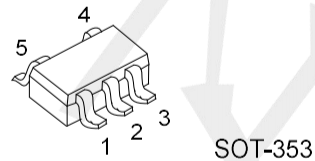


DESCRIPTION

The NC7S00P5X-TP is a 2-input NAND gate which provides the Function $Y = \overline{A \times B}$.

FEATURES

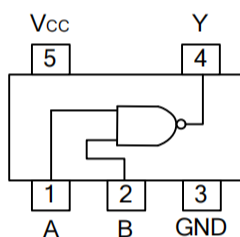
- * Operation Voltage Range: 2~5.5V
- * Low Power Dissipation: $I_{CC}=1.0\mu A$ (Max)
- * High Speed: $t_{PD}=4.3ns$ (Typ)



ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
NC7S00P5X-TP	NC7S00P5X-TP	SOT-353	Tape Reel

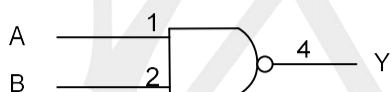
PIN CONFIGURATION



FUNCTION TABLE (each gate)

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

LOGIC DIAGRAM (positive logic)



ABSOLUTE MAXIMUM RATING (Note 1)

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_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	mA
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. 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	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}		0		V_{CC}	V
High-Level Output Current	I_{OH}	$V_{CC}=2V$			-50	μA
		$V_{CC}=3.3\pm0.3V$			-4	mA
		$V_{CC}=5\pm0.3V$			-8	mA
Low-Level Output Current	I_{OL}	$V_{CC}=2V$			50	μA
		$V_{CC}=3.3\pm0.3V$			4	mA
		$V_{CC}=5\pm0.5V$			8	mA
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=3.3\pm0.3V$			100	ns/V
		$V_{CC}=5.0\pm0.5V$			20	
Operating Temperature	T_A		-40		+125	°C

STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^\circ\text{C}$			$T_A=-40\sim+125^\circ\text{C}$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			1.5			V
		$V_{CC}=3.0V$	2.1			2.1			
		$V_{CC}=5.5V$	3.85			3.85			
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5			0.5	V
		$V_{CC}=3.0V$			0.9			0.9	
		$V_{CC}=5.5V$			1.65			1.65	
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2.0		1.9			V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3.0		2.9			
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		4.4			
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			2.4			
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			3.7			
Low-Level Output Voltage	V_{OL}	$V_{CC}=2.0V, I_{OL}=50\mu A$			0.1			0.1	V
		$V_{CC}=3.0V, I_{OL}=50\mu A$			0.1			0.1	
		$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1			0.1	
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36			0.55	
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36			0.55	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim5.5V, V_{IN}=V_{CC}$ or GND			±0.1			±2	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1			40	μA

DYNAMIC CHARACTERISTICS (Input: $t_R, t_F \leq 3\text{ns}$; $P_{RR} \leq 1\text{MHz}$)

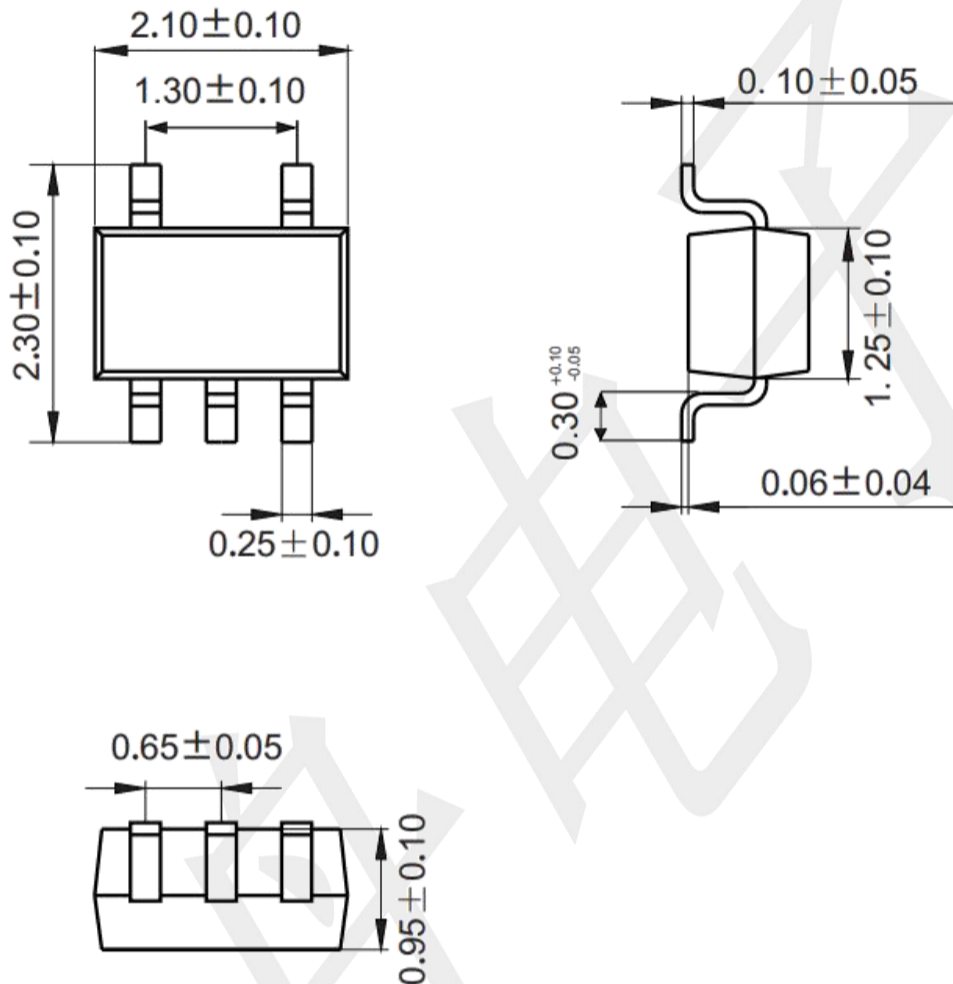
PARAMETER	SYMBOL	TEST CONDITIONS	$T_A = 25^\circ\text{C}$			$T_A = -40 \sim +125^\circ\text{C}$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay Time Input (A or B) to Output(Y)	t_{PLH}	$V_{CC} = 3.3 \pm 0.3\text{V}, C_L = 15\text{pF}$		5.5	7.9	1		10.5	ns
	t_{PHL}			5.5	7.9	1		10.5	ns
	t_{PLH}	$V_{CC} = 3.3 \pm 0.3\text{V}, C_L = 50\text{pF}$		8	11.4	1		14.5	ns
	t_{PHL}			8	11.4	1		14.5	ns
Propagation Delay Time Input (A or B) to Output(Y)	t_{PLH}	$V_{CC} = 5 \pm 0.5\text{V}, C_L = 15\text{pF}$		3.7	5.5	1		7	ns
	t_{PHL}			3.7	5.5	1		7	ns
	t_{PLH}	$V_{CC} = 5 \pm 0.5\text{V}, C_L = 50\text{pF}$		5.2	7.5	1		9.5	ns
	t_{PHL}			5.2	7.5	1		9.5	ns

OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	$V_{CC} = 5\text{V}, V_{IN} = V_{CC} \text{ or } \text{GND}$		4	10	pF
Power Dissipation Capacitance	C_{PD}	No load, $f = 1\text{MHz}, V_{CC} = 5\text{V}$		9.5		pF

Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

