

### Features

- Operation Voltage Range: 2~5.5V
- Low Power Current:  $I_{CC}=10\mu A(\text{Max})$
- High speed:  $t_{PD}=4.3ns(\text{Typ}) @ V_{CC}=5V$
- 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

### 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

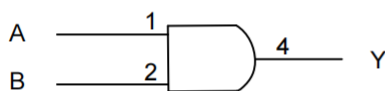
### General Description

The SN74AHC1G08 is a high-speed si-gate CMOS device which provides the 2-input AND function.

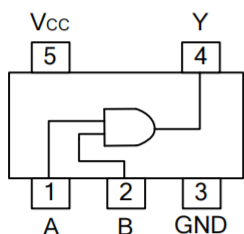
### Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
SN74AHC1G08DBVR	SOT23-5	Tape and Reel, 3000
SN74AHC1G08DCKR	SOT353	Tape and Reel, 3000

### Logic Diagram



### Pin Configuration



SOT23-5/ SOT353

### Marking

SN74AHC1G08DBVR Marking: A08G

SN74AHC1G08DCKR Marking: AE3

### Function Table

INPUTS		OUTPUT
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

### 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	$I_{OK}$	$\pm 20$	mA
Output Current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 50$	mA
Power Dissipation	$P_D$	250	mW
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	$V_{OUT}$		0		$V_{CC}$	V
Input Transition Rise or Fall Times	$t_R, t_F$	$V_{CC}=3.3V\pm 0.3V$			100	ns/V
		$V_{CC}=5.0V\pm 0.5V$			20	
Operating Temperature	$T_{OPR}$		-40		125	°C



**Electrical Characteristics**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			V
		$V_{CC}=5.5V$	3.85			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	V
		$V_{CC}=5.5V$			1.65	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2.0		V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3.0		V
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		V
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			V
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=2.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36	V
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=V_{CC}$ or GND			$\pm 0.1$	$\mu A$
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	$\mu A$
Input Capacitance	$C_{IN}$	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF

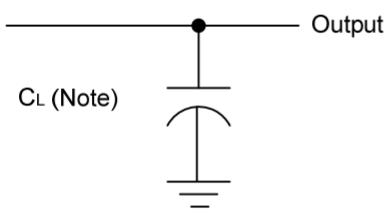
**Dynamic Characteristics** (Input:  $t_R, t_F \leq 3ns$ ;  $P_{RR} \leq 1MHz$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay time Input (A or B) to output(Y)	$t_{PLH}$	$V_{CC}=3.3V \pm 0.3V, C_L=15pF$		6.2	8.8	ns
	$t_{PHL}$			6.2	8.8	ns
	$t_{PLH}$	$V_{CC}=3.3V \pm 0.3V, C_L=50pF$		8.7	12.3	ns
	$t_{PHL}$			8.7	12.3	ns
Propagation delay time Input (A or B) to output(Y)	$t_{PLH}$	$V_{CC}=5V \pm 0.5V, C_L=15pF$		4.3	5.9	ns
	$t_{PHL}$			4.3	5.9	ns
	$t_{PLH}$	$V_{CC}=5V \pm 0.5V, C_L=50pF$		5.8	7.9	ns
	$t_{PHL}$			5.8	7.9	ns

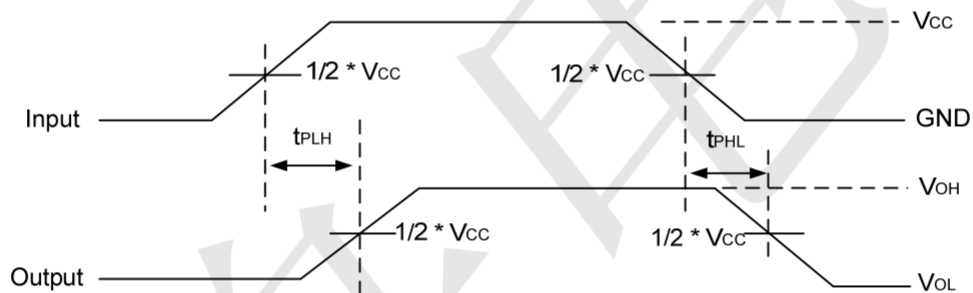
### Operating Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	No load, $V_{CC}=5V$ , $f=1MHz$		18		pF

### Test Circuit And Waveforms



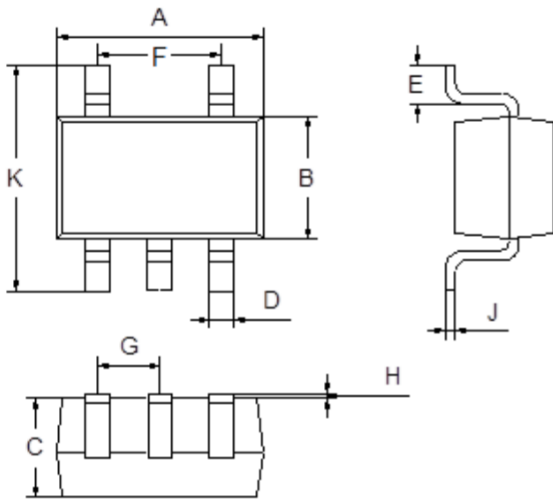
Note:  $C_L$  includes probe and jig capacitance.





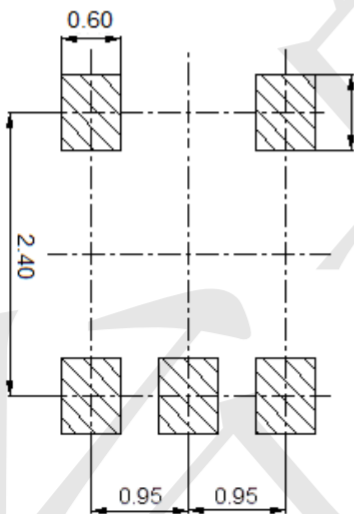
**Package Outline Dimensions** (Unit: mm)

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

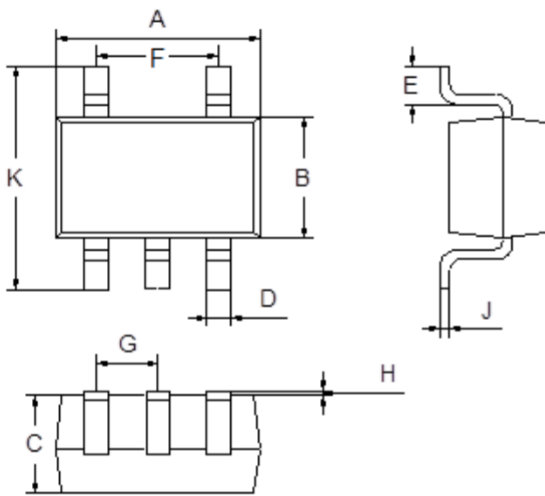
**Mounting Pad Layout** (Unit: mm)





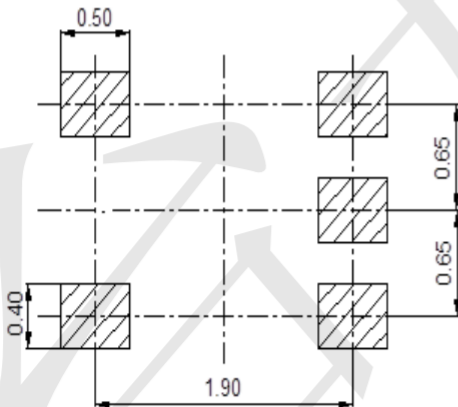
**Package Outline Dimensions** (Unit: mm)

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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