

SN74LS148N

■ Product Introduction

The SN74LS148N is a Encode 8 Data Lines to 3-Line Binary(Octal).

■ Product Features

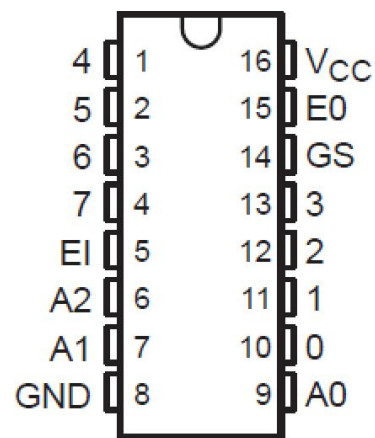
- Encode 8 Data Lines to 3-Line Binary(Octal).
- Fully compatible with TTL input and output logic level
- Package : DIP16, SOP16

■ Product Applications

- n-Bit Encoding
- Code Converters and Generators.
- Industrial control applications
- Other application areas Battery-powered equipment

■ Package and Pin Assignment

SOP16 or DIP16			
Pin NO	Pin Definition	Pin NO	Pin Definition
1	Input 4	16	Supply VCC
2	Input 5	15	Output EO
3	Input 6	14	Output GS
4	Input 7	13	Input 3
5	Input EI	12	Input 2
6	Output A2	11	Input 1
7	Output A1	10	Input 0
8	Supply GND	9	Output A0

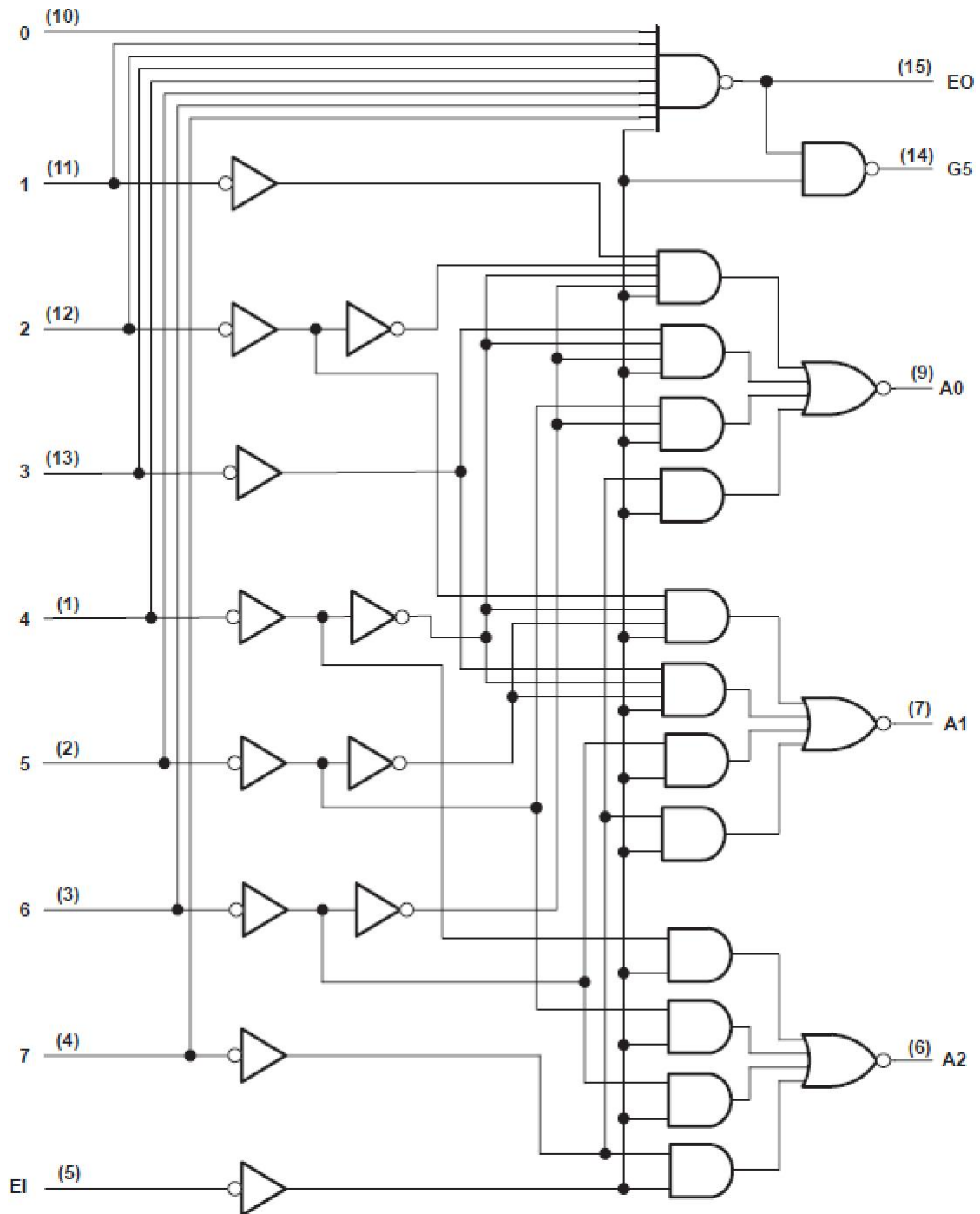


■ Absolute Maximum Ratings

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

EI	INPUTS								OUTPUTS				
	0	1	2	3	4	5	6	7	A2	A1	A0	GS	EO
H	X	X	X	X	X	X	X	X	H	H	H	H	H
L	H	H	H	H	H	H	H	H	H	H	H	H	L
L	X	X	X	X	X	X	X	L	L	L	L	L	H
L	X	X	X	X	X	X	L	H	L	L	H	L	H
L	X	X	X	X	X	L	H	H	L	H	L	L	H
L	X	X	X	X	L	H	H	H	L	H	H	L	H
L	X	X	X	L	H	H	H	H	H	L	L	L	H
L	X	X	L	H	H	H	H	H	H	L	H	L	H
L	X	L	H	H	H	H	H	H	H	H	L	L	H
L	L	H	H	H	H	H	H	H	H	H	H	L	H

H = high logic level, L = low logic level, X = irrelevant

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	uA
	I _{OL}	—	—	8	mA
Operating temperature	T _A	0	—	60	°C

Electrical Characteristics

(T_a=25°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	
		—	0.24	0.5		
Input current	I _I	—	0.1	100	uA	V _{CC} =5.25V, V _I =7V
	I _{IH}	—	0.1	20	uA	V _{CC} =5.25V, V _I =2.7V
	I _{IL}	—	0.5	0.8	mA	V _{CC} =5.25V, V _I =0.4V
Short-circuit output current *	I _{OS}	—	-46	-100	mA	V _{CC} =5.25V
Supply current	I _{CCH}	—	11	20	mA	V _{CC} =5.25V, input 7=EI=GND, other open
	I _{CCL}	—	11	20	mA	V _{CC} =5.25V, all input=GND or open
Input clamp voltage	V _{IK}	—	0.9	-1.5	V	V _{CC} =4.75V, I _I = -18mA

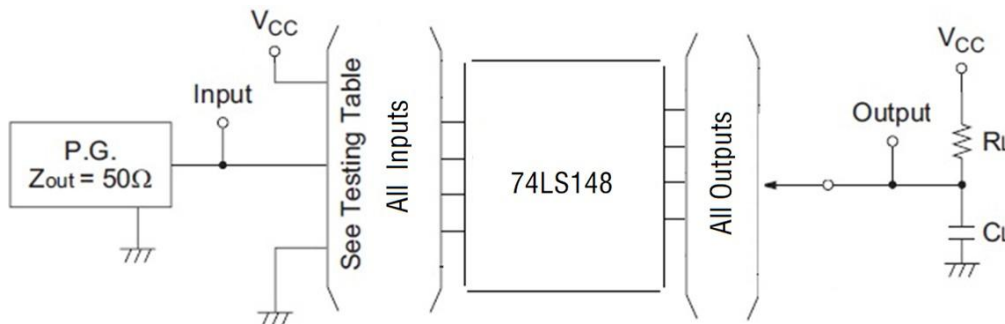
Notes: * only one output port is short circuited each time, and the short circuit time is not more than one second.

■ Switching Characteristics (T_a=25°C, Unless specified)

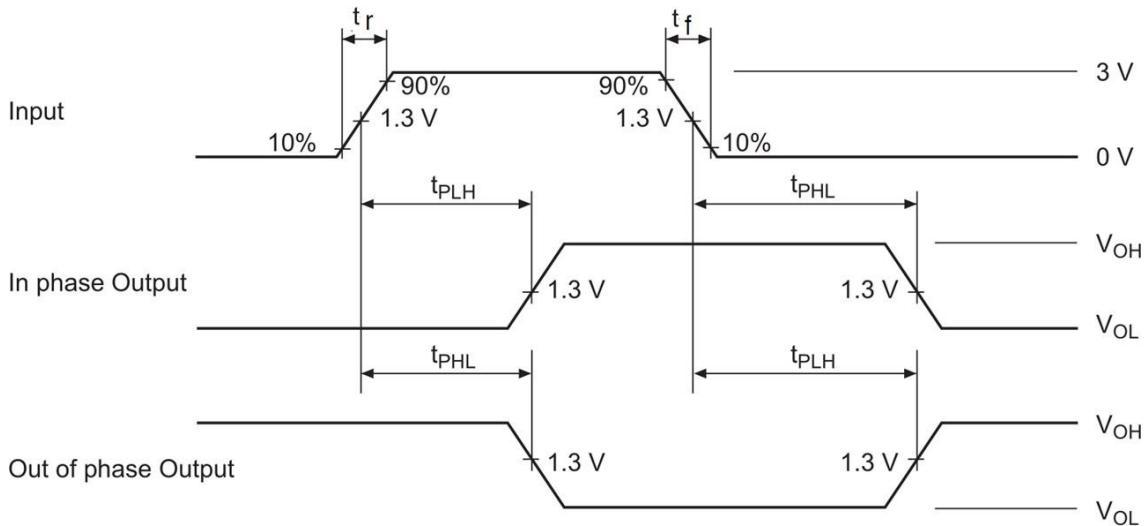
Item	Symbol	Min	Typ	Max	Unit	Conditions
Propagation delay time Data Inputs (1 to 7) to Output (A0、A1、A2)	t _{PLH}	–	8	–	ns	VCC=5V CL=16pF RL=2KΩ
	t _{PHL}	–	14	–	ns	
Propagation delay time Data Inputs (0 to 7) to Output (EO、GS)	t _{PLH}	–	12	–	ns	
	t _{PHL}	–	15	–	ns	
Propagation delay time EI to all Outputs	t _{PLH}	–	10	–	ns	
	t _{PHL}	–	24	–	ns	

■ Testing Method

1、Test Circuit



2、Waveform



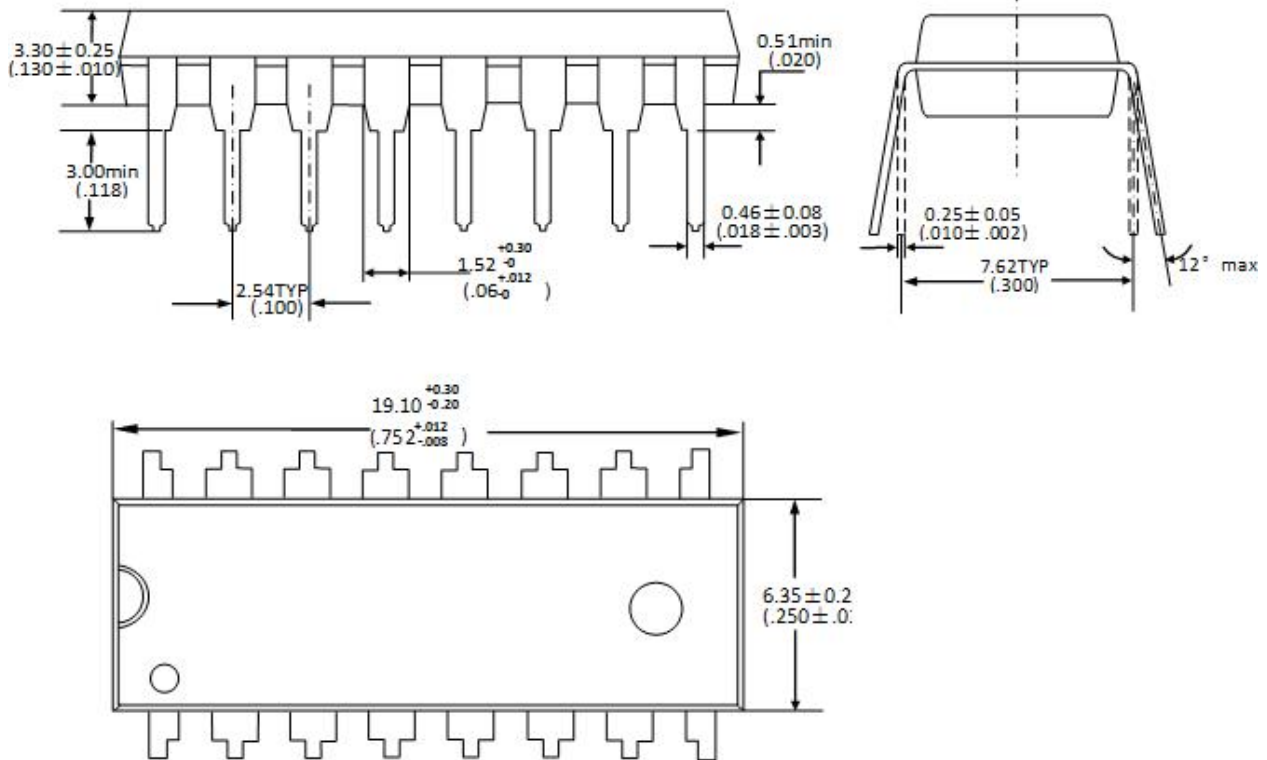
Note:

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

Package Dimensions

Unit : mm / inch

DIP16



SOP16

