TECH PUBLIC
台舟电子

NC7ST08 Series
2-INPUT AND GATE

WWW.TECHPUBLIC.COM

Features

- Operation Voltage Range:4.5~5.5V
- Low Power Dissipation:ICC=1μA (Max.) @25°C
- ±8mA output drive at 5V
- 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)

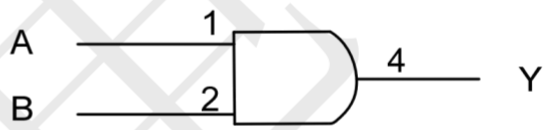
Applications

- Motor control： Communication induction
- Graphics card
- Advanced Driver Assistance Systems (ADAS)
- Motor Drive&Control
- DLP positive projection system
- Server motherboard

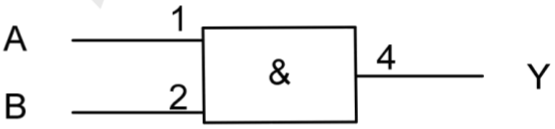
General Description

The NC7ST08 is a 2-input AND gate which provides the 3-F unction Y=A×B

Logic Diagram



Logic symbol

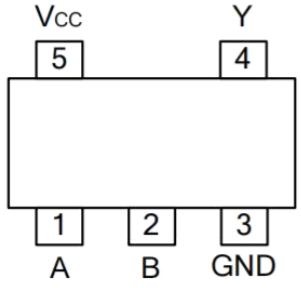


IEC logic symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
NC7ST08M5X-TP	SOT23-5	Tape and Reel,3000
NC7ST08P5X-TP	SOT353	Tape and Reel,3000

Pin Configuratio



SOT23-5 / SOT353

Function Table

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

ABSOLUTE MAXIMUM RATINGS (T_A=25°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	IIK	-20	mA
Output Clamp Current	IOK	±20	mA
Output Current	IOUT	±25	mA
VCC or GND Current	ICC	±50	mA
Storage Temperature	TSTG	-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.

STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	V_{CC}=4.5V~5.5V	2.0	--	--	V
Low-Level Input Voltage	V_{IL}	V_{CC}=4.5V~5.5V	--	--	0.8	V
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V, I_{OH}=-50μA	4.4	4.5	--	V
		V_{CC}=4.5V, I_{OH}=-8mA	3.94	--	--	
Low-Level Output Voltage	V_{OL}	V_{CC}=4.5V, I_{OL}=50μA	--	--	0.1	V
		V_{CC}=4.5V, I_{OL}=8mA	--	--	0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=5.5V, 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
Additional Quiescent Supply Current	ΔI_Q	V_{CC}=5.5V, V_{IN}=3.4V; I_{OUT}=0; other input at V_{CC} or GND	--	--	1.35	mA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND	--	4	10	pF

DYNAMIC CHARACTERISTICS

(Input: t_R, t_F≤3ns; PRR≤1MHz, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	t_{PLH}	V_{CC}=5±0.5V, C_L=15pF	--	5	6.9	ns
	t_{PHL}		--	5	6.9	
	t_{PLH}	V_{CC}=5±0.5V, C_L=50pF	--	5.5	7.9	
	t_{PHL}		--	5.5	7.9	

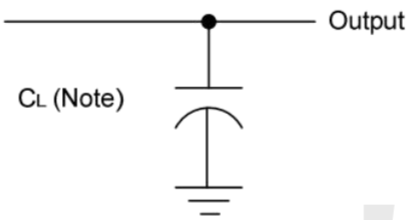
OPERATING CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_{CC}=5V, f=1MHz, No load	--	18	--	pF

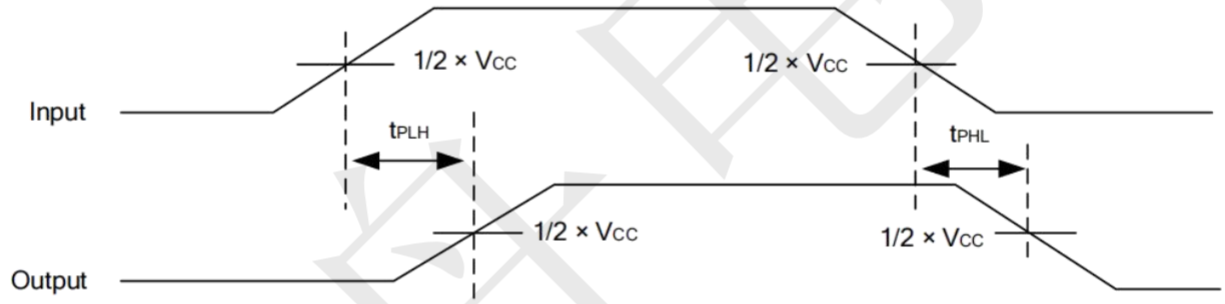
RECOMMENDED OPERATING COMDITIONS

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
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	V_{CC}=5.0±0.5V	--	--	20	ns/V
Operating Temperature	T_A		-40	--	+125	°C

TEST CIRCUIT AND WAVEFORMS

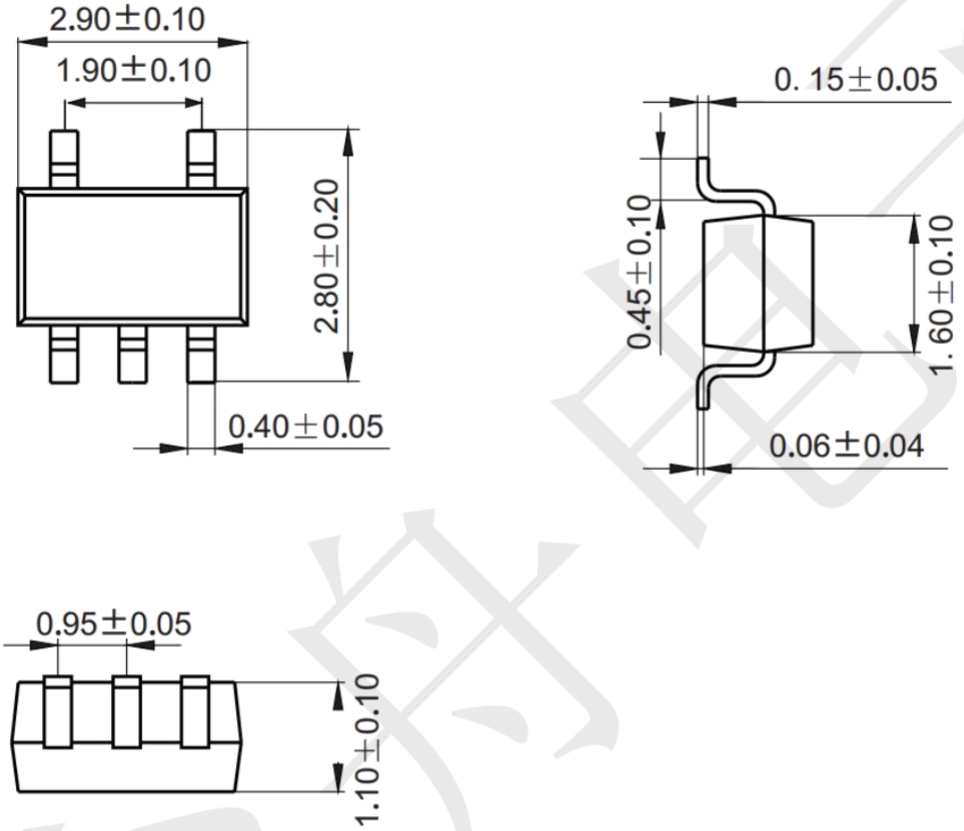


Note: CL includes probe and jig capacitance.

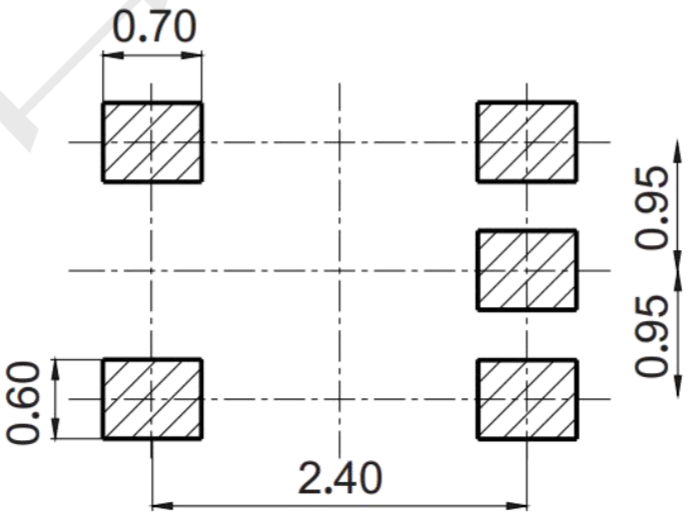


Package information (Unit: mm)

SOT23-5

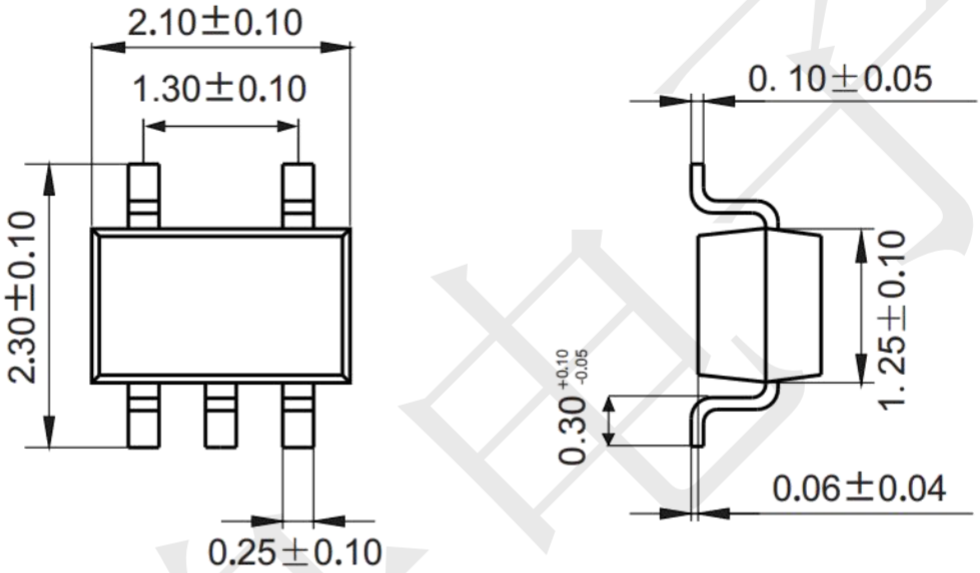


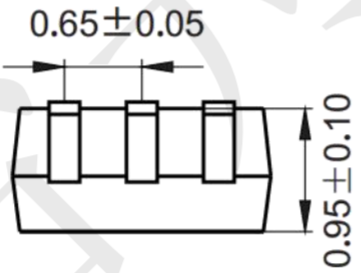
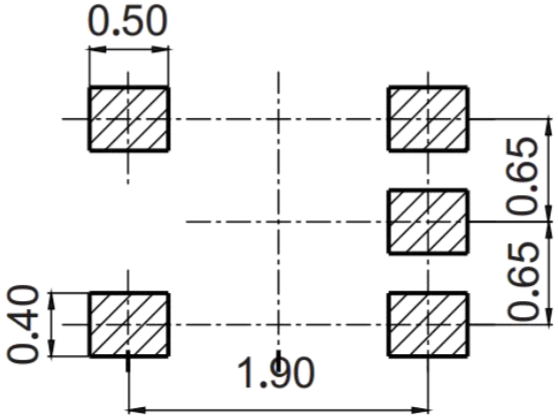
Mounting Pad Layout (Unit: mm)



Package information

SOT353 (Unit: mm)





Mounting Pad Layout (unit: mm)