

### 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
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 1000-V Charged-Device Model (C101)
- SOT23-5 Package Available
- SOT353 Package Available

### General Description

The 74AHC1G14 contains one inverter with Schmitt-trigger, which provides the Function  $Y = \bar{A}$ .

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.

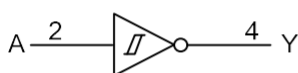
### Applications

- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide array of products such as:
  - PCs, Networking, Notebooks, Netbooks, PDAs
  - Tablet Computers, E-readers
  - Computer Peripherals, Hard Drives, CD/DVD ROM
  - TV, DVD, DVR, Set-Top Box
  - Cell Phones, Personal Navigation / GPS
  - MP3 Players, Cameras, Video Recorders

### Ordering Information

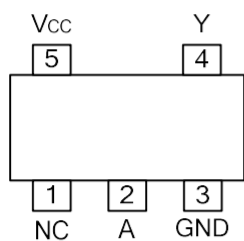
ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G14GV	SOT23-5	Tape and Reel,3000
74AHC1G14GW	SOT353	Tape and Reel,3000

### Logic Diagram



Logic symbol

### Pin Configuration



SOT23-5/ SOT353

### Marking

74AHC1G14GV Marking:A14

74AHC1G14GW Marking:AF

### Function Table

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

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



### Absolute Maximum Ratings

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

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Positive-Going Threshold	V <sub>T+</sub>	V <sub>CC</sub> =3.0V	1.2		2.2	1.2		2.2	V
		V <sub>CC</sub> =4.5V	1.75		3.15	1.75		3.15	V
		V <sub>CC</sub> =5.5V	2.15		3.85	2.15		3.85	V
Negative-Going Threshold	V <sub>T-</sub>	V <sub>CC</sub> =3.0V	0.90		1.90	0.9		1.9	V
		V <sub>CC</sub> =4.5V	1.35		2.75	1.35		2.75	V
		V <sub>CC</sub> =5.5V	1.65		3.35	1.65		3.35	V
Hysteresis Voltage (V <sub>T+</sub> -V <sub>T-</sub> )	ΔV <sub>T</sub>	V <sub>CC</sub> =3.0V	0.3		1.2	0.3		1.2	V
		V <sub>CC</sub> =4.5V	0.4		1.4	0.4		1.4	V
		V <sub>CC</sub> =5.5V	0.5		1.6	0.4		1.6	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =2.0V	1.9	2		1.9			V
		V <sub>CC</sub> =3.0V	2.9	3		2.9			V
		V <sub>CC</sub> =4.5V	4.4	4.5		4.4			V
		V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-4mA	2.58			2.4			V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-8mA	3.94			3.7			V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =2.0V			0.1			0.1	V
		V <sub>CC</sub> =3.0V			0.1			0.1	V
		V <sub>CC</sub> =4.5V			0.1			0.1	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =4mA			0.36			0.6	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =8mA			0.36			0.6	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =0~5.5V, V <sub>IN</sub> =5.5V or GND			±0.1			±2	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0A			1			40	μA

### Dynamic Characteristics (Input: t<sub>R</sub>, t<sub>F</sub>≤3ns; P<sub>RR</sub>≤1MHz)

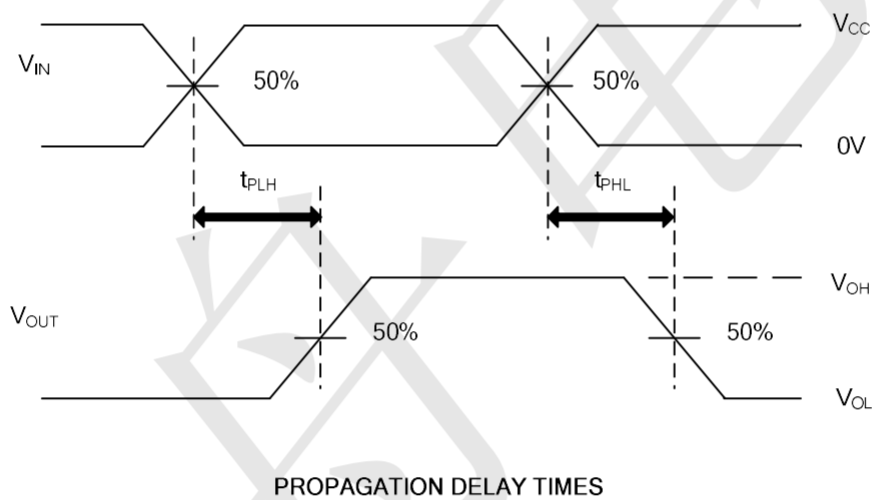
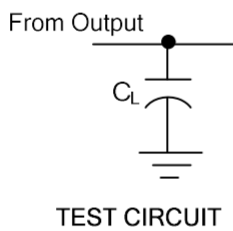
PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay Time Input (A) to Output (Y)	t <sub>PLH</sub>	V <sub>CC</sub> =3.3V±0.3V		10.8	16.3	1		21	ns
		V <sub>CC</sub> =5V±0.5V		10.8	16.3	1		14	ns
	t <sub>PHL</sub>	V <sub>CC</sub> =3.3V±0.3V		7	10.6	1		21	ns
		V <sub>CC</sub> =5V±0.5V		7	10.6	1		14	ns
	t <sub>PLH</sub>	V <sub>CC</sub> =3.3V±0.3V		10.8	16.3	1		21	ns
		V <sub>CC</sub> =5V±0.5V		10.8	16.3	1		14	ns
	t <sub>PHL</sub>	V <sub>CC</sub> =3.3V±0.3V		7	10.6	1		21	ns
		V <sub>CC</sub> =5V±0.5V		7	10.6	1		14	ns



**Operating Characteristics**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	$C_i$	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		2	10	pF
Power Dissipation Capacitance	$C_{PD}$	$V_{CC}=5V, f=1MHz$ , No load		9		pF

**Test Circuit And Waveforms**



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



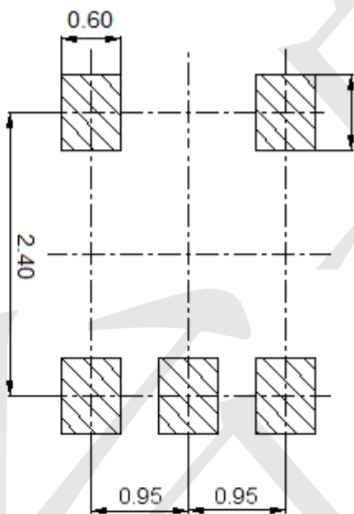
**Package Outline Dimensions** (Unit: mm)

SOT23-5



Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
F	1.80	2.00
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

**Mounting Pad Layout** (Unit: mm)





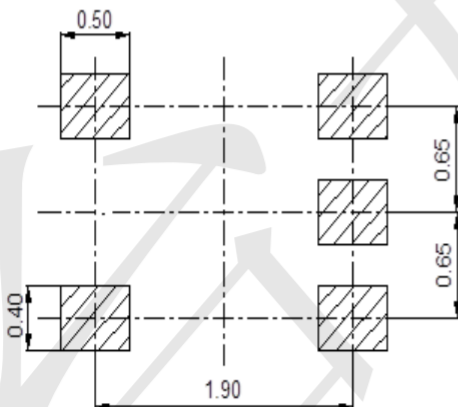
**Package Outline Dimensions** (Unit: mm)

SOT353



Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
F	1.20	1.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

**Mounting Pad Layout** (Unit: mm)



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