

Features

- Operation Voltage Range:4.5~5.5V
- Low Power Dissipation
- High noise immunity
- 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)

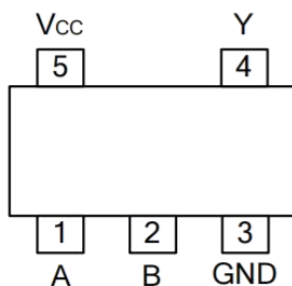
General Description

The SN74AHCT1G02 is a single 2-input NOR gate which provides the Function.

Ordering Information

| ORDER NUMBER | PACKAGE DESCRIPTION | PACKAGE OPTION |
|---------------------|---------------------|--------------------|
| SN74AHCT1G02DBVR-TP | SOT23-5 | Tape and Reel,3000 |
| SN74AHCT1G02DCKR-TP | SOT353 | Tape and Reel,3000 |

Pin Configuratio

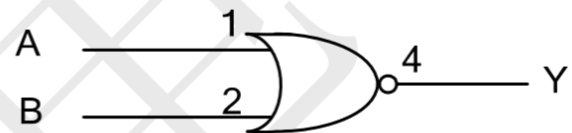


SOT23-5 / SOT353

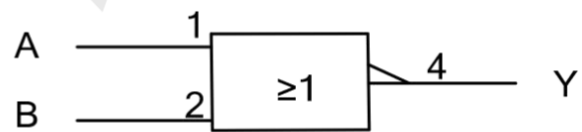
Applications

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

Logic Diagram



Logic symbol



IEC logic symbol

Function Table

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

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

| 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 _O | ±25 | mA |
| V _{CC} or GND Current | I _{CC} | ±50 | mA |
| Storage Temperature | T _{STG} | -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.

ELECTRICAL CHARACTERISTICS (T_A=25°C, 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 | ΔI _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 | -- | 2 | 10 | pF |

RECOMMENDED OPERATING COMDITIONS

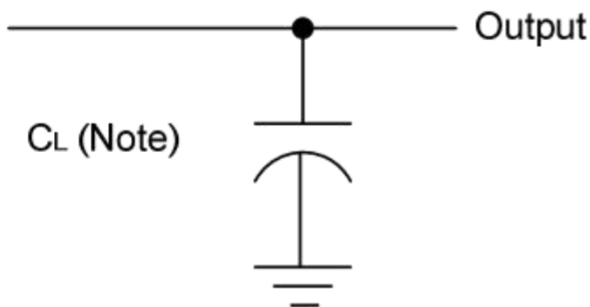
| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------|-----------|------------|-----|-----|----------|------|
| Supply Voltage | V_{CC} | | 4.5 | -- | 5.5 | V |
| Input Voltage | V_{IN} | | 0 | -- | 5.5 | V |
| Output Voltage | V_{OUT} | | 0 | -- | V_{CC} | V |
| Operating Temperature | T_A | | -40 | -- | +125 | °C |

SWITCHING CHARACTERISTICS

(Input signal: $P_{RR} \leq 1\text{MHz}$, $Z_0=50\Omega$, $t_r \leq 3\text{ns}$, $t_f \leq 3\text{ns}$.)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------------|-------------------|--|-----|-----|-----|------|
| Propagation Delay Times | t_{PLH}/t_{PHL} | $V_{CC}=4.5\text{V}\sim 5.5\text{V}$, $C_L=15\text{pF}$ | | 3.5 | 5.5 | ns |
| | | $V_{CC}=4.5\text{V}\sim 5.5\text{V}$, $C_L=50\text{pF}$ | | 4.9 | 7.5 | ns |

TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

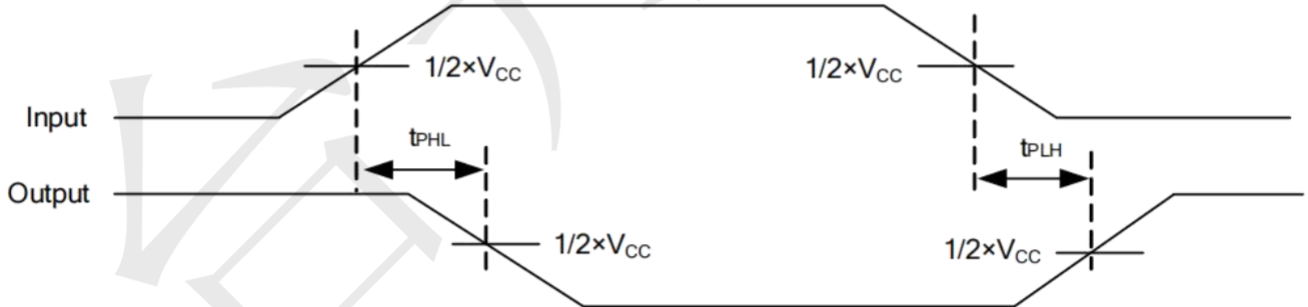
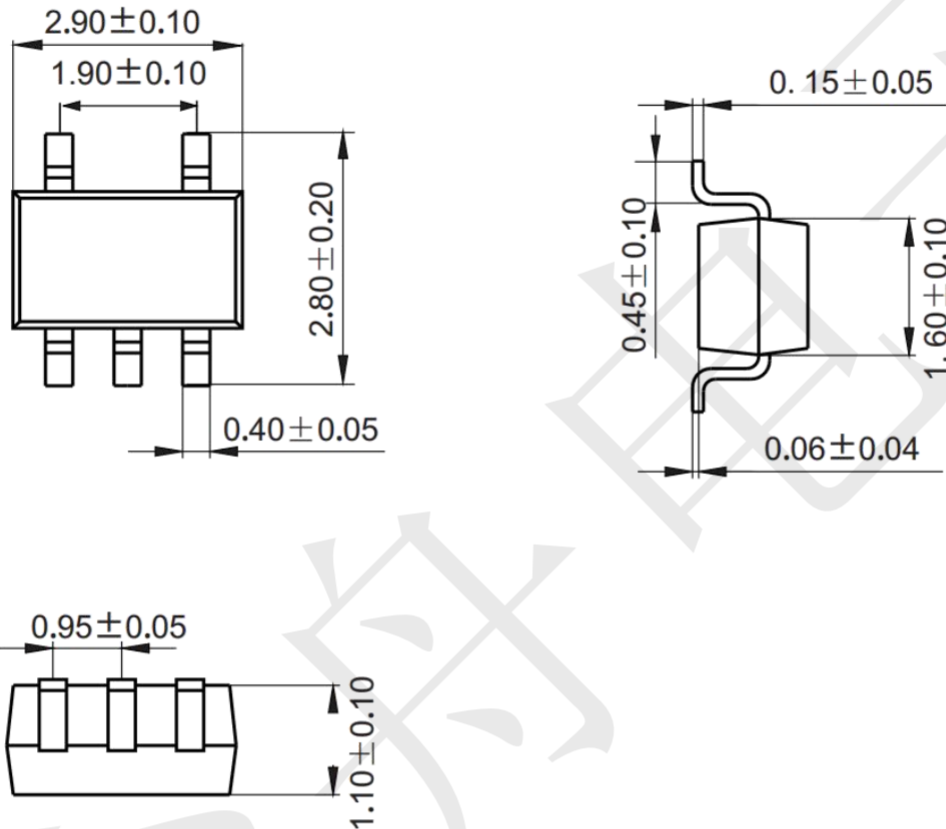


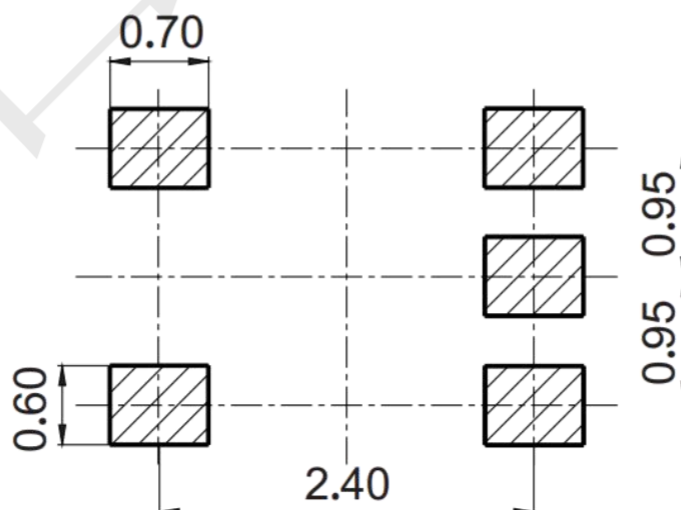
Fig. 2 Propagation delay from input(A and B) to output(Y)

Package information (Unit: mm)

SOT23-5

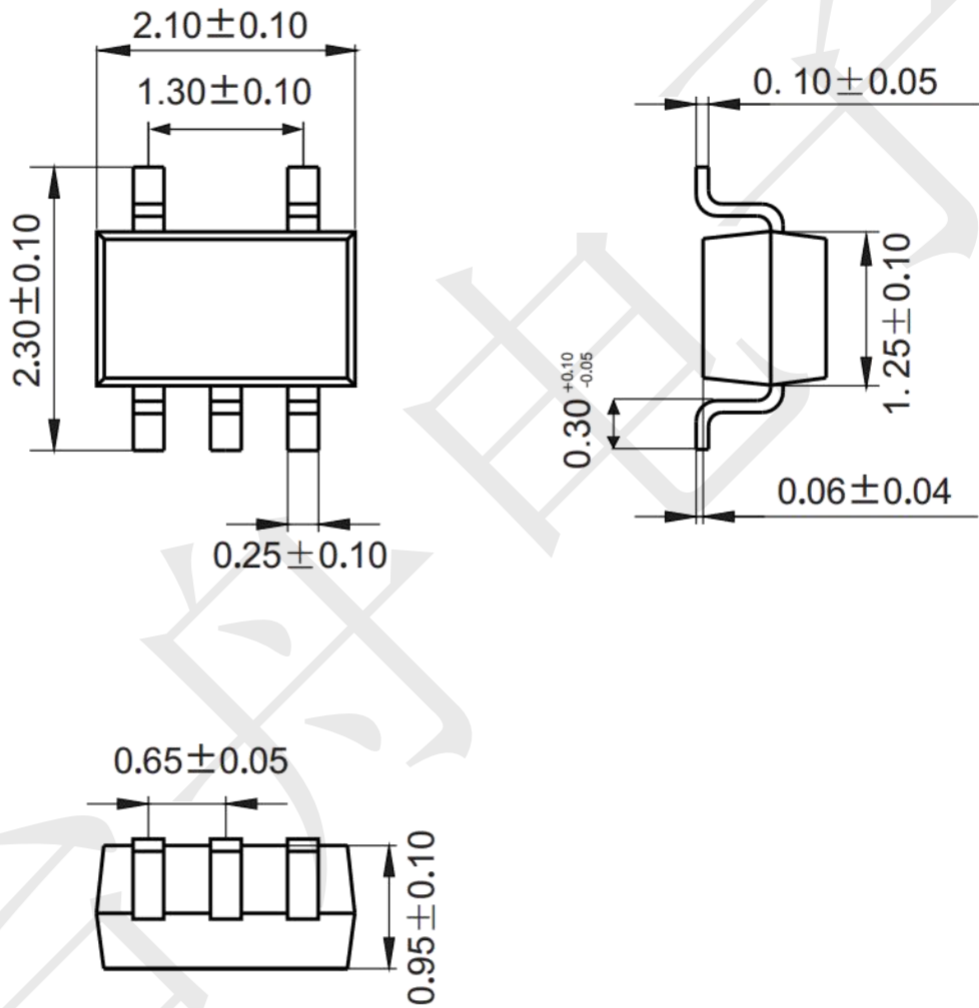


Mounting Pad Layout (Unit: mm)



Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

