

SN74LS151N

Product Introduction

The SN74LS151N is a Data Selector/Multiplexer. It contains full on-chip decoding to select the desired data source. It selects one-of-eight data sources. It has a strobe input which must be at a low logic level to enable these devices.

Product Features

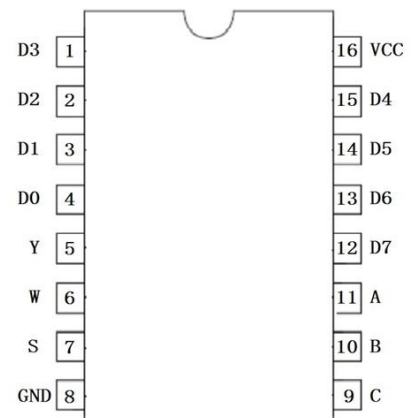
- Select one-of-eight data lines
- Performs parallel-to-serial conversion
- Permits multiplexing from N lines to one line
- Also for use as Boolean function generator
- Fully compatible with TTL input logic level
- Package format: DIP16, SOP16

Product Applications

- Digital logic driver
- Industrial control application
- Other application areas

Package and Pin Assignment

SOP16 or DIP16			
Pin NO	Pin Definition	Pin NO	Pin Definition
1	Input D3	16	Supply VCC
2	Input D2	15	Input D4
3	Input D1	14	Input D5
4	Input D0	13	Input D6
5	Output Y	12	Input D7
6	Output W	11	Select A
7	Strobe S	10	Select B
8	Supply GND	9	Select C

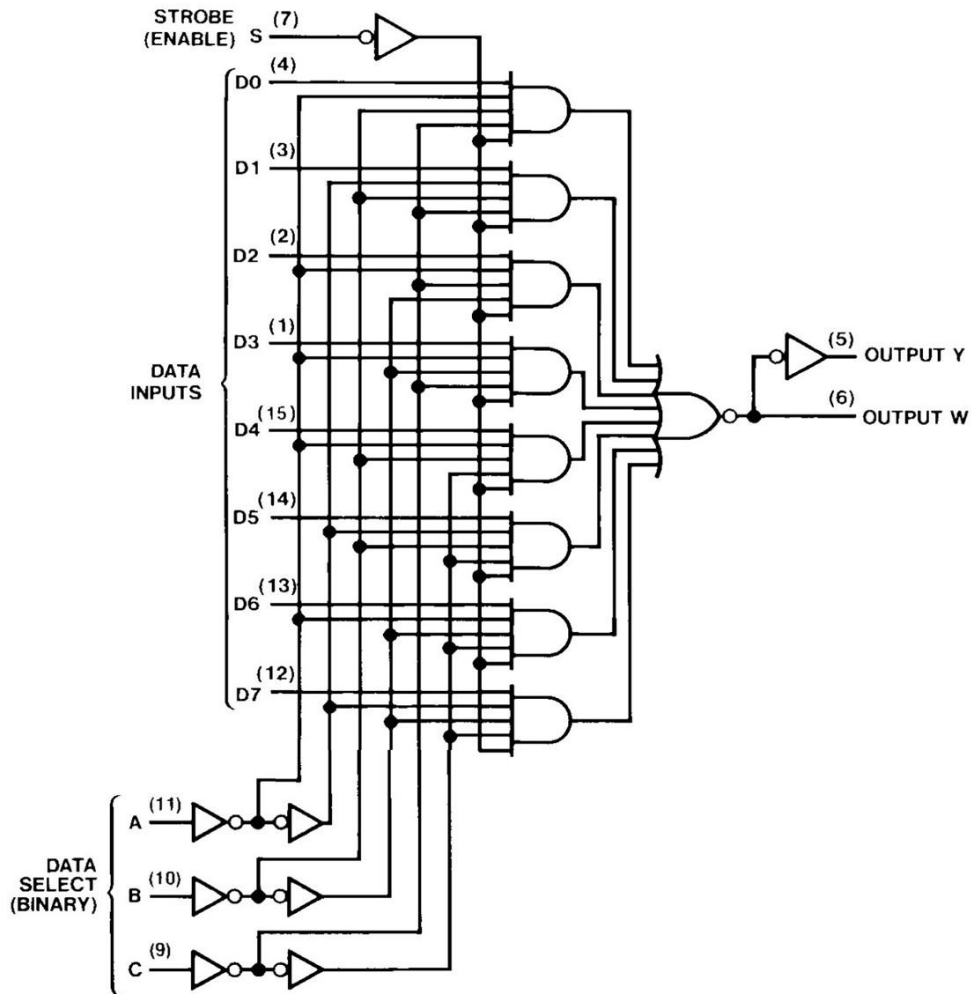


Absolute Maximum Ratings

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, 10s	°C

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			Strobe S	Outputs	
Select				Y	W
C	B	A			
X	X	X	H	L	H
L	L	L	L	D0	$\overline{D0}$
L	L	H	L	D1	$\overline{D1}$
L	H	L	L	D2	$\overline{D2}$
L	H	H	L	D3	$\overline{D3}$
H	L	L	L	D4	$\overline{D4}$
H	L	H	L	D5	$\overline{D5}$
H	H	L	L	D6	$\overline{D6}$
H	H	H	L	D7	$\overline{D7}$

H = High Level, L = Low Level, X = Don't Care

D0, D1...D7 = the level of the respective D input

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	μ 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	3.3	—	V	$V_{CC}=4.75V, V_{IH}=2V$ $V_{IL}=0.7V$
	V_{OL}	—	0.15	0.4	V	
		—	0.23	0.5		
Input current	I_I	—	0.1	100	μ A	$V_{CC}=5.25V, V_I=7V$
	I_{IH}	—	0.1	20	μ A	$V_{CC}=5.25V, V_I=2.7V$
	I_{IL}	—	0.18	0.4	mA	$V_{CC}=5.25V, V_I=0.4V$
Short-circuit output current *	I_{OS}	—	-35	-100	mA	$V_{CC}=5.25V$
Supply current **	I_{CC}	—	6	10	mA	$V_{CC}=5.25V$
Input clamp voltage	V_{IK}	—	1.0	-1.5	V	$V_{CC}=4.75V, I_I = -18mA$

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

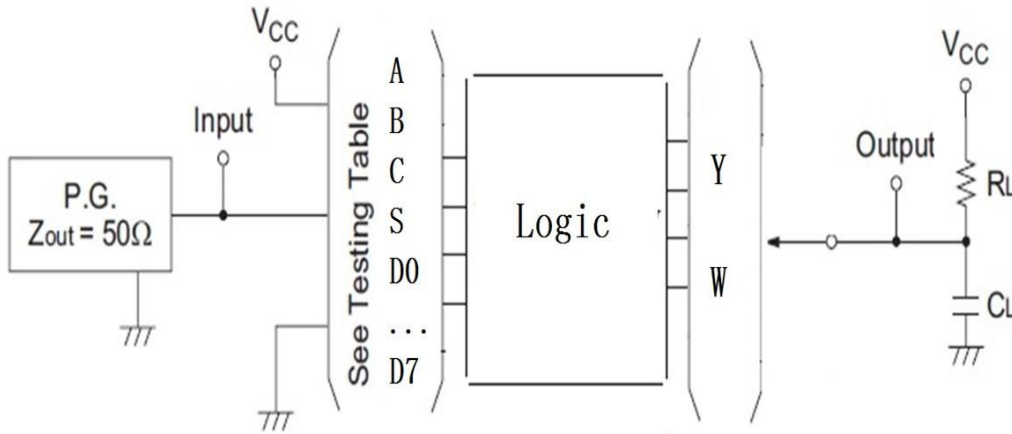
** ICC is measured with all outputs open, strobe and data select inputs at 4.5V, and all other inputs open.

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

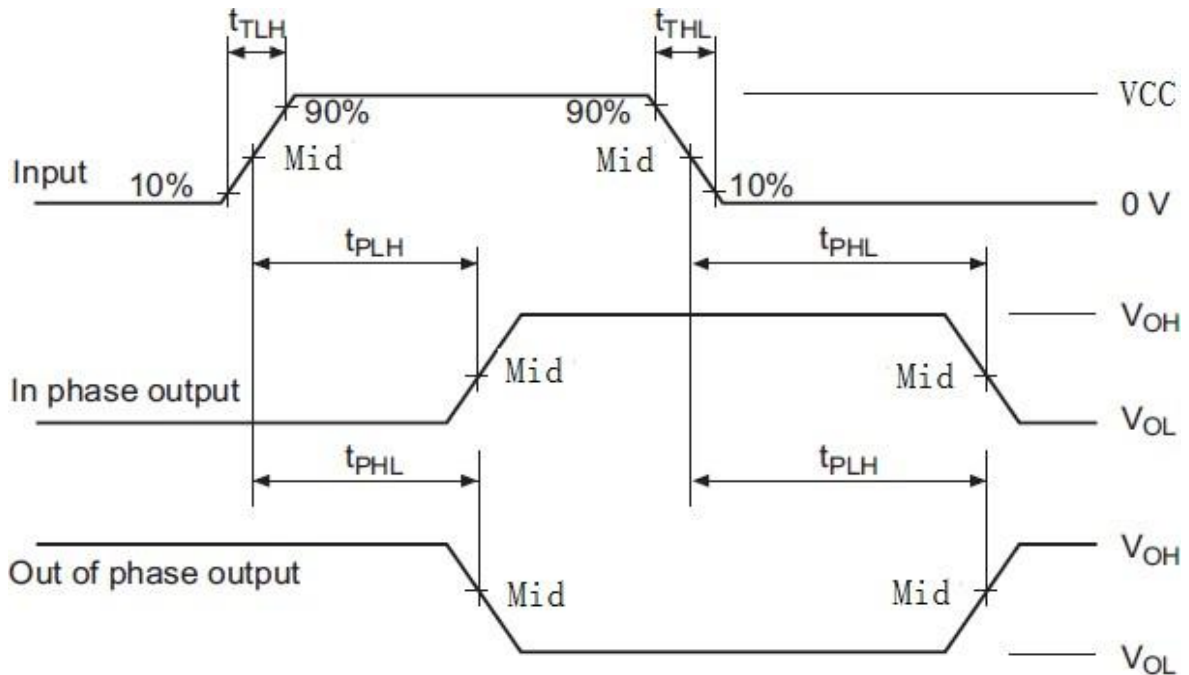
Item	Symbol	Min	Tpy	Max	Unit	Conditions
Propagation delay time Data Select Inputs (A、B、C) to Y	t_{PLH}	-	18	-	ns	$V_{CC}=5V$ $CL=16pF$ $RL=2K\Omega$
	t_{PHL}	-	37	-	ns	
Propagation delay time Data Select Inputs (A、B、C) to W	t_{PLH}	-	30	-	ns	
	t_{PHL}	-	12	-	ns	
Propagation delay time Strobe (S) to Y	t_{PLH}	-	32	-	ns	
	t_{PHL}	-	10	-	ns	
Propagation delay time Strobe (S) to W	t_{PLH}	-	13	-	ns	
	t_{PHL}	-	18	-	ns	
Propagation delay time Data Inputs (D0 thru D7) to Y	t_{PLH}	-	12	-	ns	
	t_{PHL}	-	22	-	ns	
Propagation delay time Data Inputs (D0 thru D7) to W	t_{PLH}	-	26	-	ns	
	t_{PHL}	-	2	-	ns	

■ Testing Method

1、Test Circuit



2、Waveform



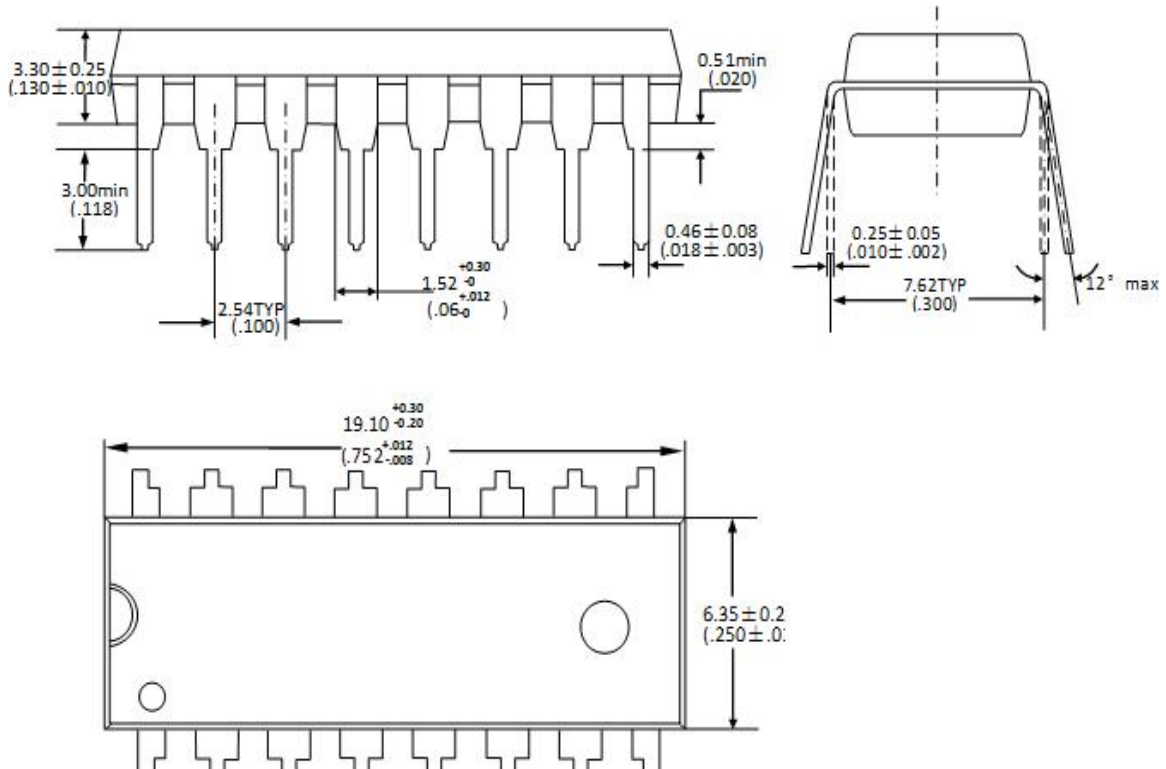
Notes:

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=1MHz, D=50%, tTLH=tTHL or less 20ns;
4. Output: Y output test port (Out of Phase Output, In Phase Output)

Package Dimensions

Unit : mm /inch

DIP16



SOP16

