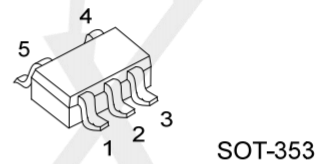


■ DESCRIPTION

The NC7S08P5X-TP is a high-speed si-gate CMOS device which provides the 2-input AND function.

■ FEATURES

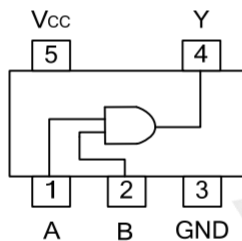
- * Operation Voltage Range: 2 ~ 5.5V
- * Low Power Current: $I_{CC}=40\mu A$ (Max.)
- * High speed: $t_{PD}=4.8ns$ (Typ.) @ $V_{CC}=5V$



■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
NC7S08P5X-TP	NC7S08P5X-TP	SOT-353	Tape Reel

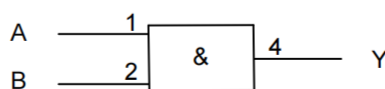
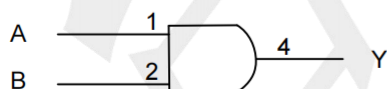
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUTS		OUTPUT
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ LOGIC DIAGRAM (positive logic)



IEC logic symbol

■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^\circ\text{C}$, 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
Output Current	I_{OUT}	± 25	mA
V_{CC} or GND Current	I_{CC}	± 50	mA
Power Dissipation	P_D	250	mW
Storage Temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

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		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Times	t_R, t_F	$V_{CC}=3.3V\pm 0.3V$			100	ns/V
		$V_{CC}=5.0V\pm 0.5V$			20	
Operating Temperature	T_{OPR}		-40		125	$^\circ\text{C}$

■ **STATIC CHARACTERISTICS** (Unless otherwise specified)

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
		$V_{CC}=5.5V$	3.85			3.85			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5			0.5	V
		$V_{CC}=3.0V$			0.9			0.9	V
		$V_{CC}=5.5V$			1.65			1.65	V
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
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		4.4			V
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			2.4			V
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			3.7			V
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
		$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1			0.1	V
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36			0.55	V
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=V_{CC}$ or GND			± 0.1			± 2	μA
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1			40	μA

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

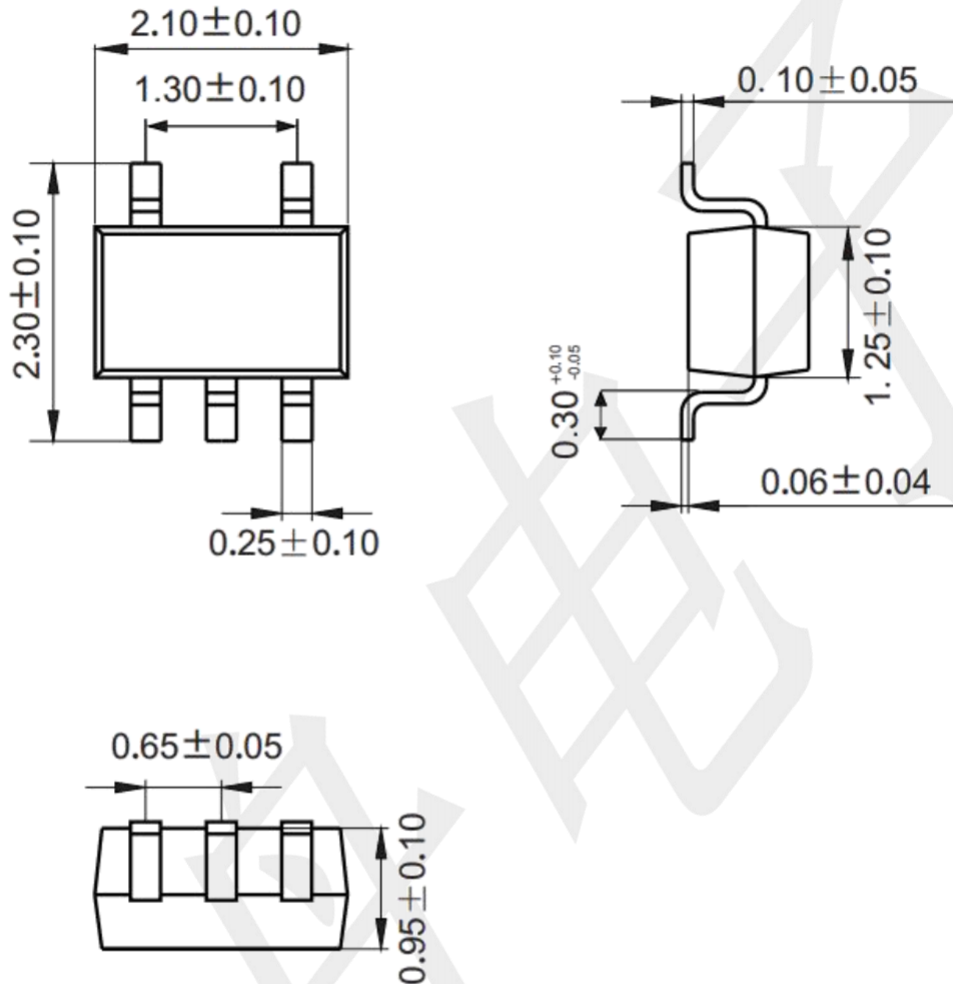
PARAMETER	SYMBOL	TEST CONDITIONS	$T_A = 25^\circ\text{C}$			$T_A = -40 \sim +125^\circ\text{C}$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	$V_{CC} = 3.3\text{V} \pm 0.3\text{V}, C_L = 15\text{pF}$		6.7	9.8	1		12	ns
	t_{PHL}			6.7	9.8	1		12	ns
	t_{PLH}	$V_{CC} = 3.3\text{V} \pm 0.3\text{V}, C_L = 50\text{pF}$		9.2	13.3	1		16	ns
	t_{PHL}			9.2	13.3	1		16	ns
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	$V_{CC} = 5\text{V} \pm 0.5\text{V}, C_L = 15\text{pF}$		4.8	6.9	1		8	ns
	t_{PHL}			4.8	6.9	1		8	ns
	t_{PLH}	$V_{CC} = 5\text{V} \pm 0.5\text{V}, C_L = 50\text{pF}$		6.3	8.9	1		10.5	ns
	t_{PHL}			6.3	8.9	1		10.5	ns

■ **OPERATING CHARACTERISTICS** (Unless otherwise specified)

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, $V_{CC} = 5\text{V}, f = 1\text{MHz}$		18		pF

Package information (Unit: mm)

SOT353



Mounting Pad Layout (Unit: mm)

