

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

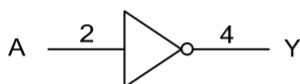
General Description

The 74AHC1G04 is a inverter gate, it provides the Function $Y = \bar{A}$.

Ordering Information

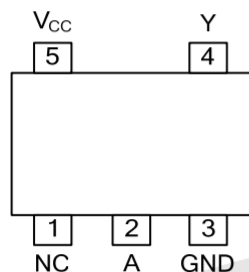
ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G04GV	SOT23-5	Tape and Reel,3000
74AHC1G04GW	SOT353	Tape and Reel,3000

Logic Diagram



Logic symbol

Pin Configuration



SOT23-5/ SOT353

Marking

74AHC1G04GV Marking:A04

74AHC1G04GW Marking:AC

Function Table

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

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

Notes: 1. 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.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

Thermal Data

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	SOT-23-5	θ_{JC}	75	°C/W
	SOT-353		145	

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

Electrical Characteristics

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}		0		V_{CC}	V
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			
		$V_{CC}=5.5V$	3.85			
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	
		$V_{CC}=5.5V$			1.65	
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V$	1.9	2.0		V
		$V_{CC}=3.0V$	2.9	3.0		
		$V_{CC}=4.5V$	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}	$V_{CC}=2.0V$			0.1	V
		$V_{CC}=3.0V$			0.1	
		$V_{CC}=4.5V$			0.1	
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36	
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V\sim 5.5V$, $V_{IN}=5.5V$ 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

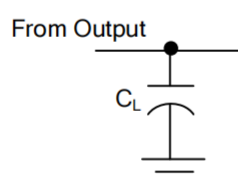
Dynamic Characteristics (Input: $t_R, t_F \leq 3ns$; $P_{RR} \leq 1MHz$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	$V_{CC}=3.3V \pm 0.3V$		5	7.1	ns
		$V_{CC}=5V \pm 0.5V$		3.8	5.5	ns
	t_{PHL}	$V_{CC}=3.3V \pm 0.3V$		5	7.1	ns
		$V_{CC}=5V \pm 0.5V$		3.8	5.5	ns
	t_{PLH}	$V_{CC}=3.3V \pm 0.3V$		7.5	10.6	ns
		$V_{CC}=5V \pm 0.5V$		5.3	7.5	ns
	t_{PHL}	$V_{CC}=3.3V \pm 0.3V$		7.5	10.6	ns
		$V_{CC}=5V \pm 0.5V$		5.3	7.5	ns

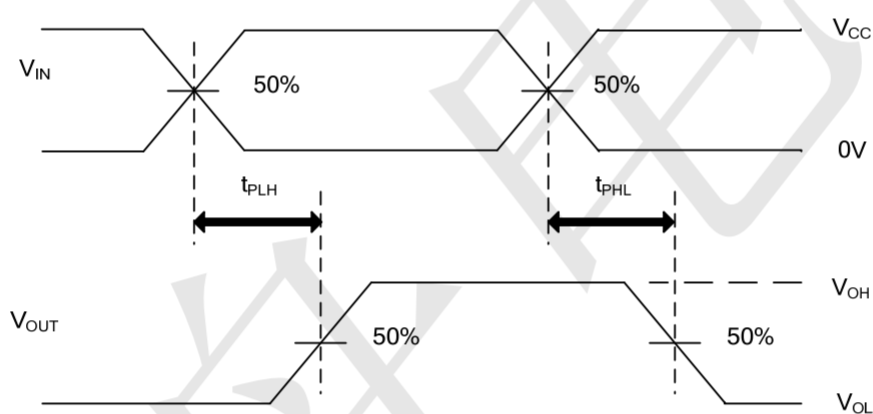
Operating Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=5V$, $f=1MHz$, No load		12		pF

Test Circuit And Waveforms



TEST CIRCUIT

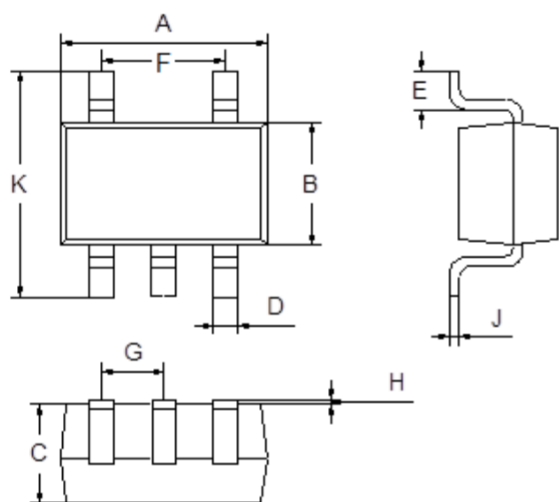


PROPAGATION DELAY TIMES

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

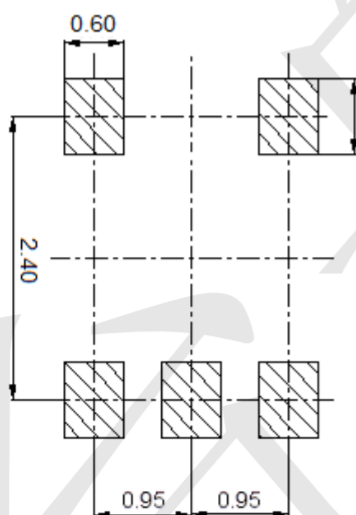
Package Outline Dimensions (Unit: mm)

SOT23-5



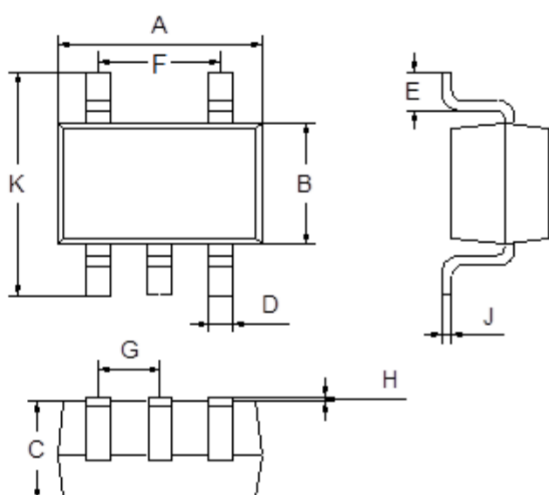
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
F	1.80	2.00
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

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)

