



SN74LS280 (LX) 9-bit Odd/Even Parity Generator/Checker

Product Specification

Specification Revision History:

Version	Date	Description
2022-06-A1	2022-06	New
2023-04-B1	2023-04	Update the template



Contents

1、General Description.....	3
2、Block Diagram And Pin Description	6
2.1、Block Diagram	6
2.2、Pin Configurations.....	7
2.3、Pin Description.....	7
2.4、Function Table.....	7
3、Electrical Parameter	8
3.1、Absolute Maximum Ratings.....	8
3.2、Recommended Operating Conditions	8
3.3、Electrical Characteristics.....	9
3.3.1、DC Characteristics 1	9
3.3.2、DC Characteristics 2.....	10
3.3.3、DC Characteristics 3.....	11
3.3.4、AC Characteristics 1	12
3.3.5、AC Characteristics 2.....	13
3.3.6、AC Characteristics 3.....	14
4、Testing Circuit	15
4.1、AC Testing Circuit	15
4.2、AC Testing Waveforms.....	15
4.3、Measurement Points	16
4.4、Test Data	16
5、Package Information	17
5.1、DIP14	17
5.2、SOP14	18
5.3、TSSOP14.....	19
6、Statements And Notes	20
6.1、The name and content of Hazardous substances or Elements in the product.....	20
6.2、Notes	20



1、General Description

The SN74LS280 is a 9-bit parity generator or checker. Both even and odd parity outputs are available. The even parity output (PE) is HIGH when an even number of data inputs (I0 to I8) is HIGH. The odd parity output (PO) is HIGH when an odd number of data inputs are HIGH. Expansion to larger word sizes is accomplished by tying the even outputs (PE) of up to nine parallel devices to the final stage data inputs. Inputs include clamp diodes. It enables the use of current limiting resistors to interface inputs to voltages in excess of V_{CC} .

Features:

- Word-length easily expanded by cascading
- Generates either odd or even parity for nine data bits
- Specified from -40°C to $+125^{\circ}\text{C}$
- Packaging information: DIP14/SOP14/TSSOP14



Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
SN74LS280N(LX)	DIP14	SN74LS280N	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
SN74LS280D(LX)	SOP14	LS280	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
SN74LS280P(LX)	TSSOP14	LS280	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm



Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
SN74LS280DR(LX)	SOP14	LS280	2500 PCS/reel	5000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
SN74LS280PW(LX)	TSSOP14	LS280	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.

2、Block Diagram And Pin Description

2.1、Block Diagram

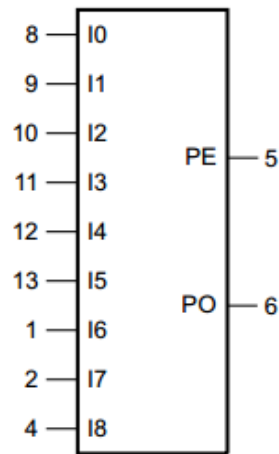


Figure 1. Logic symbol

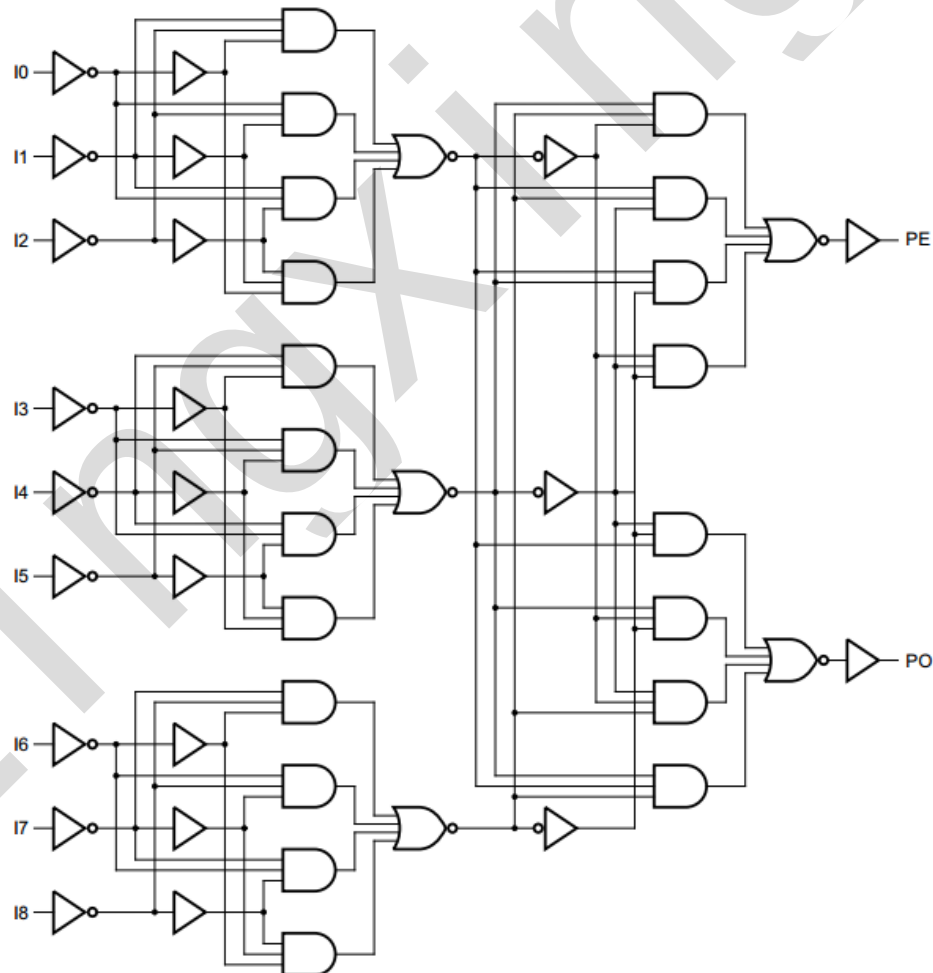
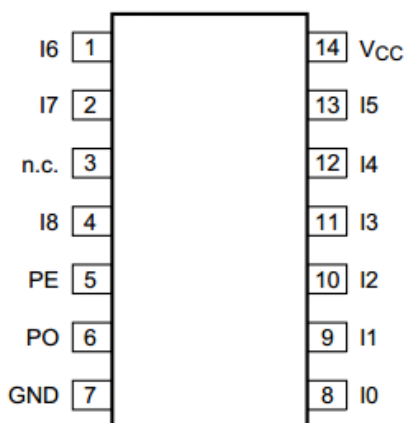


Figure 2. Logic diagram



2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	I6	data input
2	I7	data input
3	n.c.	not connected
4	I8	data input
5	PE	even parity output
6	PO	odd parity output
7	GND	ground (0V)
8	I0	data input
9	I1	data input
10	I2	data input
11	I3	data input
12	I4	data input
13	I5	data input
14	V _{CC}	supply voltage

2.4、Function Table

Inputs	Outputs	
number of HIGH data inputs (I0 to I8)	PE	PO
even	H	L
odd	L	H

Note: H=HIGH voltage level; L=LOW voltage level.



3、Electrical Parameter

3.1、Absolute Maximum Ratings

(Voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Max.	Unit
supply voltage	V _{CC}	-		-0.5	+7	V
input clamping current	I _{IK}	V _I < -0.5V or V _I > V _{CC} +0.5V		-	±20	mA
output clamping current	I _{OK}	V _O < -0.5V or V _O > V _{CC} +0.5V		-	±20	mA
output current	I _O	-0.5V < V _O < V _{CC} +0.5V		-	±25	mA
supply current	I _{CC}	-		-	50	mA
ground current	I _{GND}	-		-50	-	mA
total power dissipation	P _{tot}	-		-	500	mW
storage temperature	T _{stg}	-		-65	+150	°C
Soldering temperature	T _L	10s	DIP	245		°C
			SOP/TSSOP	260		

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{CC}	-	2.0	5.0	6.0	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=2.0V$	-	-	625	ns/V
		$V_{CC}=4.5V$	-	1.67	139	ns/V
		$V_{CC}=6.0V$	-	-	83	ns/V
ambient temperature	T_{amb}	-	-40	-	+125	°C



3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

($T_{amb}=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
HIGH-level input voltage	V _{IH}	V _{CC} =2.0V		1.5	1.2	-	V
		V _{CC} =4.5V		3.15	2.4	-	V
		V _{CC} =6.0V		4.2	3.2	-	V
LOW-level input voltage	V _{IL}	V _{CC} =2.0V		-	0.8	0.5	V
		V _{CC} =4.5V		-	2.1	1.35	V
		V _{CC} =6.0V		-	2.8	1.8	V
HIGH-level output voltage	V _{OH}	V _I = V _{IH} or V _{IL}	I _O =-20uA; V _{CC} =2.0V	1.9	2.0	-	V
			I _O =-20uA; V _{CC} =4.5V	4.4	4.5	-	V
			I _O =-20uA; V _{CC} =6.0V	5.9	6.0	-	V
			I _O =-4.0mA; V _{CC} =4.5V	3.98	4.32	-	V
			I _O =-5.2mA; V _{CC} =6.0V	5.48	5.81	-	V
LOW-level output voltage	V _{OL}	V _I = V _{IH} or V _{IL}	I _O =20uA; V _{CC} =2.0V	-	0	0.1	V
			I _O =20uA; V _{CC} =4.5V	-	0	0.1	V
			I _O =20uA; V _{CC} =6.0V	-	0	0.1	V
			I _O =4.0mA; V _{CC} =4.5V	-	0.15	0.26	V
			I _O =5.2mA; V _{CC} =6.0V	-	0.16	0.26	V
input leakage current	I _I	V _I = V _{CC} or GND; V _{CC} =6.0V		-	-	±1	uA
supply current	I _{CC}	V _I = V _{CC} or GND; I _O =0A; V _{CC} =6.0V		-	-	2.0	uA
input capacitance	C _I	-		-	3.5	-	pF



3.3.2、DC Characteristics 2

($T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	$V_{CC}=2.0\text{V}$		1.5	-	-	V
		$V_{CC}=4.5\text{V}$		3.15	-	-	V
		$V_{CC}=6.0\text{V}$		4.2	-	-	V
LOW-level input voltage	V_{IL}	$V_{CC}=2.0\text{V}$		-	-	0.5	V
		$V_{CC}=4.5\text{V}$		-	-	1.35	V
		$V_{CC}=6.0\text{V}$		-	-	1.8	V
HIGH-level output voltage	V_{OH}	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O = -20\mu\text{A}; V_{CC}=2.0\text{V}$	1.9	-	-	V
			$I_O = -20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	-	-	V
			$I_O = -20\mu\text{A}; V_{CC}=6.0\text{V}$	5.9	-	-	V
			$I_O = -4.0\text{mA}; V_{CC}=4.5\text{V}$	3.84	-	-	V
			$I_O = -5.2\text{mA}; V_{CC}=6.0\text{V}$	5.34	-	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O = 20\mu\text{A}; V_{CC}=2.0\text{V}$	-	-	0.1	V
			$I_O = 20\mu\text{A}; V_{CC}=4.5\text{V}$	-	-	0.1	V
			$I_O = 20\mu\text{A}; V_{CC}=6.0\text{V}$	-	-	0.1	V
			$I_O = 4.0\text{mA}; V_{CC}=4.5\text{V}$	-	-	0.33	V
			$I_O = 5.2\text{mA}; V_{CC}=6.0\text{V}$	-	-	0.33	V
input leakage current	I_I	$V_I = V_{CC} \text{ or } \text{GND}; V_{CC}=6.0\text{V}$		-	-	± 1	μA
supply current	I_{CC}	$V_I = V_{CC} \text{ or } \text{GND}; I_O=0\text{A}; V_{CC}=6.0\text{V}$		-	-	80	μA



3.3.3、DC Characteristics 3

($T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
HIGH-level input voltage	V _{IH}	V _{CC} =2.0V		1.5	-	-	V
		V _{CC} =4.5V		3.15	-	-	V
		V _{CC} =6.0V		4.2	-	-	V
LOW-level input voltage	V _{IL}	V _{CC} =2.0V		-	-	0.5	V
		V _{CC} =4.5V		-	-	1.35	V
		V _{CC} =6.0V		-	-	1.8	V
HIGH-level output voltage	V _{OH}	V _I = V _{IH} or V _{IL}	I _O =-20uA; V _{CC} =2.0V	1.9	-	-	V
			I _O =-20uA; V _{CC} =4.5V	4.4	-	-	V
			I _O =-20uA; V _{CC} =6.0V	5.9	-	-	V
			I _O =-4.0mA; V _{CC} =4.5V	3.7	-	-	V
			I _O =-5.2mA; V _{CC} =6.0V	5.2	-	-	V
LOW-level output voltage	V _{OL}	V _I = V _{IH} or V _{IL}	I _O =20uA; V _{CC} =2.0V	-	-	0.1	V
			I _O =20uA; V _{CC} =4.5V	-	-	0.1	V
			I _O =20uA; V _{CC} =6.0V	-	-	0.1	V
			I _O =4.0mA; V _{CC} =4.5V	-	-	0.4	V
			I _O =5.2mA; V _{CC} =6.0V	-	-	0.4	V
input leakage current	I _I	V _I = V _{CC} or GND; V _{CC} =6.0V		-	-	±1	uA
supply current	I _{CC}	V _I = V _{CC} or GND; I _O =0A; V _{CC} =6.0V		-	-	160	uA



3.3.4、AC Characteristics 1

($T_{amb}=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
In to PE propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	55	200 ns
			$V_{CC}=4.5\text{V}$	-	20	40 ns
			$V_{CC}=5.0\text{V}; C_L=15\text{pF}$	-	17	- ns
			$V_{CC}=6.0\text{V}$	-	16	34 ns
In to PO propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	63	200 ns
			$V_{CC}=4.5\text{V}$	-	23	40 ns
			$V_{CC}=5.0\text{V}; C_L=15\text{pF}$	-	20	- ns
			$V_{CC}=6.0\text{V}$	-	18	34 ns
transition time	t_t	see Figure 4	$V_{CC}=2.0\text{V}$	-	19	75 ns
			$V_{CC}=4.5\text{V}$	-	7	15 ns
			$V_{CC}=6.0\text{V}$	-	6	13 ns
power dissipation capacitance	C_{PD}	per package; $V_I = \text{GND to } V_{CC}$	-	65	-	pF

Note:

[1] t_{pd} is the same as t_{PLH} and t_{PHL} .

[2] t_t is the same as t_{THL} and t_{TLH} .

[3] C_{PD} is used to determine the dynamic power dissipation (P_D in uW).

$P_D = (C_{PD} \times V_{CC}^2 \times f_i \times N) + \sum (C_L \times V_{CC}^2 \times f_o)$ where:

f_i = input frequency in MHz;

f_o = output frequency in MHz;

C_L = output load capacitance in pF;

V_{CC} = supply voltage in V;

N = number of inputs switching;

$\sum (C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.



3.3.5、AC Characteristics 2

($T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
In to PE propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	250 ns
			$V_{CC}=4.5\text{V}$	-	-	50 ns
			$V_{CC}=6.0\text{V}$	-	-	43 ns
In to PO propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	250 ns
			$V_{CC}=4.5\text{V}$	-	-	50 ns
			$V_{CC}=6.0\text{V}$	-	-	43 ns
transition time	t_t	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	95 ns
			$V_{CC}=4.5\text{V}$	-	-	19 ns
			$V_{CC}=6.0\text{V}$	-	-	16 ns

Note:

[1] t_{pd} is the same as t_{PLH} and t_{PHL} .

[2] t_t is the same as t_{THL} and t_{TLH} .



3.3.6、AC Characteristics 3

($T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
In to PE propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	300 ns
			$V_{CC}=4.5\text{V}$	-	-	60 ns
			$V_{CC}=6.0\text{V}$	-	-	51 ns
In to PO propagation delay	t_{pd}	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	300 ns
			$V_{CC}=4.5\text{V}$	-	-	60 ns
			$V_{CC}=6.0\text{V}$	-	-	51 ns
transition time	t_t	see Figure 4	$V_{CC}=2.0\text{V}$	-	-	110 ns
			$V_{CC}=4.5\text{V}$	-	-	22 ns
			$V_{CC}=6.0\text{V}$	-	-	19 ns

Note:

[1] t_{pd} is the same as t_{PLH} and t_{PHL} .

[2] t_t is the same as t_{THL} and t_{TLH} .

4、Testing Circuit

4.1、AC Testing Circuit

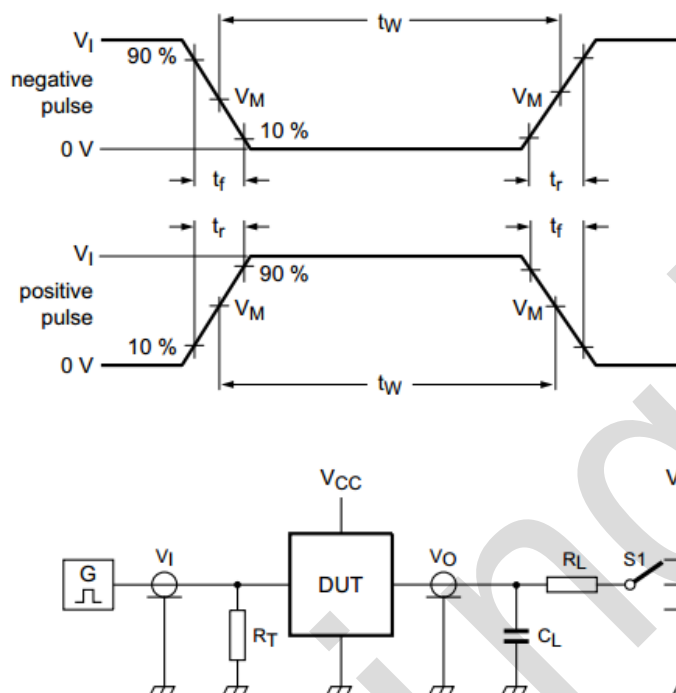


Figure 3. Test circuit for measuring switching times

Definitions for test circuit:

C_L =load capacitance including jig and probe capacitance.

R_T =termination resistance should be equal to the output impedance Z_o of the pulse generator.

R_L = Load resistance.

S1 = Test selection switch

4.2、AC Testing Waveforms

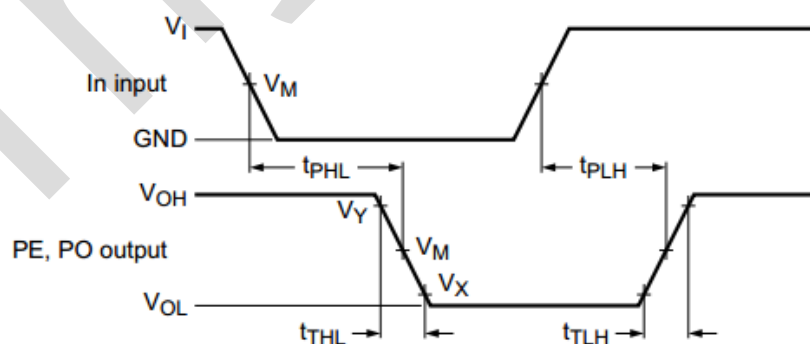


Figure 4. Input to output propagation delays



4.3、Measurement Points

Input	Output		
V_M	V_M	V_X	V_Y
$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$

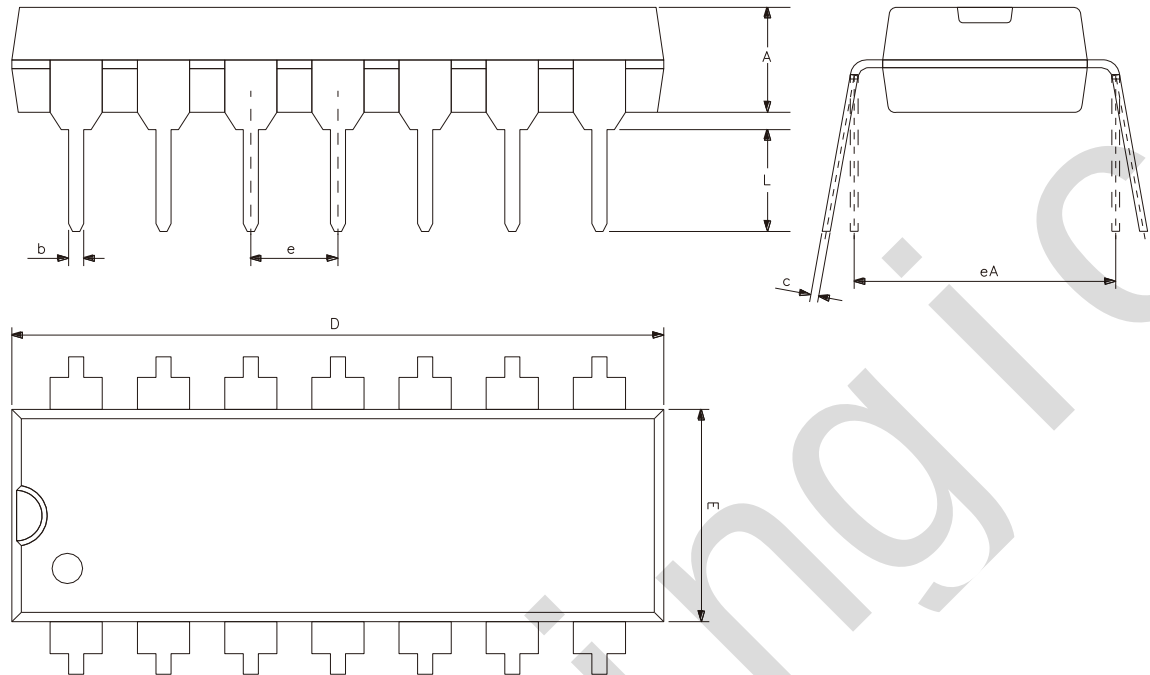
4.4、Test Data

Input		Load		S1 position
V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}
V_{CC}	6.0ns	15pF, 50pF	1k Ω	open



5、Package Information

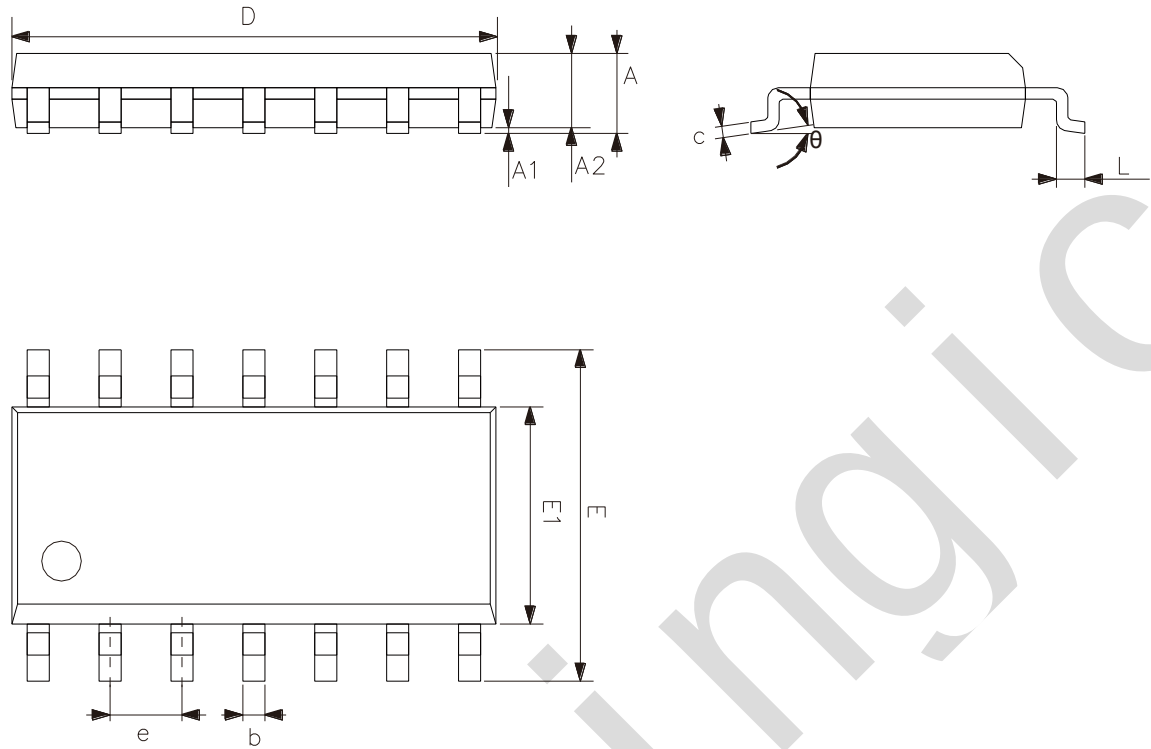
5.1、DIP14



Symbol	Dimensions (mm)	
	Min.	Max.
A	3.05	3.60
b	0.33	0.56
c	0.20	0.36
D	18.80	19.40
E	6.20	6.60
e	2.54	
eA	7.62	10.90
L	2.92	-



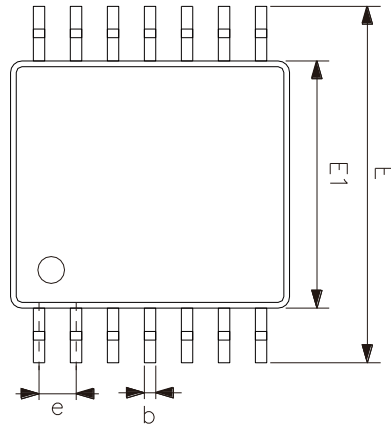
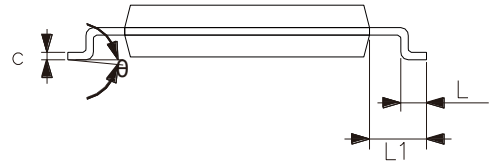
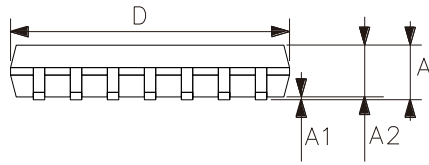
5.2、SOP14



Symbol	Dimensions (mm)	
	Min.	Max.
A	1.50	1.75
A1	0.05	0.25
A2	1.30	-
b	0.33	0.50
c	0.19	0.25
D	8.43	8.76
E	5.80	6.25
E1	3.75	4.00
e	1.27	
L	0.40	0.89
θ	0°	8°



5.3、TSSOP14



Symbol	Dimensions (mm)	
	Min.	Max.
A	-	1.20
A1	0.05	0.15
A2	0.80	1.05
b	0.19	0.30
c	0.09	0.20
D	4.90	5.10
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
L1	1.00	
θ	0°	8°



6、Statements And Notes

6.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

6.2、Notes

We Recommend you to read this chapter carefully before using this product.

The information in this chapter is provided for reference only and Lingxing disclaims any express or implied warranties, including but not limited to applicability, special application or non-infringement of third party rights.

This product is not suitable for critical equipment such as life-saving, life-sustaining or safety equipment. It is also not suitable for applications that may result in personal injury, death, or serious property or environmental damage due to product malfunction or failure. Lingxing will not be liable for any damages incurred by the customers at their own risk for such applications.

The customer is responsible for conducting all necessary tests Lingxing's application to avoid failure in the application or the application of the customer's third party users. Lingxing does not accept any liability.

The Company reserves the right to change or improve the information published in this chapter at any time. The information in this chapter are subject to change without notice. We recommend the customer to consult our sales staff before purchasing.

Please obtain related materials form Lingxing's regular channels and we are not responsible for its content if it is provided by sources other than our company.

In case of any conflict between the Chinese and English version, the version is subject to the Chinese one.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [lingxingic](#) manufacturer:

Other Similar products are found below :

[HT9032D\(LX\)](#) [SN74HC541N\(LX\)](#) [SN74HC13N\(LX\)](#) [SN74HC13DR\(LX\)](#) [SN74HC165DR\(LX\)](#) [TXB0102DCU\(LX\)](#) [SN74LS192DR\(LX\)](#)
[SN74HC90DR\(LX\)](#) [SN74LS06N\(LX\)](#) [CD40103BDR\(LX\)](#) [SN74LS173N](#) [SN74HC173N](#) [SN74LS11N\(LX\)](#) [SN74LS193N\(LX\)](#) [SN74LS280N](#)
[SN74LV1T125DC\(LX\)](#) [SN74HC90N\(LX\)](#) [CD4073BM\(LX\)](#) [SN74LVC2G07DC\(LX\)](#) [SN74HC280DR\(LX\)](#) [SN74LS166AN\(LX\)](#)
[SN74LS126N\(LX\)](#) [SN74HC166N\(LX\)](#) [SN74LVC2G08DCU\(LX\)](#) [CD4082BM\(LX\)](#) [SN74LS166ADR\(LX\)](#) [SN74LV1T125DB\(LX\)](#)
[CD40103BE\(LX\)](#) [CD4073BE\(LX\)](#) [SN74LVC1G06DB\(LX\)](#) [SN74LS280DR](#) [SN74HC266N\(LX\)](#) [SN74LS393N\(LX\)](#) [CD4538BM\(LX\)](#)
[SN74HC244N\(LX\)](#) [SN74LS245N\(LX\)](#) [SN74HC573D\(LX\)](#) [SN74LS374N](#) [SN74LS240N\(LX\)](#) [SN74HC240N\(LX\)](#) [SN74HC245N\(LX\)](#)
[SN74HC00N\(LX\)](#) [ULN2803AN\(LX\)](#) [SN74LS74N](#) [CD4026BE\(LX\)](#) [SN74HC597N\(LX\)](#) [SN74LS32N](#) [SN74LS138N\(LX\)](#) [CD4021BE\(LX\)](#)
[SN74LS153N\(LX\)](#)