

### 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)

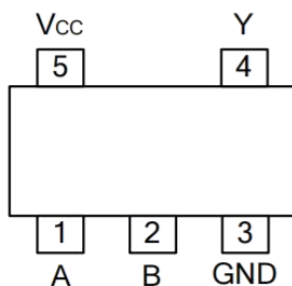
### General Description

The M74VHC1GT02 is a single 2-input NOR gate which provides the Function.

### Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
M74VHC1GT02DTT1G-TP	SOT23-5	Tape and Reel,3000
M74VHC1GT02DFT2G-TP	SOT353	Tape and Reel,3000

### Pin Configuratio

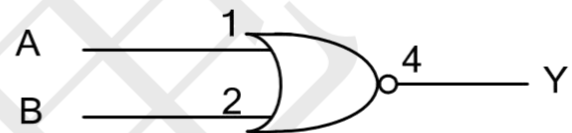


SOT23-5 / SOT353

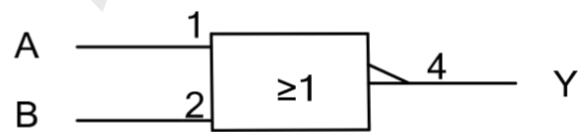
### Applications

- 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<sub>A</sub>=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ 7	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ 7	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Input Clamp Current	I <sub>IK</sub>	±20	mA
Output Clamp Current	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±25	mA
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±50	mA
Storage Temperature	T <sub>STG</sub>	-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<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =4.5V~5.5V	2.0	--	--	V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =4.5V~5.5V	--	--	0.8	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4	4.5	--	V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-8mA	3.94	--	--	
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5V, I <sub>OL</sub> =50μA	--	--	0.1	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =8mA	--	--	0.36	
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND	--	--	±0.1	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>OUT</sub> =0	--	--	1	μA
Additional Quiescent Supply Current	ΔI <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =3.4V; I <sub>OUT</sub> =0; other input at V <sub>CC</sub> or GND	--	--	1.35	mA
Input Capacitance	C <sub>IN</sub>	V <sub>IN</sub> =V <sub>CC</sub> or GND	--	2	10	pF

### RECOMMENDED OPERATING COMDITIONS

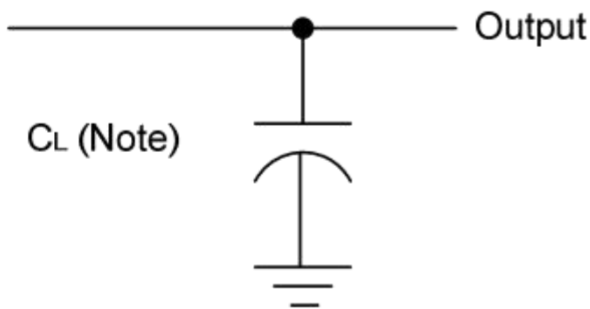
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		4.5	--	5.5	V
Input Voltage	$V_{IN}$		0	--	5.5	V
Output Voltage	$V_{OUT}$		0	--	$V_{CC}$	V
Operating Temperature	$T_A$		-40	--	+125	°C

### 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<sub>L</sub> includes probe and jig capacitance.

Fig.1 Load circuitry for switching times.

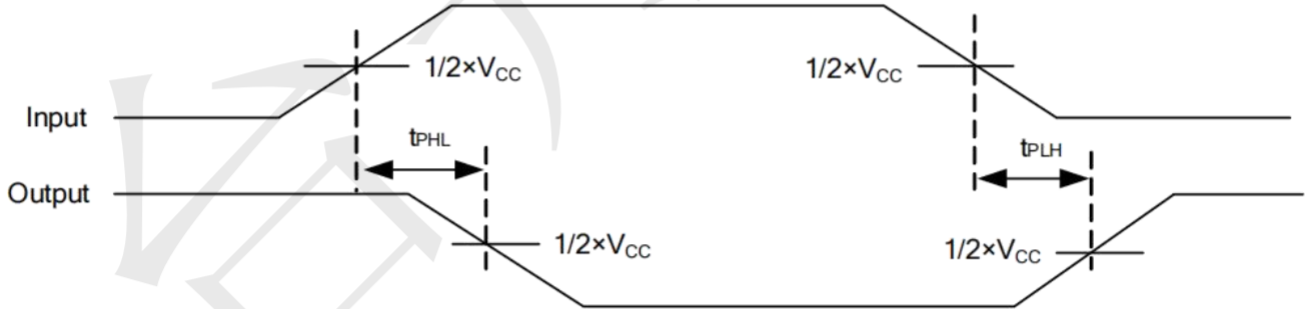
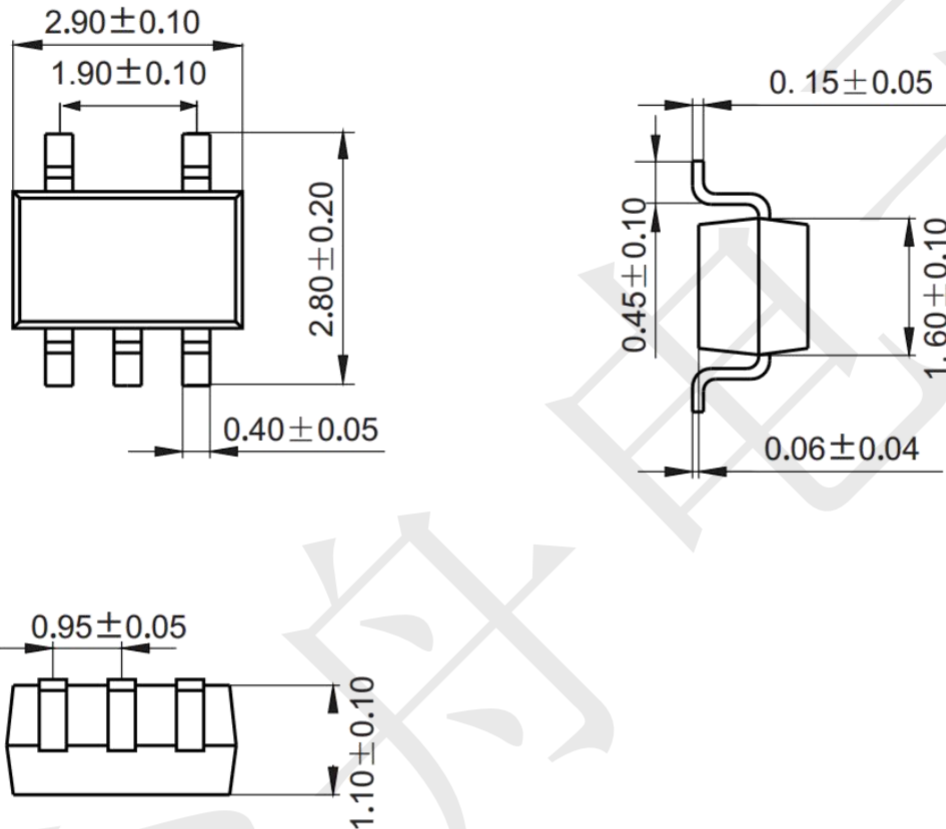


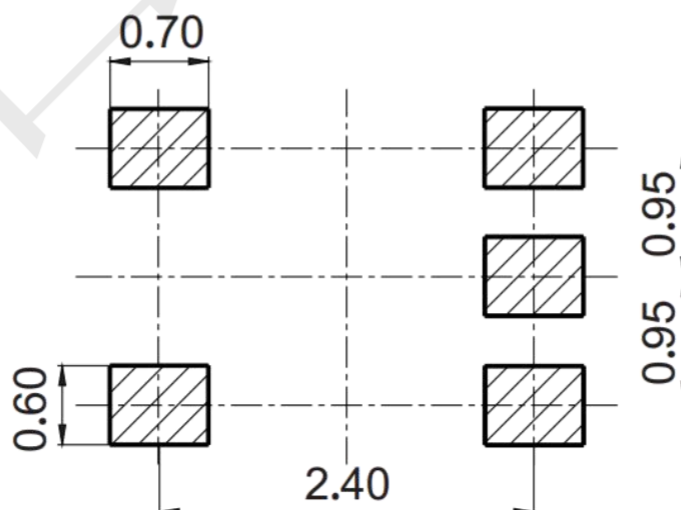
Fig. 2 Propagation delay from input(A and B) to output(Y)

**Package information (Unit: mm)**

SOT23-5

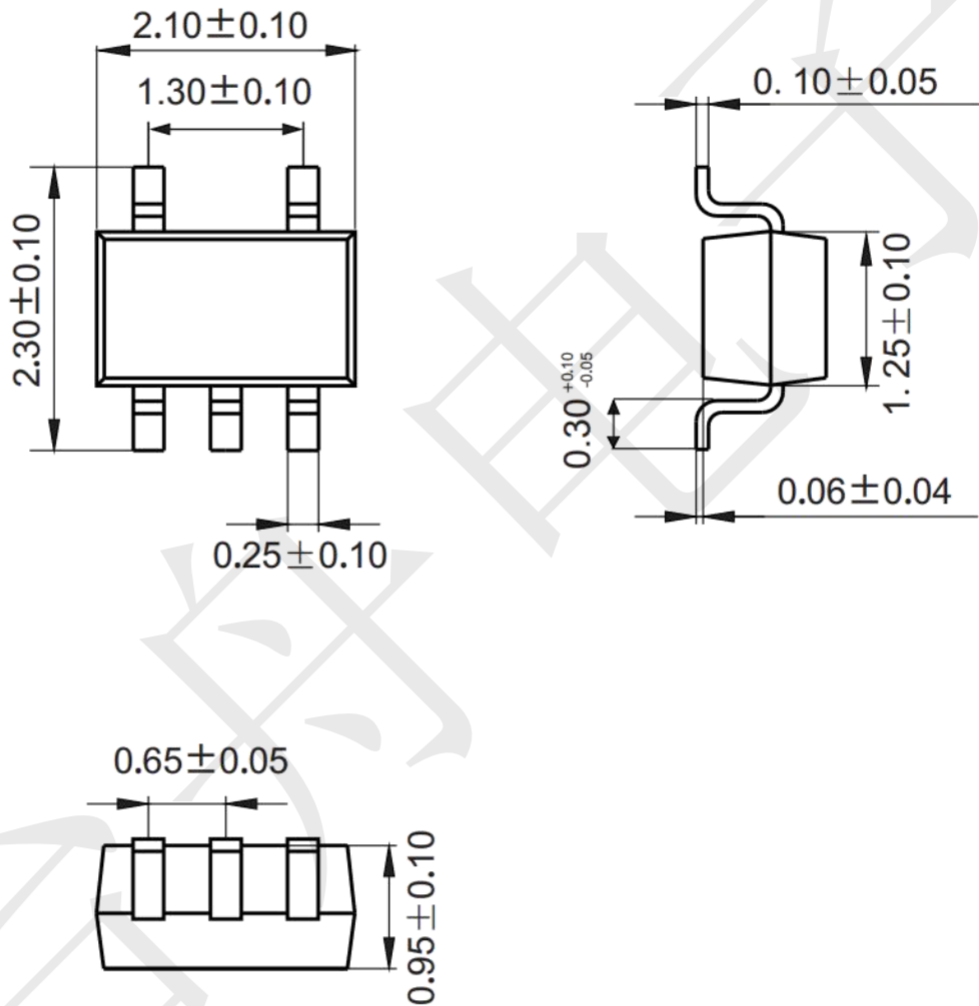


**Mounting Pad Layout (Unit: mm)**



### Package information

SOT353 (Unit: mm)



### Mounting Pad Layout (unit: mm)

