

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 $Y = \overline{A}$.

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.

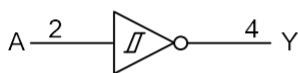
Ordering Information

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

Applications

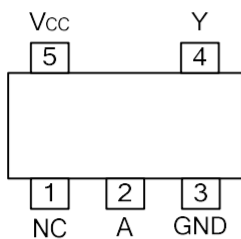
- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide array of products such as:
 - PCs, Networking, Notebooks, Netbooks, PDAs
 - Tablet Computers, E-readers
 - Computer Peripherals, Hard Drives, CD/DVD ROM
 - TV, DVD, DVR, Set-Top Box
 - Cell Phones, Personal Navigation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

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

Dynamic Characteristics (Input: t_R, t_F≤3ns; P_{RR}≤1MHz)

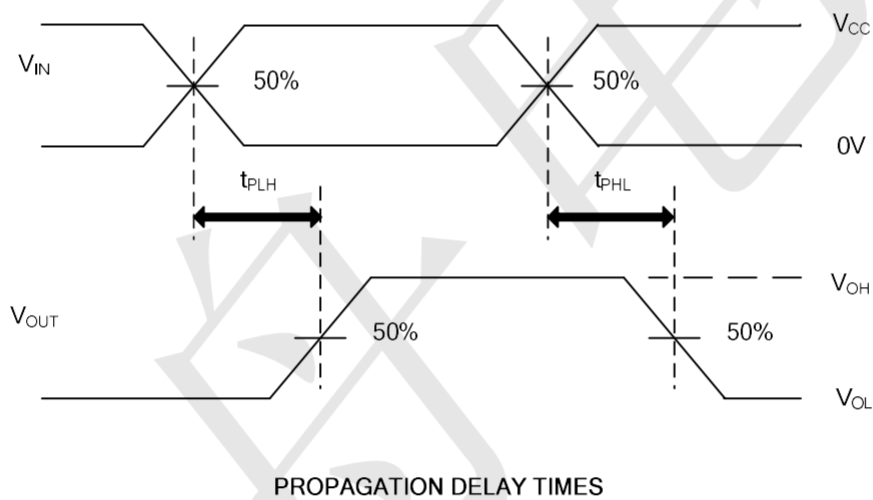
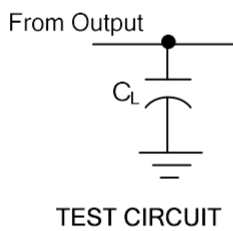
PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay Time Input (A) to Output (Y)	t _{PLH}	V _{CC} =3.3V±0.3V		10.8	16.3	1		21	ns
		V _{CC} =5V±0.5V		10.8	16.3	1		14	ns
	t _{PHL}	V _{CC} =3.3V±0.3V		7	10.6	1		21	ns
		V _{CC} =5V±0.5V		7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

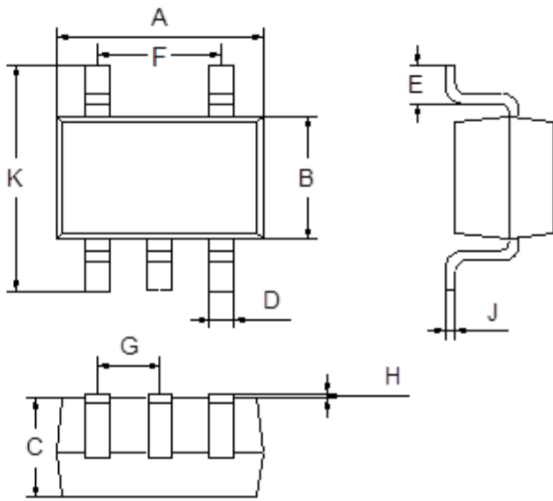


- Notes: 1. C_L includes probe and jig capacitance.
2. $P_{RR} \leq 1MHz, Z_O = 50\Omega, t_r \leq 3ns, t_f \leq 3ns$.



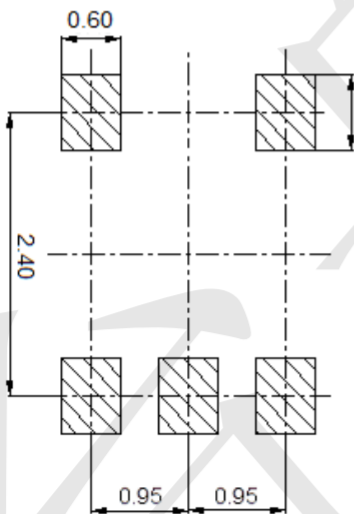
Package Outline Dimensions (Unit: mm)

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

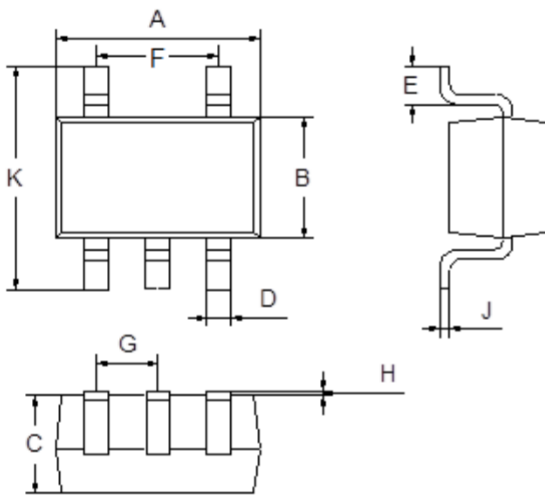
Mounting Pad Layout (Unit: mm)





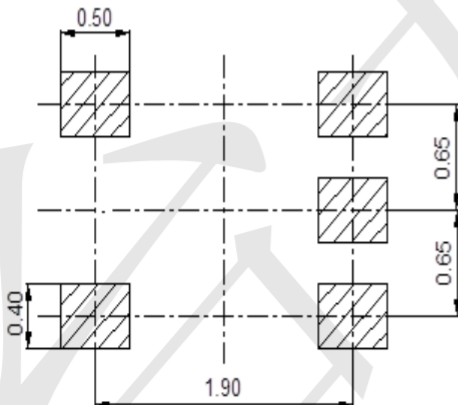
Package Outline Dimensions (Unit: mm)

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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