

### Features

- Operation Voltage Range: 2~5.5V
- Low Power Dissipation:  $I_{CC}=1.0\mu A$  (Max)
- High Speed:  $t_{PD}=4.3ns$  (Typ)
- 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)

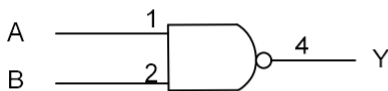
### General Description

The 74AHC1G00 is a 2-input NAND gate which provides the Function  $Y = \overline{A \times B}$ .

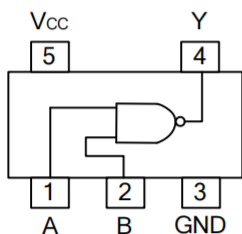
### Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G00GV	SOT23-5	Tape and Reel,3000
74AHC1G00GW	SOT353	Tape and Reel,3000

### Logic Diagram



### Pin Configuration



SOT23-5/ SOT353

### Marking

74AHC1G00GV Marking:A00

74AHC1G00GW Marking:AA

### Function Table

INPUT		OUTPUT
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

### 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
Input Clamp Current	$I_{IK}$	-20	mA
Output Clamp Current	$I_{OK}$	±20	mA
Output Current	$I_{OUT}$	±25	mA
$V_{CC}$ or GND Current	$I_{CC}$	±50	mA
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

- Notes: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.  
 2. 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	$V_{OUT}$		0		$V_{CC}$	V
High-Level Output Current	$I_{OH}$	$V_{CC}=2V$			-50	µA
		$V_{CC}=3.3\pm 0.3V$			-4	mA
		$V_{CC}=5\pm 0.3V$			-8	mA
Low-Level Output Current	$I_{OL}$	$V_{CC}=2V$			50	µA
		$V_{CC}=3.3\pm 0.3V$			4	mA
		$V_{CC}=5\pm 0.5V$			8	mA
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=3.3+0.3V$			100	ns/V
		$V_{CC}=5.0+0.5V$			20	
Operating Temperature	$T_A$		-40		+125	°C



**Electrical Characteristics**

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =2.0V	1.5			1.5			V
		V <sub>CC</sub> =3.0V	2.1			2.1			
		V <sub>CC</sub> =5.5V	3.85			3.85			
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =2.0V			0.5			0.5	V
		V <sub>CC</sub> =3.0V			0.9			0.9	
		V <sub>CC</sub> =5.5V			1.65			1.65	
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =2.0V, I <sub>OH</sub> =-50μA	1.9	2.0		1.9			V
		V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-50μA	2.9	3.0		2.9			
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4	4.5		4.4			
		V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-4mA	2.58			2.4			
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =2.0V, I <sub>OL</sub> =50μA			0.1			0.1	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =50μA			0.1			0.1	
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =50μA			0.1			0.1	
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =4mA			0.36			0.55	
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =8mA			0.36			0.55	
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =0~5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND			±0.1			±2	μA
Quiescent Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0			1			40	μA

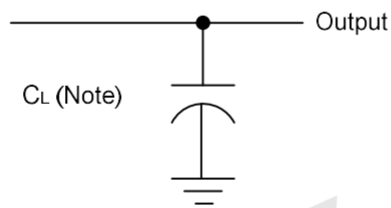
**Dynamic Characteristics** (Input: t<sub>R</sub>, t<sub>F</sub>≤3ns; P<sub>RR</sub>≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay Time Input (A or B) to Output(Y)	t <sub>PLH</sub>	V <sub>CC</sub> =3.3±0.3V, C <sub>L</sub> =15pF		5.5	7.9	1		10.5	ns
	t <sub>PHL</sub>			5.5	7.9	1		10.5	ns
	t <sub>PLH</sub>	V <sub>CC</sub> =3.3±0.3V, C <sub>L</sub> =50pF		8	11.4	1		14.5	ns
	t <sub>PHL</sub>			8	11.4	1		14.5	ns
Propagation Delay Time Input (A or B) to Output(Y)	t <sub>PLH</sub>	V <sub>CC</sub> =5±0.5V, C <sub>L</sub> =15pF		3.7	5.5	1		7	ns
	t <sub>PHL</sub>			3.7	5.5	1		7	ns
	t <sub>PLH</sub>	V <sub>CC</sub> =5±0.5V, C <sub>L</sub> =50pF		5.2	7.5	1		9.5	ns
	t <sub>PHL</sub>			5.2	7.5	1		9.5	ns

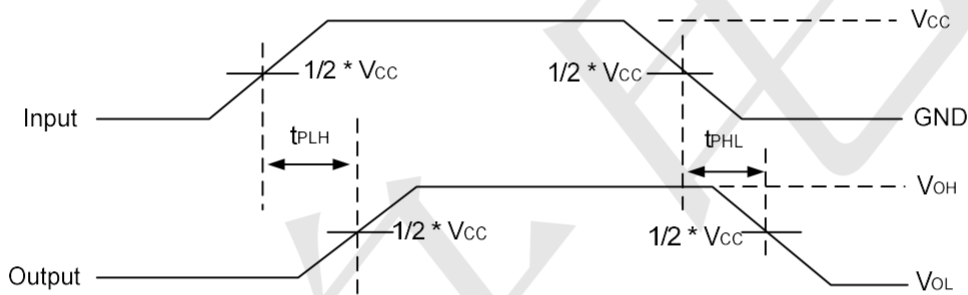
**Operating Characteristics**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> =5V, V <sub>IN</sub> =V <sub>CC</sub> or GND		4	10	pF
Power Dissipation Capacitance	C <sub>PD</sub>	No load, f=1MHz, V <sub>CC</sub> =5V		9.5		pF

**Test Circuit And Waveforms**



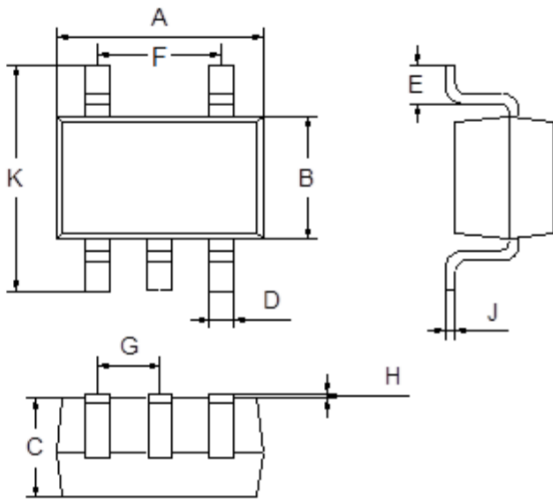
Note:  $C_L$  includes probe and jig capacitance.





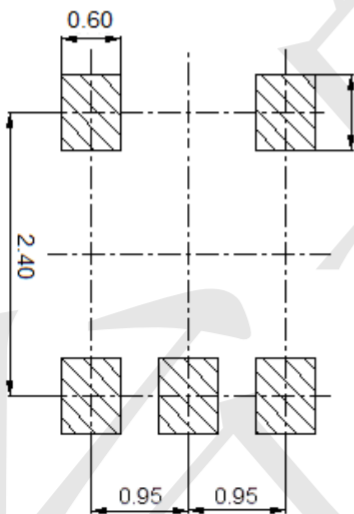
**Package Outline Dimensions** (Unit: mm)

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

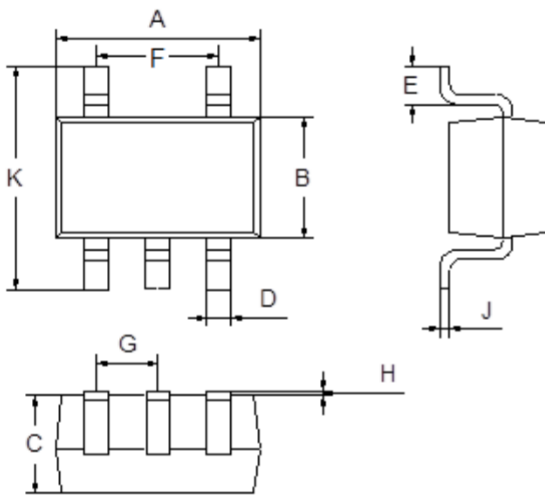
**Mounting Pad Layout** (Unit: mm)





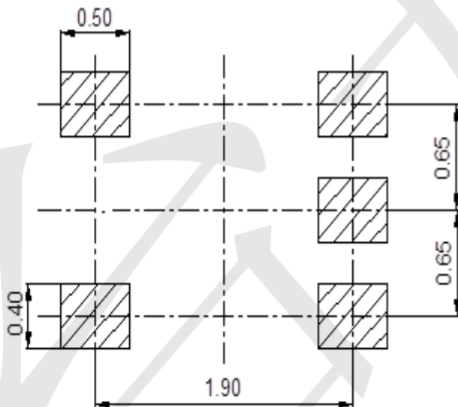
**Package Outline Dimensions** (Unit: mm)

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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