

### 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)

### Applications

- IP Phones
- Notebook PCs
- Printers
- Solar Inverters
- DLP positive projection system
- Access Control and Security

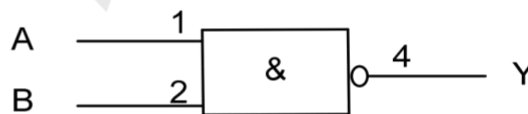
### General Description

The NC7ST00 is a 2-input NAND gate which provides the function  $Y = \overline{A \cdot B}$ .

### Logic Diagram



Logic symbol

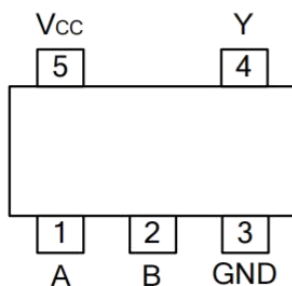


IEC logic symbol

### Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
NC7ST00M5X-TP	SOT23-5	Tape and Reel,3000
NC7ST00P5X-TP	SOT353	Tape and Reel,3000

### Pin Configuratio



SOT23-5 / SOT353

### Function Table

INPUT		OUTPUT
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

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

### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , 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	I <sub>IK</sub>	±20	mA
Output Clamp Current	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±25	mA
VCC 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.

### RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V <sub>CC</sub>		4.5	--	5.5	V
Input Voltage	V <sub>IN</sub>		0	--	5.5	V
Output Voltage	V <sub>OUT</sub>		0	--	V <sub>CC</sub>	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	V <sub>CC</sub> =5.0+0.5V	--	--	20	ns/V
Operating Temperature	T <sub>A</sub>		-40	--	+125	°C

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

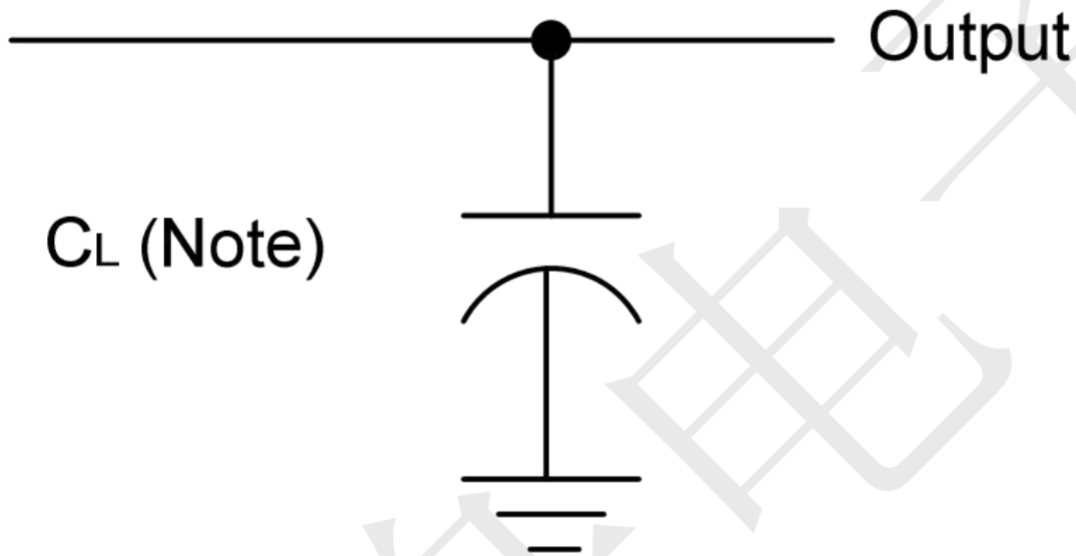
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =4.5V~5.5V	2.0	--	--	V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =4.5V~5.5V	--	--	0.8	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4	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
Power Dissipation Capacitance	C <sub>PD</sub>	f=1MHz, No load	--	10.5	--	pF

### DYNAMIC CHARACTERISTICS

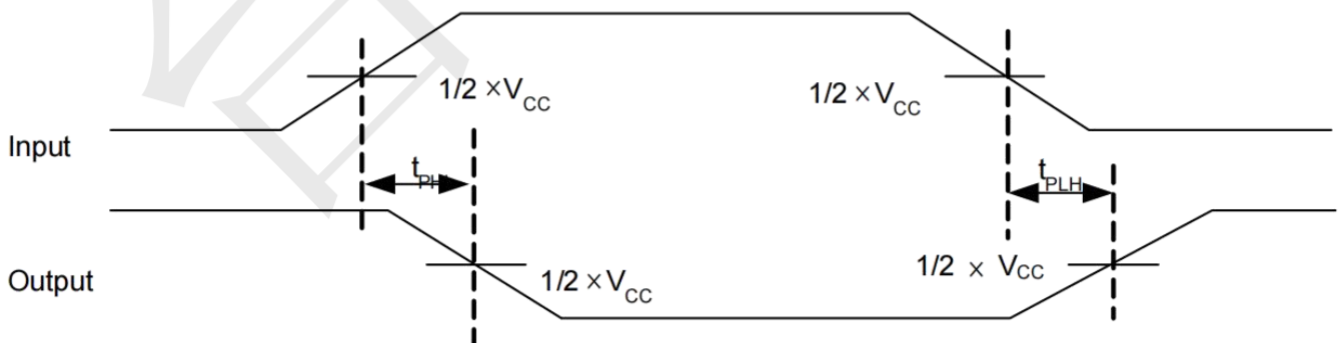
(t<sub>R</sub>, t<sub>F</sub>≤3ns, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input (A and B) to Output(Y)	t <sub>PLH</sub>	V <sub>CC</sub> =5V±0.5V, C <sub>L</sub> =15pF	--	5	6.9	ns
	t <sub>PHL</sub>		--	5	6.9	ns
	t <sub>PLH</sub>	V <sub>CC</sub> =5V±0.5V, C <sub>L</sub> =50pF	--	5.5	7.9	ns
	t <sub>PHL</sub>		--	5.5	7.9	ns

**TEST CIRCUIT AND WAVEFORMS**

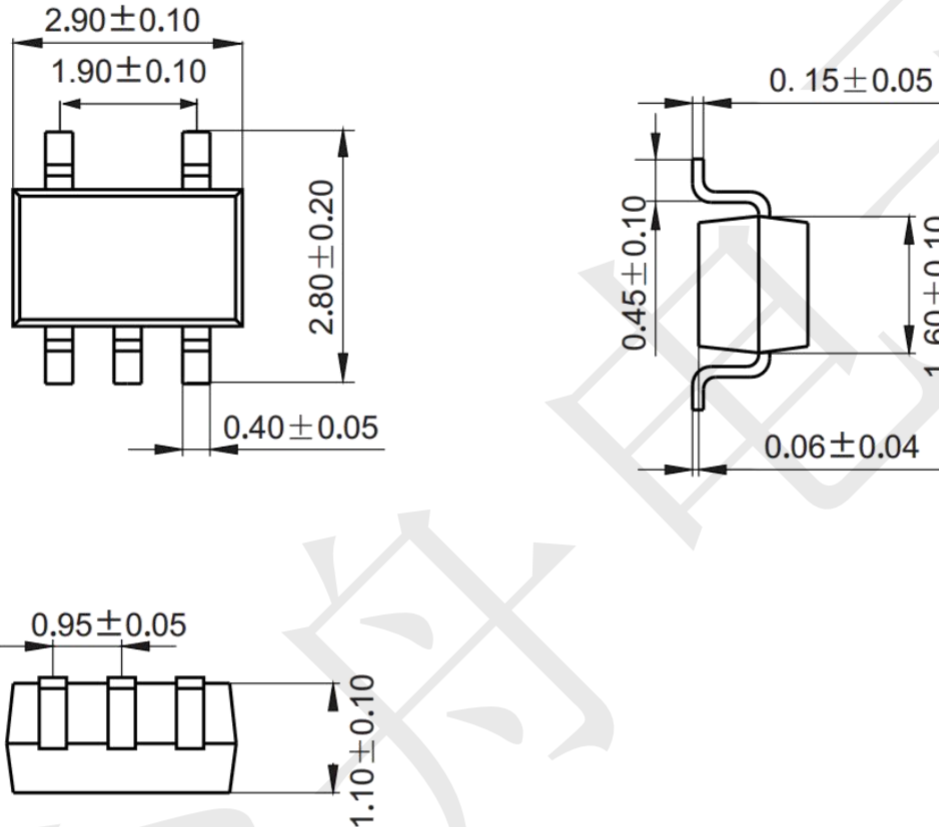


Note:  $C_L$  includes probe and jig capacitance.

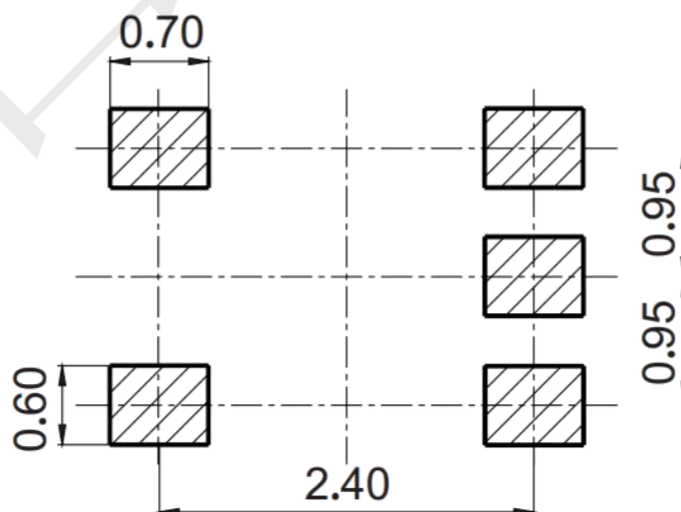


### Package information (Unit: mm)

SOT23-5

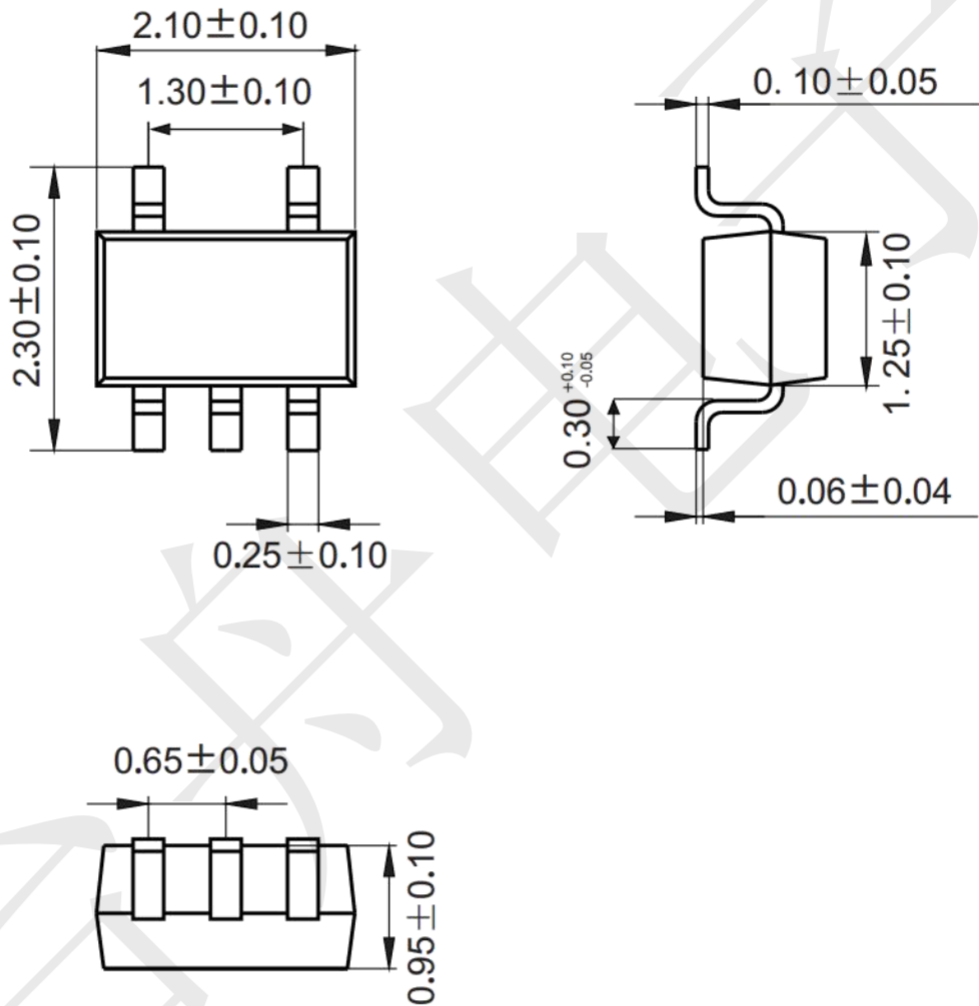


### Mounting Pad Layout (Unit: mm)



**Package information**

SOT353 (Unit: mm)



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

