# TP74AHC1G17 Series

## Single Schmitt trigger buffer



## Features

- Operate from 2V to 5.5V
- CMOS low power dissipation
- High noise immunity
- 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

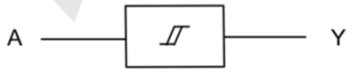
- AV Receiver
- Audio Dock:Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power:Telecom/Server AC/DC Supply:Single Controller:Analog and Digital
- Solid State Drive(SSD):Client and Enterprise
- Wireless Headset,Keyboard,and Mouse

## General Description

The TP74AHC1G17 is a single Schmitt-trigger buffer, it provides the function Y=A.
The device have different input threshold levels for positive going (VT+) and negative-going(VT-) signals because of the Schmitt-trigger action in the input.

## Logic Diagram

Logic symbol

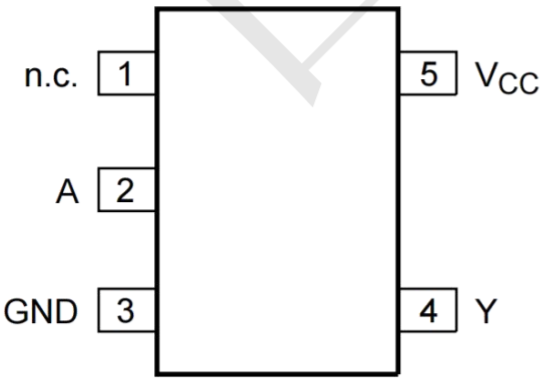



IEC logic symbol

## Ordering Information

| ORDER NUMBER | PACKAGE DESCRIPTION | PACKAGE OPTION |
|---|---|---|
| TP74AHC1G17S5 | SOT23-5 | Tape and Reel,3000 |
| TP74AHC1G17C5 | SOT353 | Tape and Reel,3000 |

## Pin Configuratio




**SOT23-5 / SOT353**

## Function Table

| INPUT(A) | OUTPUT(Y) |
|---|---|
| L | L |
| H | H |

**Note:H: HIGH voltage level;L: LOW voltage level.**

## Absolute Maximum Ratings

| PARAMETER | SYMBOL | CONDITIONS | RATINGS | UNIT |
|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | | -0.5 ~ +7 | V |
| Input Voltage | $V_{IN}$ | | -0.5 ~ +7 | V |
| Output Voltage | $V_{OUT}$ | | -0.5 ~ +7 | V |
| VCC or GND Current | $I_{CC}$ | Output in the Power-off state | ±50 | mA |
| Continuous Output Current | $I_{OUT}$ | VOUT=0~VCC | ±25 | mA |
| Input Clamp Current | $I_{IK}$ | VIN<0 | -20 | mA |
| Output Clamp Current | $I_{OK}$ | VOUT<0 | ±20 | mA |
| Storage Temperature Range | $T_{STG}$ | | -65 ~ +150 | ℃ |
| Junction to Ambient | $\theta_{JA}$ | SOT23-5 | 230 | ℃/W |
| | | SOT353 | 280 | ℃/W |

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 | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | | 2 | -- | 5.5 | V |
| Input Voltage | $V_{IN}$ | | 0 | -- | 5.5 | V |
| Output Voltage | $V_{OUT}$ | High or low state | 0 | -- | VCC | V |
| Operating Temperature | $T_A$ | | -40 | -- | 125 | ℃ |

## Electrical Characteristics (unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| positive-going threshold voltage | VT+ | $V_{CC}$=3.0V | -- | -- | 2.2 | V |
| | | $V_{CC}$=4.5V | -- | -- | 3.15 | V |
| | | $V_{CC}$=5.5V | -- | -- | 3.85 | V |
| negative going threshold voltage | VT- | $V_{CC}$=3.0V | 0.9 | -- | -- | V |
| | | $V_{CC}$=4.5V | 1.35 | -- | -- | V |
| | | $V_{CC}$=5.5V | 1.65 | -- | -- | V |
| Hysteresis voltage | VH | $V_{CC}$=3.0V | 0.3 | -- | 1.2 | V |
| | | $V_{CC}$=4.5V | 0.4 | -- | 1.4 | V |
| | | $V_{CC}$=5.5V | 0.5 | -- | 1.6 | V |
| High-Level Output Voltage | $V_{OH}$ | $V_{CC}$=2.0V, $I_{OH}$=-50μA | 1.9 | 2.0 | -- | V |
| | | $V_{CC}$=3.0V, $I_{OH}$=-50μA | 2.9 | 3.0 | -- | V |
| | | $V_{CC}$=4.5V, $I_{OH}$=-50μA | 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, $I_{OL}$=50μA | -- | -- | 0.1 | V |
| | | $V_{CC}$=3.0V, $I_{OL}$=50μA | -- | -- | 0.1 | V |
| | | $V_{CC}$=4.5V, $I_{OL}$=50μA | -- | -- | 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 | $I_{I(LEAK)}$ | $V_{CC}$=0~5.5V, $V_{IN}$=5.5V or GND | -- | -- | ±0.1 | μA |
| Supply Current | $I_{CC}$ | $V_{CC}$=5.5V, $V_{IN}$=$V_{CC}$ or GND, $I_{OUT}$=0A | -- | -- | 1 | μA |
| Input Capacitance | $C_I$ | $V_{CC}$=5.0V, $V_{IN}$=$V_{CC}$ or GND | -- | 1.5 | 10 | pF |

## OPERATING CHARACTERISTICS

( TA =25°C , unless otherwise specified)

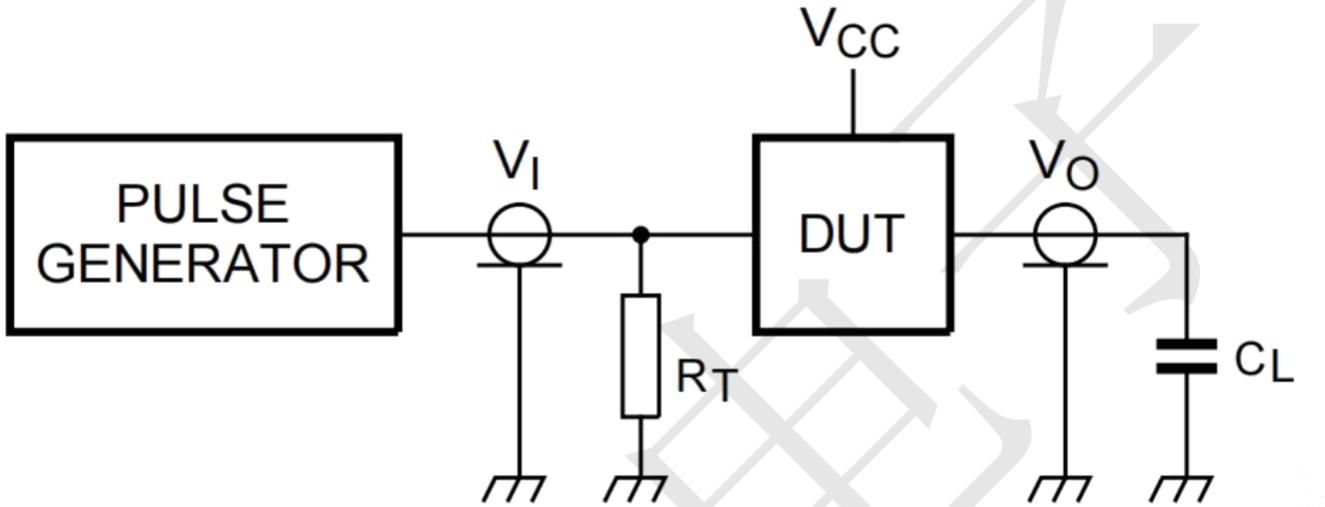
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Power Dissipation Capacitance | $C_{PD}$ | per buffer; CL = 50 pF;f = 1 MHz; VI= GND to VCC | -- | 12 | -- | pF |

## SWITCHING CHARACTERISTICS

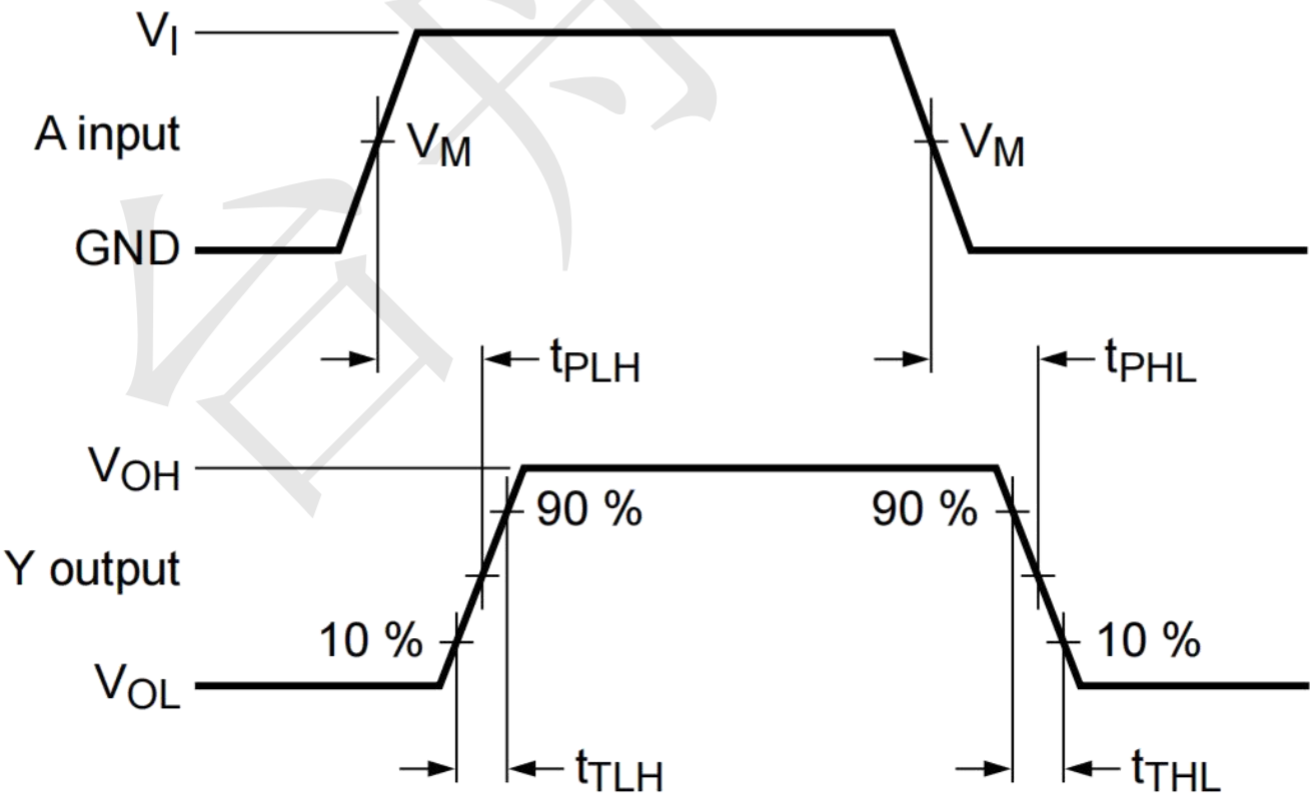
**($T_A$=25°C, Input: $t_R$, $t_F$≤3ns; $P_{RR}$≤1MHz)**

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| propagation delay | tpd | A to Y | | | | ns |
| | | VCC = 3.0 V to 3.6 V | | | | |
| | | CL = 15 pF | -- | 4.2 | 12.8 | |
| | | CL = 50 pF | -- | 6.0 | 16.3 | |
| | | VCC = 4.5 V to 5.5 V | | | | |
| | | CL = 15 pF | -- | 3.2 | 8.6 | |
| | | CL = 50 pF | -- | 4.6 | 10.6 | |

## TEST CIRCUIT AND WAVEFORMS



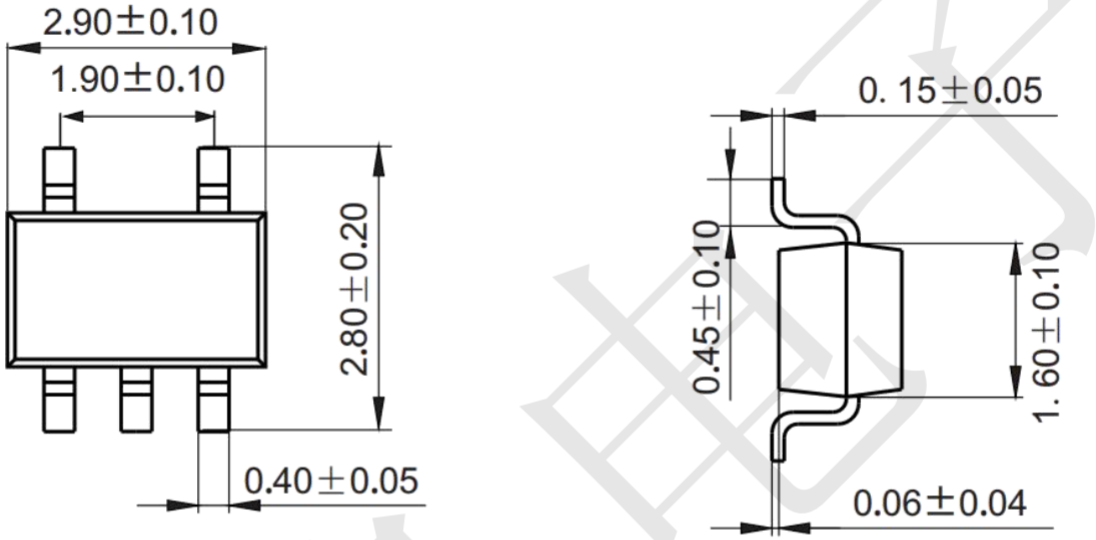

**Test circuit for measuring switching times**

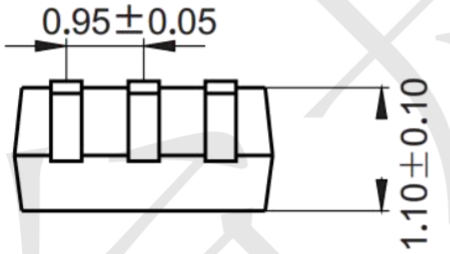



**The input (A) to output (Y) propagation delays**

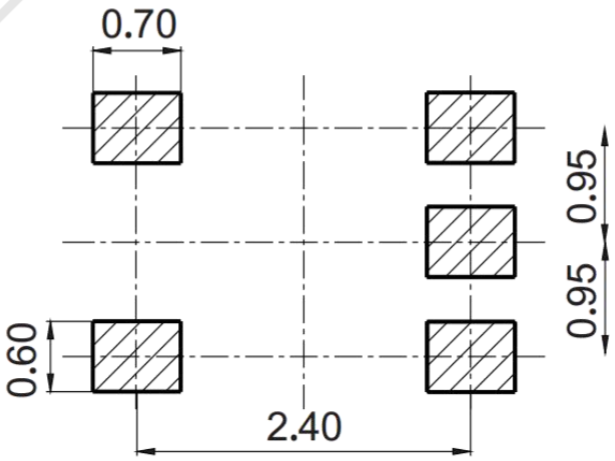
## Package informantion

**SOT23-5 (Unit: mm)**



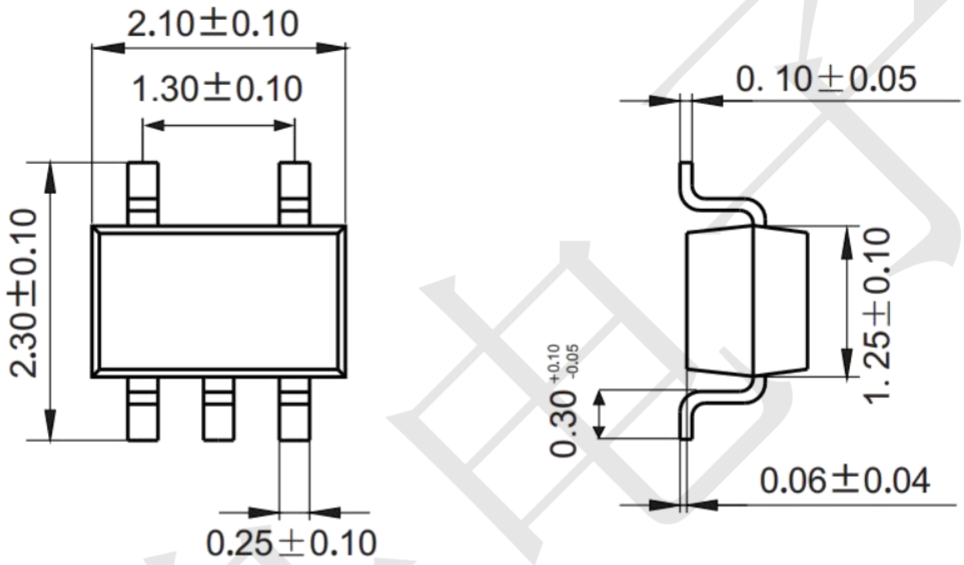



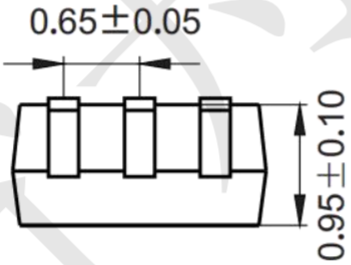

## Mounting Pad Layout (unit: mm)

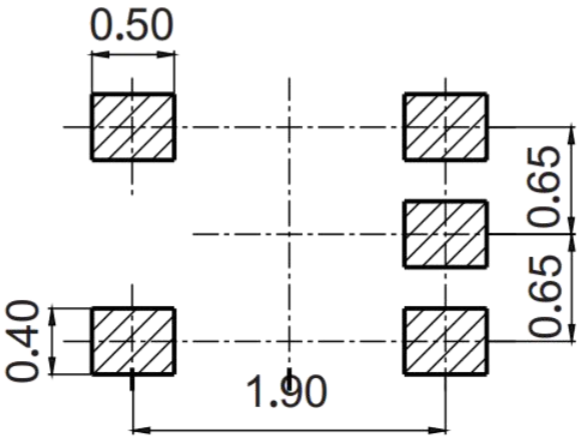


## Package informantion

**SOT353 (Unit: mm)**




## Mounting Pad Layout (unit: mm)