# 74AHCT1G08 Series
## 2-INPUT AND GATE



## Features

- Operation Voltage Range:4.5~5.5V
- Low Power Dissipation:ICC=1μA (Max.) @25°C
- ±8mA output drive at 5V
- Input compatible with TTL voltage
- ESD Protection Exceeds JESD 22
  -2000-V Human-Body Model (A114-A)
  -200-V Machine Model (A115-A)
  -1000-V Charged-Device Model (C101)

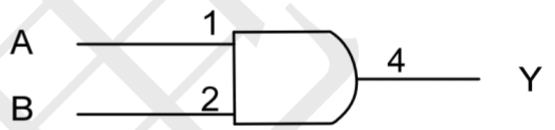
## Applications

- Motor control： Communication induction
- Graphics card
- Advanced Driver Assistance Systems (ADAS)
- Motor Drive&Control
- DLP positive projection system
- Server motherboard

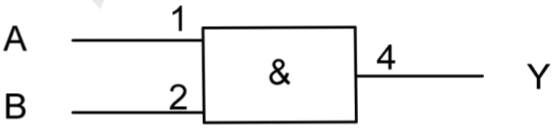
## General Description

The 74AHCT1G08 is a 2-input AND gate which provides the 3-F unction Y=A×B

## Logic Diagram




Logic symbol

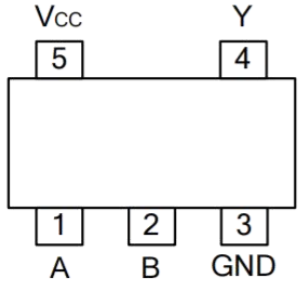



IEC logic symbol

## Ordering Information

| ORDER NUMBER | PACKAGE DESCRIPTION | PACKAGE OPTION |
|---|---|---|
| 74AHCT1G08W5-TP | SOT23-5 | Tape and Reel,3000 |
| 74AHCT1G08SE-TP | SOT353 | Tape and Reel,3000 |

## Pin Configuratio




**SOT23-5 / SOT353**

## Function Table

| INPUT | | OUTPUT |
|---|---|---|
| A | B | Y |
| L | L | L |
| L | H | L |
| H | L | L |
| H | H | H |

## ABSOLUTE MAXIMUM RATINGS ($T_A$=25°C, unless otherwise specified) (Note 2)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | VCC | -0.5 ~ 7 | V |
| Input Voltage | VIN | -0.5 ~ 7 | V |
| Output Voltage | VOUT | -0.5 ~ VCC+0.5 | V |
| Input Clamp Current | IIK | -20 | mA |
| Output Clamp Current | IOK | ±20 | mA |
| Output Current | IOUT | ±25 | mA |
| VCC or GND Current | ICC | ±50 | mA |
| Storage Temperature | TSTG | -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.

## STATIC CHARACTERISTICS (Unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| High-Level Input Voltage | $V_{IH}$ | $V_{CC}$=4.5V~5.5V | 2.0 | -- | -- | V |
| Low-Level Input Voltage | $V_{IL}$ | $V_{CC}$=4.5V~5.5V | -- | -- | 0.8 | V |
| High-Level Output Voltage | $V_{OH}$ | $V_{CC}$=4.5V, $I_{OH}$=-50μA | 4.4 | 4.5 | -- | V |
| | | $V_{CC}$=4.5V, $I_{OH}$=-8mA | 3.94 | -- | -- | |
| Low-Level Output Voltage | $V_{OL}$ | $V_{CC}$=4.5V, $I_{OL}$=50μA | -- | -- | 0.1 | V |
| | | $V_{CC}$=4.5V, $I_{OL}$=8mA | -- | -- | 0.36 | |
| Input Leakage Current | $I_{I(LEAK)}$ | $V_{CC}$=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 |
| Additional Quiescent Supply Current | $\Delta I_Q$ | $V_{CC}$=5.5V, $V_{IN}$=3.4V; $I_{OUT}$=0; other input at $V_{CC}$ or GND | -- | -- | 1.35 | mA |
| Input Capacitance | $C_{IN}$ | $V_{IN}$=$V_{CC}$ or GND | -- | 4 | 10 | pF |

## DYNAMIC CHARACTERISTICS

**(Input: $t_R$, $t_F$≤3ns; PRR≤1MHz, Unless otherwise specified)**

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Propagation delay from input (A or B) to output(Y) | $t_{PLH}$ | $V_{CC}$=5±0.5V, $C_L$=15pF | -- | 5 | 6.9 | ns |
| | $t_{PHL}$ | | -- | 5 | 6.9 | |
| | $t_{PLH}$ | $V_{CC}$=5±0.5V, $C_L$=50pF | -- | 5.5 | 7.9 | |
| | $t_{PHL}$ | | -- | 5.5 | 7.9 | |

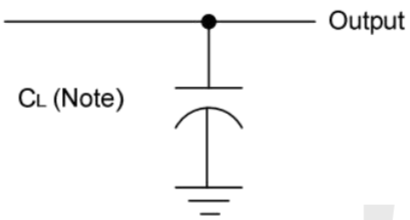
## OPERATING CHARACTERISTICS (TA=25°C, unless otherwise specified)

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

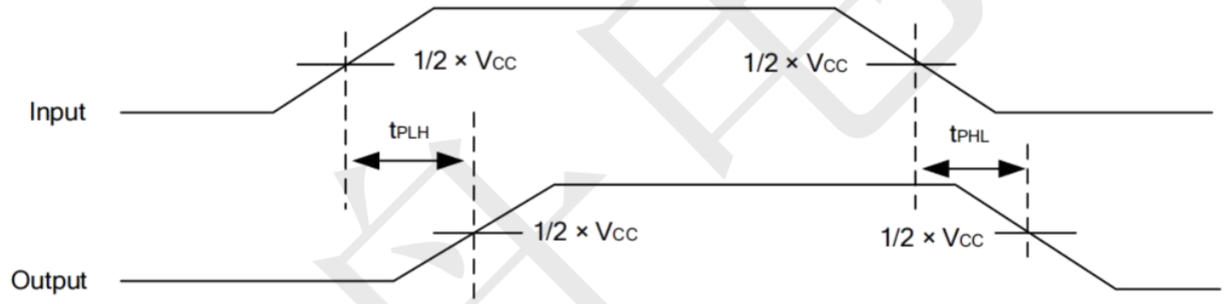
## RECOMMENDED OPERATING COMDITIONS

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | | 4.5 | -- | 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 |

## TEST CIRCUIT AND WAVEFORMS

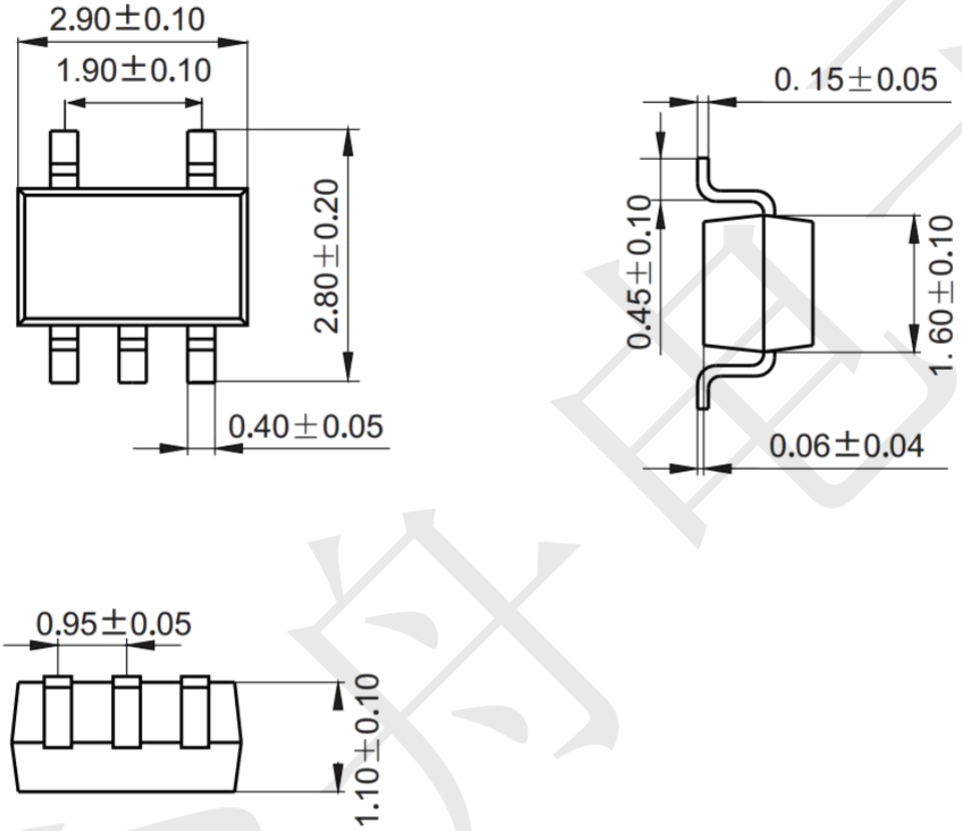



Note: CL includes probe and jig capacitance.

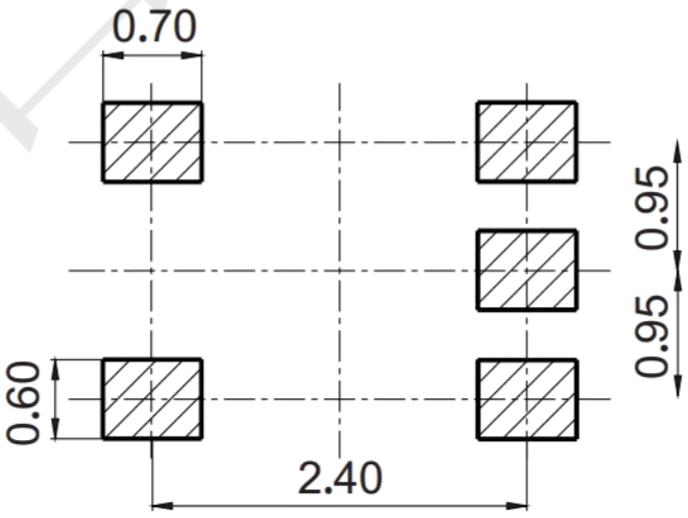


## Package information (Unit: mm)

**SOT23-5**

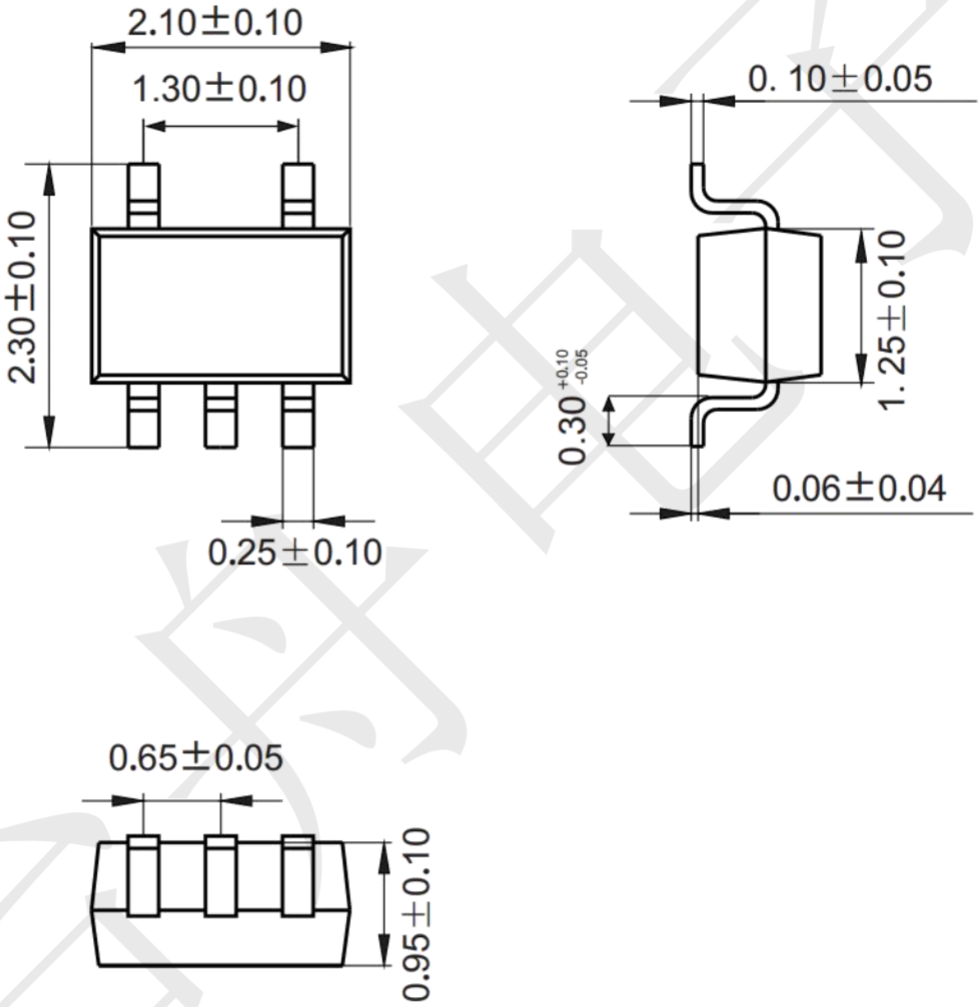


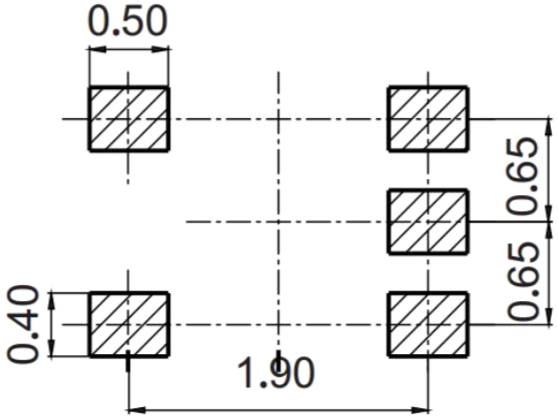

## Mounting Pad Layout (Unit: mm)



## Package information

**SOT353 (Unit: mm)**




## Mounting Pad Layout (unit: mm)