

## Features

- Operation Voltage Range: 2V ~ 5.5V
- Low power consumption,  $I_{CC} = 1\mu\text{A}$  (Max) at 5.5V
- $\pm 8\text{mA}$  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)

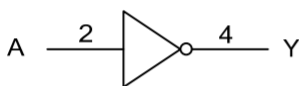
## General Description

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

## Ordering Information

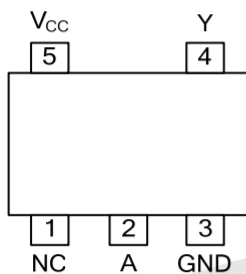
ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G04GV	SOT23-5	Tape and Reel,3000
74AHC1G04GW	SOT353	Tape and Reel,3000

## 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	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	$\Delta t/\Delta V$	$V_{CC}=5.0+0.5V$			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	$V_{OH}$	$V_{CC}=2.0V$	$I_{OH}=-50\mu A$	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	$V_{OL}$	$V_{CC}=2.0V$	$I_{OL}=-50\mu A$			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			$\pm 0.1$	$\mu A$	
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$			1	$\mu A$	
Input Capacitance	$C_I$	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		2	10	pF	

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

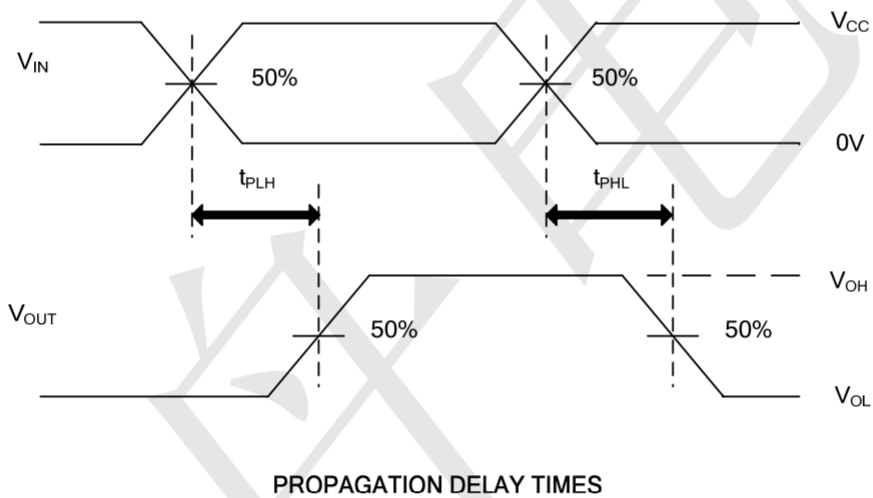
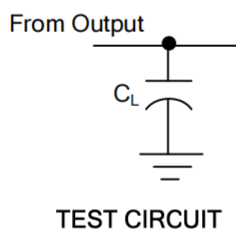
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT			
Propagation Delay Time Input(A) to Output(Y)	$t_{PLH}$	$V_{CC}=3.3V \pm 0.3V$	$C_L=15pF$		5	7.1	ns		
		$V_{CC}=5V \pm 0.5V$		3.8	5.5				
	$t_{PHL}$	$V_{CC}=3.3V \pm 0.3V$		5	7.1	ns			
		$V_{CC}=5V \pm 0.5V$		3.8	5.5				
		$t_{PLH}$		$V_{CC}=3.3V \pm 0.3V$	$C_L=50pF$		7.5	10.6	ns
				$V_{CC}=5V \pm 0.5V$		5.3	7.5		
$t_{PHL}$		$V_{CC}=3.3V \pm 0.3V$	7.5	10.6		ns			
		$V_{CC}=5V \pm 0.5V$	5.3	7.5					



### Operating Characteristics

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

### Test Circuit And Waveforms

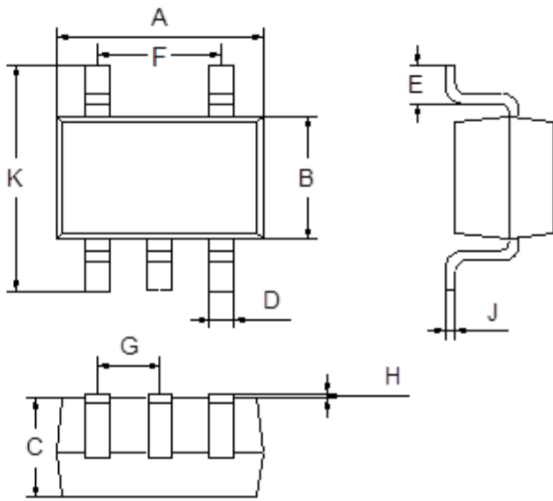


- Notes: 1.  $C_L$  includes probe and jig capacitance.  
2.  $P_{RR} \leq 1MHz, Z_0 = 50\Omega, t_R \leq 3ns, t_F \leq 3ns.$



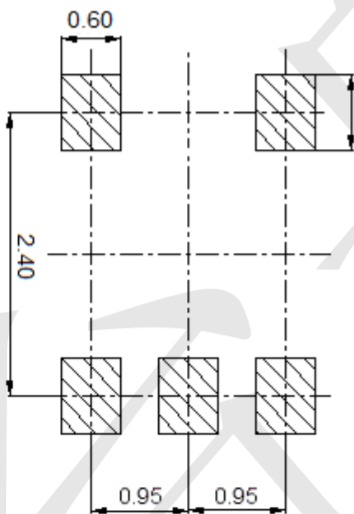
**Package Outline Dimensions** (Unit: mm)

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

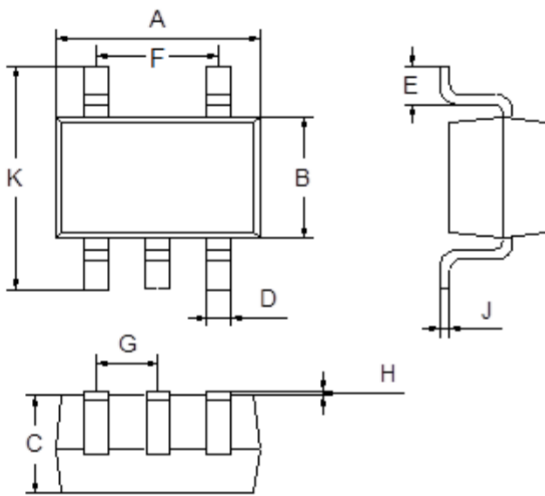
**Mounting Pad Layout** (Unit: mm)





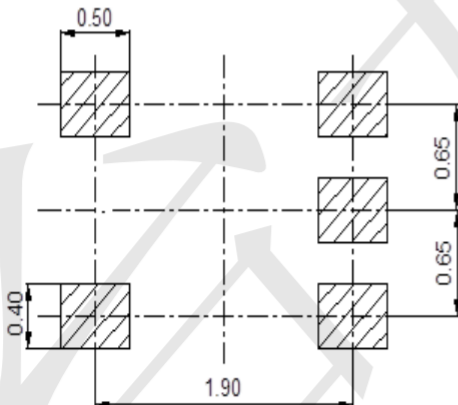
**Package Outline Dimensions** (Unit: mm)

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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