

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

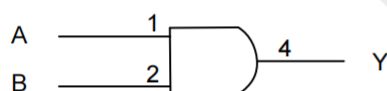
General Description

The 74AHC1G08 is a high-speed si-gate CMOS device which provides the 2-input AND function.

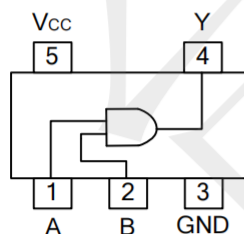
Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G08W5-TP	SOT23-5	Tape and Reel, 3000
74AHC1G08SE-TP	SOT353	Tape and Reel, 3000

Logic Diagram



Pin Configuration



SOT23-5/ SOT353

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}	±20	mA
Output Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±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	$V_{CC}=3.3V\pm0.3V$			100	ns/V
		$V_{CC}=5.0V\pm0.5V$			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			± 0.1	μA
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	μA
Input Capacitance	C_{IN}	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF

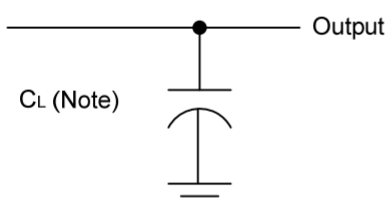
Dynamic Characteristics (Input: $t_R, t_F \leq 3ns$; $P_{RR} \leq 1MHz$)

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

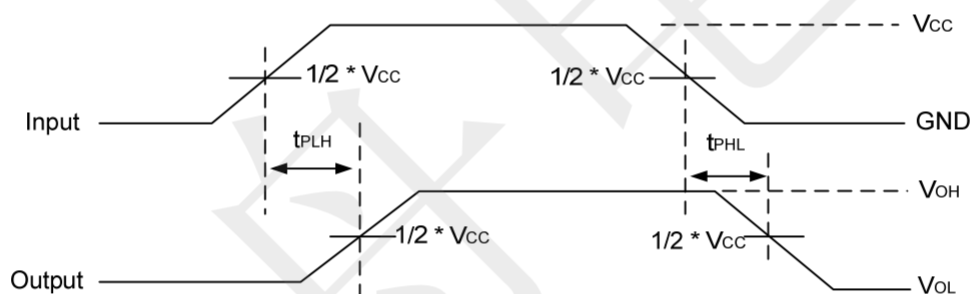
Operating Characteristics

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

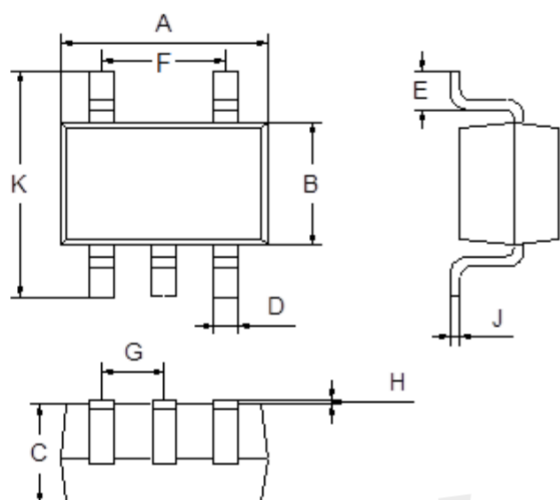


Note: C_L includes probe and jig capacitance.



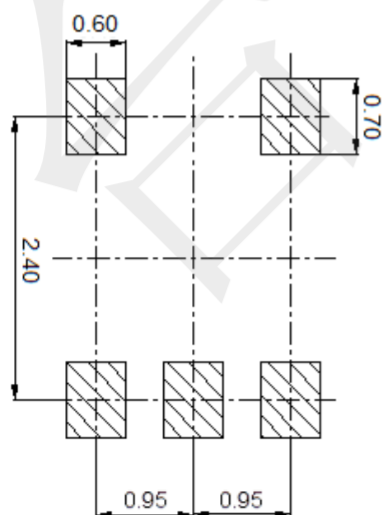
Package Outline Dimensions (Unit: mm)

SOT23-5



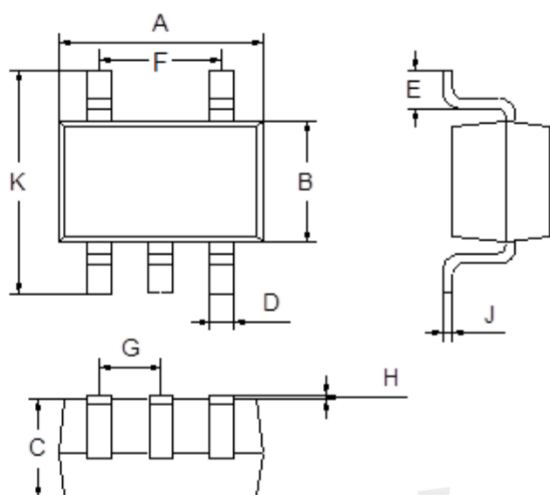
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
F	1.80	2.00
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

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)

