

## SN74LS00N

### ■ Product Introduction

The SN74LS00N is a four integrated two input and NAND gate digital integrated circuit.

### ■ Product Features

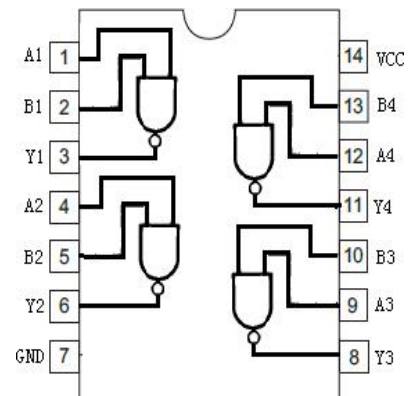
- Integrating four sets of two INPUT NAND gates
- Fully compatible with TTL/DTL input and output logic level
- Package : DIP14, SOP14

### ■ Product Applications

- Digital logic driver
- Industrial control applications (eg: responder, program control equipment, etc.)
- Other application areasBattery-powered equipment

### ■ Package and Pin Assignment

SOP14 or DIP14.			
Pin NO	Pin Definition	Pin NO	Pin Definition
1	Input A1	14	Supply VCC
2	Input B1	13	Input B4
3	Output Y1	12	Input A4
4	Input A2	11	Output Y4
5	Input B2	10	Input B3
6	Output Y2	9	Input A3
7	Supply GND	8	Output Y3

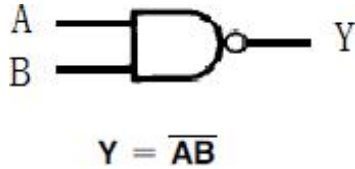


### ■ Absolute Maximum Ratings

Item	Symbol	Maximum Ratings	Unit
Supply voltage	$V_{CC}$	7	V
Input voltage	$V_i$	7	V
Power dissipation	$P_D$	500	mW
Operating temperature	$T_A$	0-70	°C
Storage temperature	$T_S$	-65-150	°C
welding temperature	$T_W$	260	°C, 10s

Note: the limit parameter is the limit value that cannot be exceeded under any condition. Once this limit is exceeded, it may cause physical damage such as deterioration of the product. At the same time, the chip can not be guaranteed to work properly when it is close to the limit parameters.

### ■ Block Diagram



### ■ Function Table

Inputs		Output
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

H = High Logic Level

L = Low Logic Level

### ■ Recommended Operating Conditions

Item	Symbol	Min	Tpy	Max	Unit
Supply voltage	$V_{CC}$	4.75	5	5.25	V
Input voltage	$V_{IH}$	2	—	—	V
	$V_{IL}$	—	—	0.7	V
Output current	$I_{OH}$	—	—	-400	$\mu$ A
	$I_{OL}$	—	—	8	mA
Operating temperature	$T_A$	0	—	60	$^{\circ}$ C

### ■ Electrical Characteristics

( $T_A=25^{\circ}$ C, Unless specified)

Item	Symbol	Min	Tpy	Max	Unit	Conditions	
Output voltage	$V_{OH}$	2.7	3.7	—	V	$I_{OH}=-400\mu$ A	$V_{CC}=4.75V, V_{IL}=0.7V$
	$V_{OL}$	—	0.20	0.4	V	$I_{OL}=4mA$	$V_{CC}=4.75V, V_{IH}=2V$
		—	0.40	0.7		$I_{OL}=8mA$	
Input current	$I_I$	—	0.20	20	$\mu$ A	$V_{CC}=5.25V, V_I=7V$	
	$I_{IH}$	—	0.0	20	$\mu$ A	$V_{CC}=5.25V, V_I=2.7V$	
	$I_{IL}$	—	0.25	0.4	mA	$V_{CC}=5.25V, V_I=0.4V$	
Short-circuit output current	$I_{OS(Notes1)}$	-8	-15	-100	mA	$V_{CC}=5.25V$	
Supply current	$I_{CCH}$	—	1.0	1.6	mA	$V_{CC}=5.25V, \text{all } V_I=GND$	
	$I_{CCL}$	—	3.3	4.4	mA	$V_{CC}=5.25V, \text{all } V_I=V_{CC}$	
Input clamp voltage	$V_{IK}$	—	1.0	-1.5	V	$V_{CC}=4.75V, I_I = -18mA$	

Note1: only one output port is short circuited each time, and the short circuit time is not more than one second.

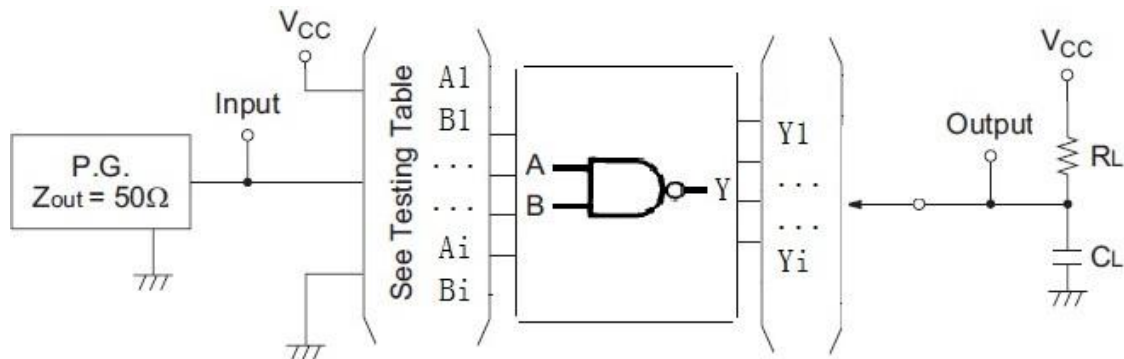
### ■ Switching Characteristics

( $T_A=25^{\circ}$ C, Unless specified)

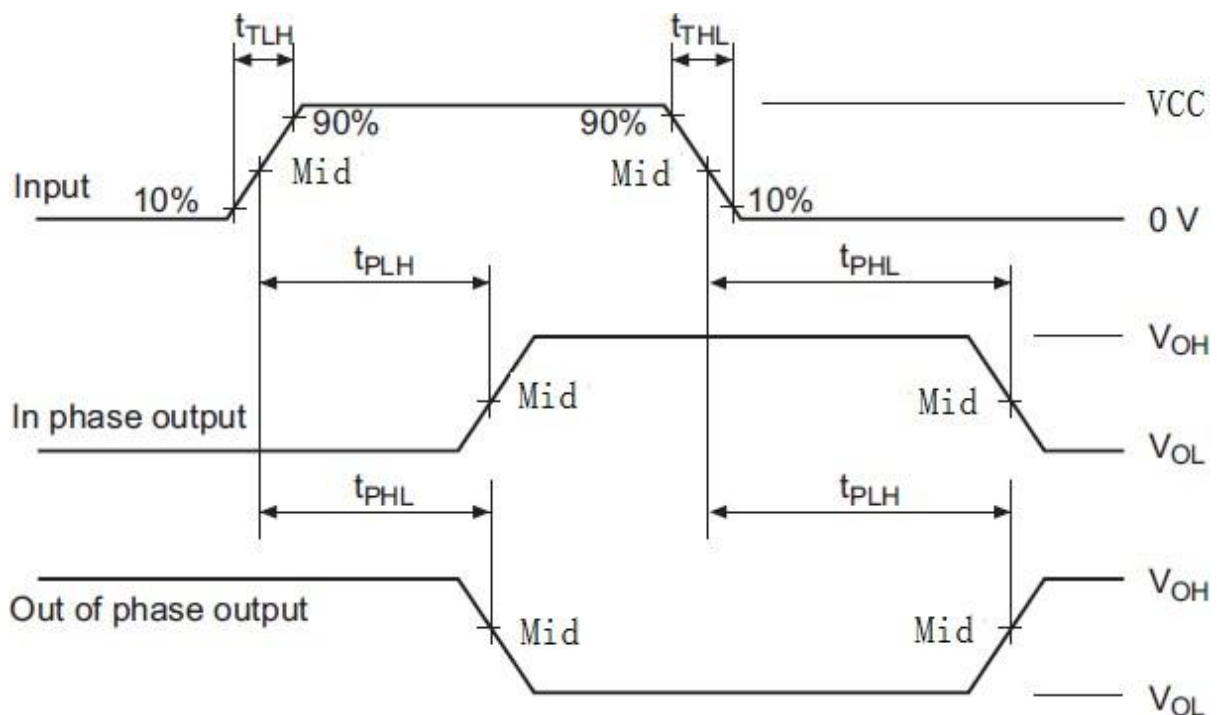
Item	Symbol	Min	Tpy	Max	Unit	Conditions
Propagation delay time	$t_{PLH}$	—	20	—	ns	$V_{CC}=5V, C_L=16pF, R_L=2K\Omega$
	$t_{PHL}$	—	10	—	ns	

## ■ Testing Method

### 1、Test Circuit



### 2、Waveform



Note:

1. See Testing Table refers to the corresponding test items in the switch characteristic table.
2. the CL capacitor is an external patch capacitor (0603), which is connected to the output pin and the capacitor is near the chip GND.
3. Input: port input level,  $f=500\text{kHz}$ ,  $D=50\%$ ,  $t_{TLH}=t_{THL}$  or less 20ns;
4. Output: Y output test port (Out of Phase Output, In Phase Output)

■ Package Dimensions

Unit : mm / inch

DIP14

