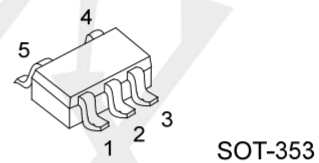


DESCRIPTION

The NC7S02P5X-TP is a single 2-input NOR gate which provides the Function $Y = \overline{A+B}$.

FEATURES

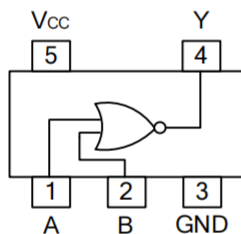
- * Operation Voltage Range: 2.0~5.5V
- * Low Power Dissipation
- * High noise immunity
- * Balanced propagation delays
- * Specified from -40 to +125°C



ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
NC7S02P5X-TP	NC7S02P5X-TP	SOT-353	Tape Reel

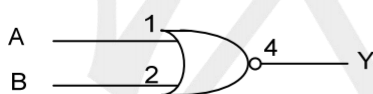
PIN CONFIGURATION



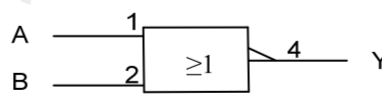
FUNCTION TABLE

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

LOGIC DIAGRAM (positive logic)



Logic symbol



IEC logic symbol

ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

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

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	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2.0	5.0	5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=3.3V\pm0.3V$			100	ns/V
		$V_{CC}=5V\pm0.5V$			20	ns/V
Operating Temperature	T_A		-40		+125	°C

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			V
		$V_{CC}=5.5V$	3.85			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	V
		$V_{CC}=5.5V$			1.65	V
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2.0		V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3.0		V
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	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}	$V_{CC}=2.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OL}=50\mu A$			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	$I_{I(LEAK)}$	$V_{CC}=0V\sim5.5V, V_{IN}=V_{CC}$ 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
Input Capacitance	C_{IN}	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF

Note: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

SWITCHING CHARACTERISTICS (Input signal: $T_A=25^\circ\text{C}$, $\text{PRR}\leq 1\text{MHz}$, $Z_O=50\Omega$, $t_R\leq 3\text{ns}$, $t_F\leq 3\text{ns}$.)

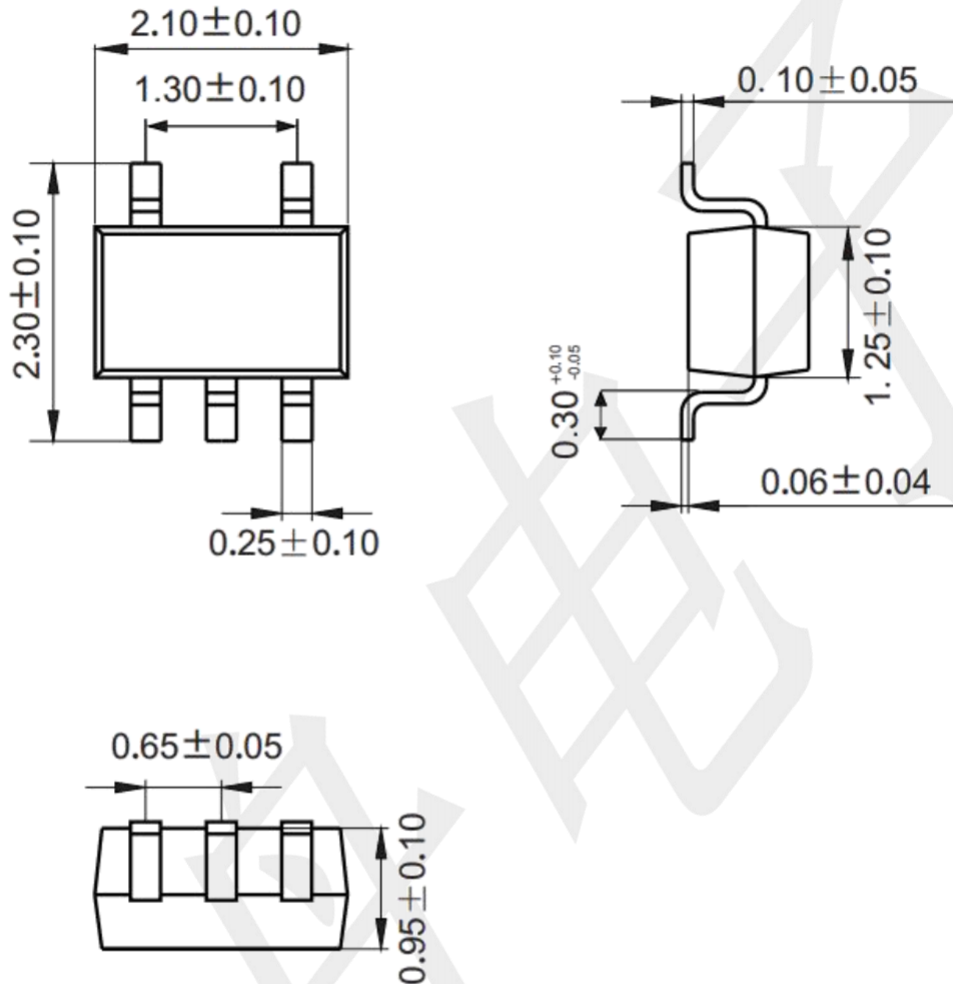
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Times	t_{PLH}	$V_{CC} = 3.3\text{V}\pm 0.3\text{V}$, $C_L=15\text{pF}$		5.6	7.9	ns
		$V_{CC} = 5\text{V}\pm 0.5\text{V}$, $C_L=15\text{pF}$		3.6	5.5	ns
		$V_{CC} = 3.3\text{V}\pm 0.3\text{V}$, $C_L=50\text{pF}$		8.1	11.4	ns
		$V_{CC} = 5\text{V}\pm 0.5\text{V}$, $C_L=50\text{pF}$		5.1	7.5	ns
	t_{PHL}	$V_{CC} = 3.3\text{V}\pm 0.3\text{V}$, $C_L=15\text{pF}$		5.6	7.9	ns
		$V_{CC} = 5\text{V}\pm 0.5\text{V}$, $C_L=15\text{pF}$		3.6	5.5	ns
		$V_{CC} = 3.3\text{V}\pm 0.3\text{V}$, $C_L=50\text{pF}$		8.1	11.4	ns
		$V_{CC} = 5\text{V}\pm 0.5\text{V}$, $C_L=50\text{pF}$		5.1	7.5	ns

OPERATING CHARACTERISTIC

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, $f=1\text{MHz}$, $V_{CC}=5\text{V}$, $T_A=25^\circ\text{C}$		15		pF

Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

