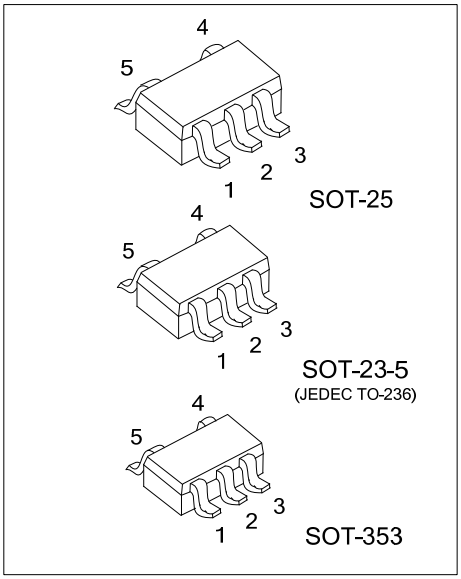
U74AHC1G14

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

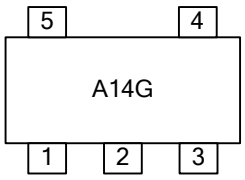
* Operation Voltage Range: 2V ~ 5.5V
* Low power consumption, I_{CC} = 1μA (Max) at 5.5V
* ±8mA output driver at 5V

■ ORDERING INFORMATION

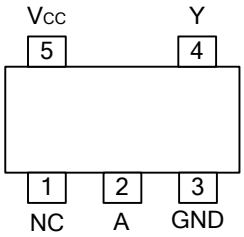
Ordering Number	Package	Packing
U74AHC1G14G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G14G-AF5-R	SOT-25	Tape Reel
U74AHC1G14G-AL5-R	SOT-353	Tape Reel

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

■ MARKING



■ PIN CONFIGURATION

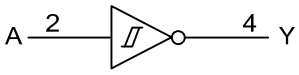


■ FUNCTION TABLE

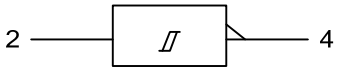
INPUT(A)	OUTPUT(Y)
L	H
H	L

H: high voltage level
L: low voltage level

■ LOGIC DIAGRAM



Logic symbol



IEC logic symbol

■ 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 COMDITIONS

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	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_{OH}=50μA			0.1	V
		V_{CC}=3.0V				0.1	V
		V_{CC}=4.5V				0.1	V
		V_{CC}=3.0V, I_{OH}=4mA				0.36	V
		V_{CC}=4.5V, I_{OH}=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

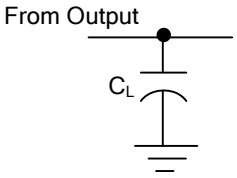
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	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_{PHL}	V_{CC}=3.3V±0.3V			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

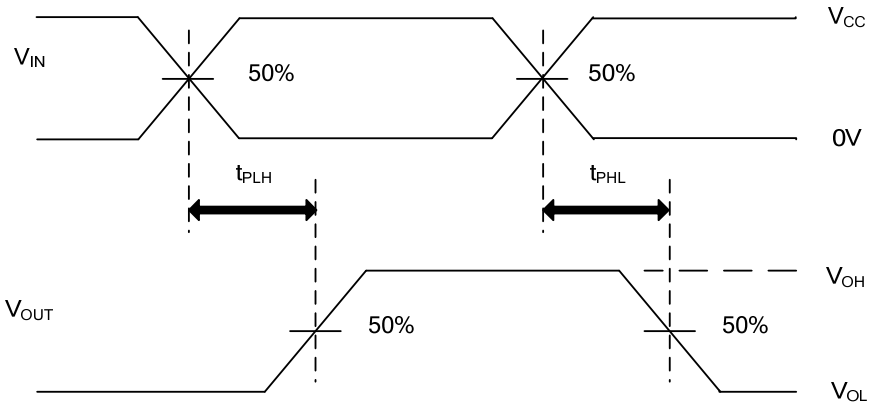
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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. $P_{RR} \leq 1MHz$, $Z_O = 50\Omega$, $t_R \leq 3ns$, $t_F \leq 3ns$.