



SN74HC/HCT154(LX) 4-to-16 Line Decoder/Demultiplexer

Product Specification

Specification Revision History:

Version	Date	Description
2024-06-A0	2024-06	New
2024-09-A1	2024-09	Modify the parameters



Contents

1、General Description.....	1
2、Block Diagram And Pin Description	2
2.1、Block Diagram	2
2.2、Pin Configurations.....	2
2.3、Pin Description.....	2
3、Electrical Parameter	3
3.1、Absolute Maximum Ratings.....	3
3.2、Recommended Operating Conditions	4
3.3、Electrical Characteristics.....	4
3.3.1、DC Characteristics 1.....	4
3.3.2、DC Characteristics 2.....	5
3.3.3、AC Characteristics 1.....	6
3.3.4、AC Characteristics 2.....	6
4、Testing Circuit	7
4.1、DC Testing Circuit	7
4.2、AC Testing Circuit	7
4.3、AC Testing Waveforms.....	8
4.4、Measurement Points	8
5、Package Information.....	9
5.1、SOP24	9
5.2、SSOP24	10
5.3、TSSOP24.....	11
5.4、DHVQFN24	12
6、Statements And Notes	13



1、General Description

The SN74HC/HCT154 is a 4-to-16 line decoder/demultiplexer.

Features:

- Supply voltage range:
SN74HC154: 2V to 6V
SN74HCT154: 4.5 V to 5.5V
- Input levels:
SN74HC154: CMOS level
SN74HCT154: TTL level
- Temperature range: -40°C to +125°C
- Packaging information: SOP24/SSOP24/TSSOP24/DHVQFN24

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed tube quantity	Boxed reel quantity	Notes
SN74HC154PW(LX)	TSSOP24	SN74HC154	62 PCS/tube	200 tube/box	12400 PCS/box	Dimensions of plastic enclosure: 7.8mm×4.4mm Pin spacing:0.65mm
SN74HCT154PW(LX)	TSSOP24	SN74HCT154	62 PCS/tube	200 tube/box	12400 PCS/box	Dimensions of plastic enclosure: 7.8mm×4.4mm Pin spacing:0.65mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
SN74HC154DR(LX)	SOP24	SN74HC154	1000 PCS/reel	2000 PCS/box	Dimensions of plastic enclosure: 15.4mm×7.5mm Pin spacing:1.27mm
SN74HCT154DR(LX)	SOP24	SN74HCT154	1000 PCS/reel	2000 PCS/box	Dimensions of plastic enclosure: 15.4mm×7.5mm Pin spacing:1.27mm

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

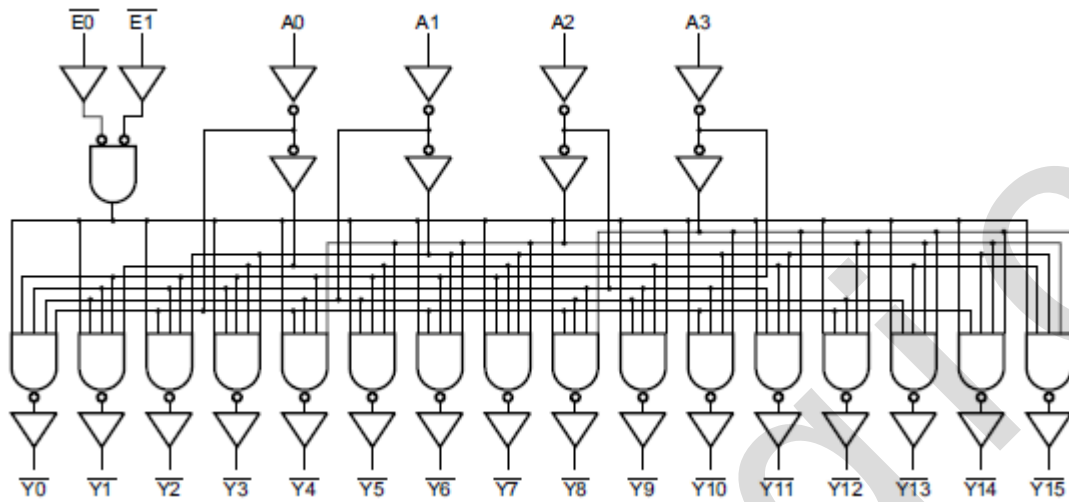
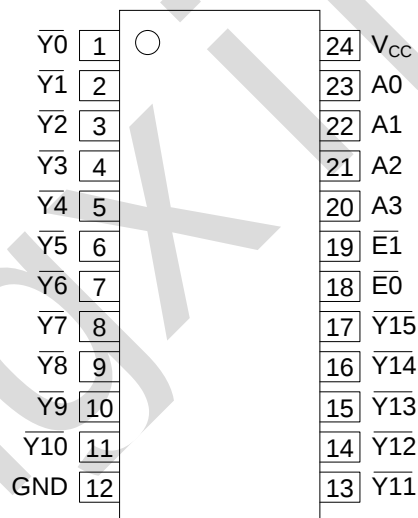


Figure 1. Functional diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17	$\overline{Y0}, \overline{Y1}, \overline{Y2}, \overline{Y3}, \overline{Y4}, \overline{Y5}, \overline{Y6}, \overline{Y7}, \overline{Y8}, \overline{Y9}, \overline{Y10}, \overline{Y11}, \overline{Y12}, \overline{Y13}, \overline{Y14}, \overline{Y15}$	data output (active LOW)
12	GND	ground (0 V)
18, 19	$\overline{E0}, \overline{E1}$	enable input (active LOW)
23, 22, 21, 20	A0, A1, A2, A3	address input
24	Vcc	supply voltage



2.4、Function Table

INPUTS						OUTPUTS															
$\bar{E}0$	$\bar{E}1$	A0	A1	A2	A3	$\bar{Y}0$	$\bar{Y}1$	$\bar{Y}2$	$\bar{Y}3$	$\bar{Y}4$	$\bar{Y}5$	$\bar{Y}6$	$\bar{Y}7$	$\bar{Y}8$	$\bar{Y}9$	$\bar{Y}10$	$\bar{Y}11$	$\bar{Y}12$	$\bar{Y}13$	$\bar{Y}14$	$\bar{Y}15$
H	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
H	L	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
		H	L	L	L	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
		L	H	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
		H	H	L	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
		L	L	H	L	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
		H	L	H	L	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H
		L	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H
		H	H	H	L	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
		L	L	L	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H
		H	L	L	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H
		L	H	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
		H	H	L	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H
		L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H
		H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H
		L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H
		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H

Note:

H = HIGH voltage level

L = LOW voltage level

X = don't care.

3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Max.	Unit
supply voltage	V_{CC}	-	-0.5	+7	V
supply current	I_{CC}	-	-	50	mA
ground current	I_{GND}	-	-50	-	mA
input clamping current	I_{IK}	$V_I < -0.5\text{V}$ or $V_I > V_{CC}+0.5\text{V}$	-	± 20	mA
output clamping current	I_{OK}	$V_O < -0.5\text{V}$ or $V_O > V_{CC}+0.5\text{V}$	-	± 20	mA
output current	I_O	$-0.5\text{V} < V_O < V_{CC}+0.5\text{V}$	-	± 25	mA
storage temperature	T_{stg}	-	-65	+150	$^{\circ}\text{C}$
soldering temperature	T_L	10s	260		$^{\circ}\text{C}$



3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
SN74HC154						
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
ambient temperature	T_{amb}	-	-40	-	+125	°C
SN74HCT154						
supply voltage	V_{CC}	-	4.5	5.0	5.5	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
ambient temperature	T_{amb}	-	-40	-	+125	°C

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

($T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
SN74HC154							
HIGH-level input voltage	V_{IH}	2.0V	-	1.5	1.2	-	V
		4.5V	-	3.15	2.4	-	V
		6.0V	-	4.2	3.2	-	V
LOW-level input voltage	V_{IL}	2.0V	-	-	0.8	0.5	V
		4.5V	-	-	2.1	1.35	V
		6.0V	-	-	2.8	1.8	V
HIGH-level output voltage	V_{OH}	2.0V	$I_O = -20\mu\text{A}$	1.9	2.0	-	V
		4.5V	$I_O = -20\mu\text{A}$	4.4	4.5	-	V
		6.0V	$I_O = -20\mu\text{A}$	5.9	6.0	-	V
		4.5V	$I_O = -4.0\text{mA}$	3.84	4.32	-	V
		6.0V	$I_O = -5.2\text{mA}$	5.34	5.81	-	V
LOW-level output voltage	V_{OL}	2.0V	$I_O = 20\mu\text{A}$	-	0	0.1	V
		4.5V	$I_O = 20\mu\text{A}$	-	0	0.1	V
		6.0V	$I_O = 20\mu\text{A}$	-	0	0.1	V
		4.5V	$I_O = 4.0\text{mA}$	-	0.15	0.33	V
		6.0V	$I_O = 5.2\text{mA}$	-	0.16	0.33	V
input leakage current	I_I	6.0V	$V_I = V_{CC}$ or GND	-	-	± 10	μA
supply current	I_{CC}	6.0V	$V_I = V_{CC}$ or GND; $I_O = 0\text{A}$	-	-	80	μA
SN74HCT154							
HIGH-level input voltage	V_{IH}	4.5V to 5.5V	-	2.0	1.6	-	V
LOW-level input voltage	V_{IL}	4.5V to 5.5V	-	-	1.2	0.8	V
HIGH-level output voltage	V_{OH}	4.5V	$I_O = -20\mu\text{A}$	4.4	4.5	-	V
			$I_O = -4.0\text{mA}$	3.84	4.32	-	V
LOW-level output voltage	V_{OL}	4.5V	$I_O = 20\mu\text{A}$	-	0	0.1	V
			$I_O = 4.0\text{mA}$	-	0.15	0.33	V



input leakage current	I_I	5.5V	$V_I = V_{CC}$ or GND	-	-	± 10	μA
supply current	I_{CC}	6.0V	$V_I = V_{CC}$ or GND; $I_O = 0A$	-	-	80	μA
additional supply current	ΔI_{CC}	4.5V to 5.5V	One input at $V_I = V_{CC} - 2.1V$; Other inputs at V_{CC} or GND; $I_O = 0A$	-	-	135	μA

3.3.2、DC Characteristics 2

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

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
SN74HC154							
HIGH-level input voltage	V_{IH}	2.0V	-	1.5	-	-	V
		4.5V	-	3.15	-	-	V
		6.0V	-	4.2	-	-	V
LOW-level input voltage	V_{IL}	2.0V	-	-	-	0.5	V
		4.5V	-	-	-	1.35	V
		6.0V	-	-	-	1.8	V
HIGH-level output voltage	V_{OH}	2.0V	$I_O = -20\mu A$	1.9	-	-	V
		4.5V	$I_O = -20\mu A$	4.4	-	-	V
		6.0V	$I_O = -20\mu A$	5.9	-	-	V
		4.5V	$I_O = -4.0mA$	3.7	-	-	V
		6.0V	$I_O = -5.2mA$	5.2	-	-	V
LOW-level output voltage	V_{OL}	2.0V	$I_O = 20\mu A$	-	-	0.1	V
		4.5V	$I_O = 20\mu A$	-	-	0.1	V
		6.0V	$I_O = 20\mu A$	-	-	0.1	V
		4.5V	$I_O = 4.0mA$	-	-	0.4	V
		6.0V	$I_O = 5.2mA$	-	-	0.4	V
input leakage current	I_I	6.0V	$V_I = V_{CC}$ or GND	-	-	± 20	μA
supply current	I_{CC}	6.0V	$V_I = V_{CC}$ or GND; $I_O = 0A$	-	-	160	μA
SN74HCT154							
HIGH-level input voltage	V_{IH}	4.5V to 5.5V	-	2.0	-	-	V
LOW-level input voltage	V_{IL}	4.5V to 5.5V	-	-	-	0.8	V
HIGH-level output voltage	V_{OH}	4.5V	$I_O = -20\mu A$	4.4	-	-	V
			$I_O = -4.0mA$	3.7	-	-	V
LOW-level output voltage	V_{OL}	4.5V	$I_O = 20\mu A$	-	-	0.1	V
			$I_O = 4.0mA$	-	-	0.4	V
input leakage current	I_I	5.5V	$V_I = V_{CC}$ or GND	-	-	± 20	μA
supply current	I_{CC}	6.0V	$V_I = V_{CC}$ or GND; $I_O = 0A$	-	-	160	μA
additional supply current	ΔI_{CC}	4.5V to 5.5V	One input at $V_I = V_{CC} - 2.1V$; Other inputs at V_{CC} or GND; $I_O = 0A$	-	-	147	μA



3.3.3、AC Characteristics 1

($T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Symbol	V _{CC}	Conditions	Min.	Typ.	Max.	Unit	
SN74HC154								
An to $\bar{Y}_n$ propagation delay	t _{PLH} , t _{PHL}	2.0V	C _L =50pF	see Figure 3	-	36	190	ns
		4.5V	C _L =50pF		-	13	38	ns
		5.0V	C _L =15pF		-	11	-	ns
		6.0V	C _L =50pF		-	10	33	ns
$\bar{E}_n$ to $\bar{Y}_n$ propagation delay		2.0V	C _L =50pF		-	39	190	ns
		4.5V	C _L =50pF		-	14	38	ns
		5.0V	C _L =15pF		-	11	-	ns
		6.0V	C _L =50pF		-	11	33	ns
transition time	t _{THL} , t _{TLH}	2.0V	C _L =50pF	-	19	95	ns	
		4.5V	C _L =50pF	-	7	19	ns	
		6.0V	C _L =50pF	-	6	16	ns	
SN74HCT154								
An to $\bar{Y}_n$ propagation delay	t _{PLH} , t _{PHL}	4.5V	C _L =50pF	see Figure 3	-	16	44	ns
		5.0V	C _L =15pF		-	13	-	ns
$\bar{E}_n$ to $\bar{Y}_n$ propagation delay		4.5V	C _L =50pF		-	15	40	ns
		5.0V	C _L =15pF		-	13	-	ns
transition time	t _{THL} , t _{TLH}	4.5V	C _L =50pF	-	7	19	ns	

3.3.4、AC Characteristics 2

($T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Symbol	V _{CC}	Conditions	Min.	Typ.	Max.	Unit	
SN74HC154								
A _n to $\bar{Y}_n$ propagation delay	t _{PLH} , t _{PHL}	2.0V	C _L =50pF	see Figure 3	-	-	225	ns
		4.5V	C _L =50pF		-	-	45	ns
		6.0V	C _L =50pF		-	-	38	ns
$\bar{E}_n$ to $\bar{Y}_n$ propagation delay		2.0V	C _L =50pF		-	-	225	ns
		4.5V	C _L =50pF		-	-	45	ns
		6.0V	C _L =50pF		-	-	38	ns
transition time	t _{THL} , t _{TLH}	2.0V	C _L =50pF		-	-	110	ns
		4.5V	C _L =50pF		-	-	22	ns
		6.0V	C _L =50pF		-	-	19	ns
SN74HCT154								
A _n to $\bar{Y}_n$ propagation delay	t _{PLH} , t _{PHL}	4.5V	C _L =50pF	see Figure 3	-	-	53	ns
$\bar{E}_n$ to $\bar{Y}_n$ propagation delay		4.5V	C _L =50pF		-	-	48	ns
transition time	t _{THL} , t _{TLH}	4.5V	C _L =50pF		-	-	22	ns

4、Testing Circuit

4.1、DC Testing Circuit

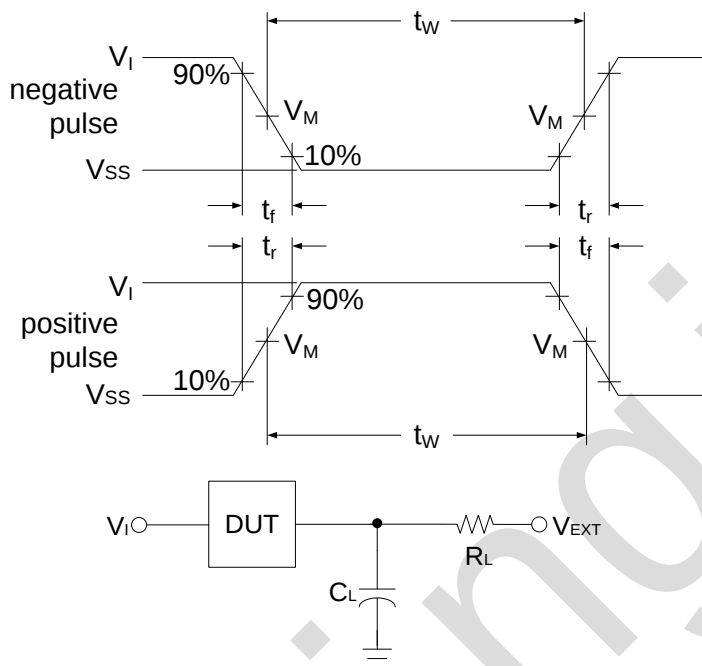


Figure 2. Load circuit

C_L includes probe and jig capacitance.

4.2、AC Testing Circuit

Type	Input		Load		V_{EXT}		
	V_I	$t_r = t_f$	C_L	R_L	t_{PLH}/t_{PHL}	t_{PLZ}/t_{PZL}	t_{PHZ}/t_{PZH}
SN74HC154	V_{CC}	3.0ns	15pF, 50pF	1K Ω	Open	V_{CC}	GND
SN74HCT154	3.0V	3.0ns	15pF, 50pF	1K Ω	Open	V_{CC}	GND

4.3、AC Testing Waveforms

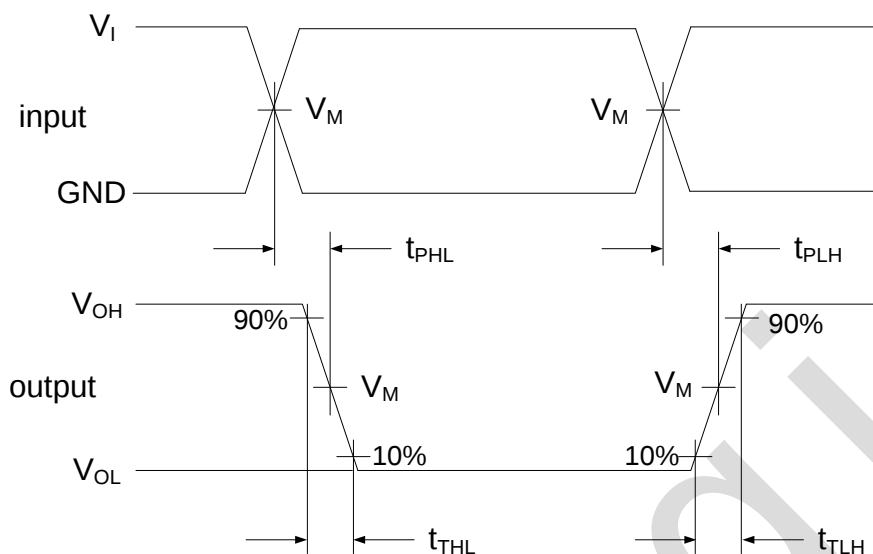


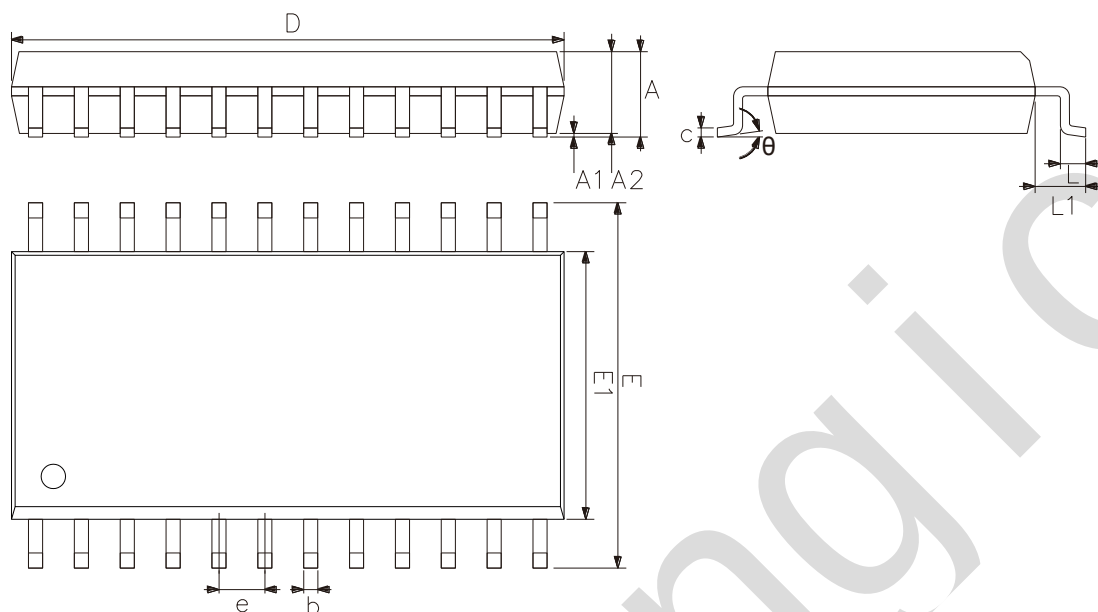
Figure 3 Propagation delay, output transition time

4.4、Measurement Points

Type	Input	Output
	V_M	V_M
SN74HC154	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$
SN74HCT154	1.3V	1.3V

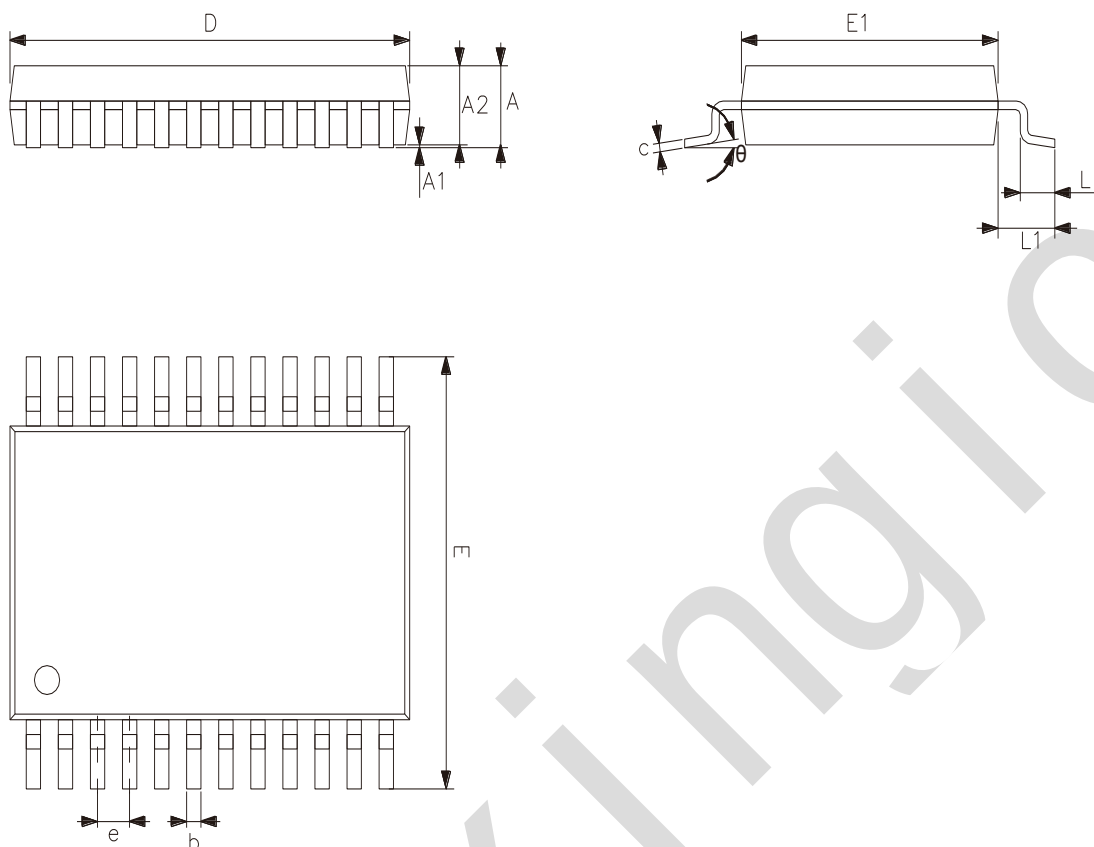
5、Package Information

5.1、SOP24



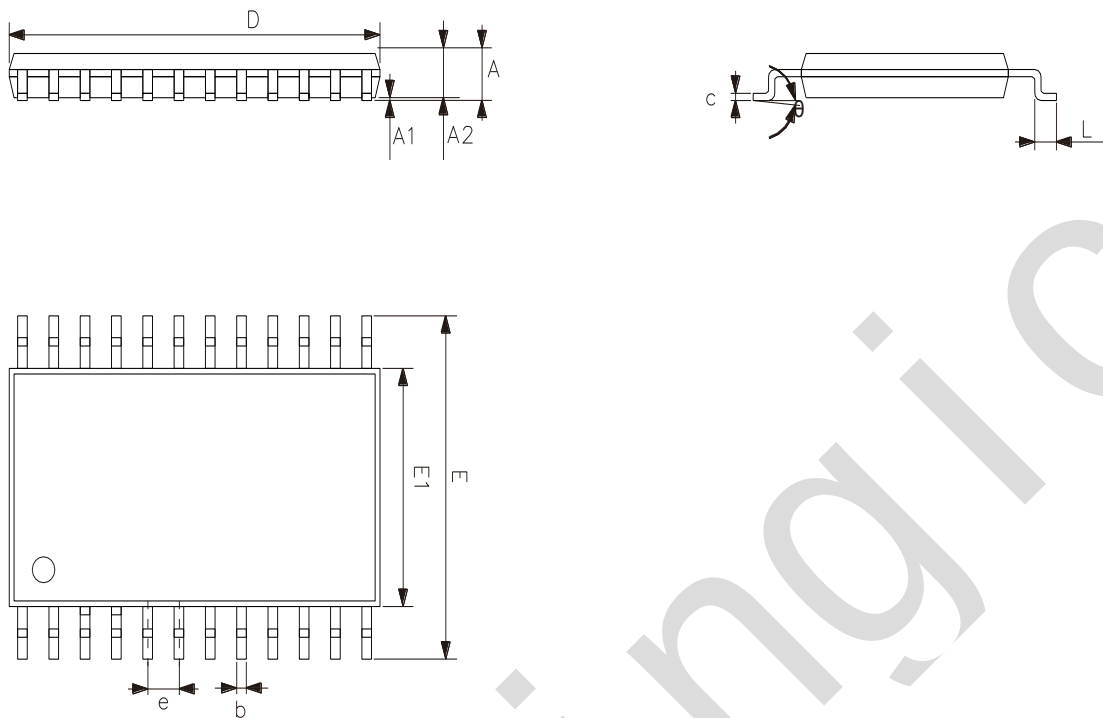
2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	2.35	2.65
A1	0.10	0.30
A2	2.13	2.44
b	0.39	0.47
c	0.25	0.30
D	15.19	15.55
E	10.10	10.57
E1	7.40	7.62
e	1.27	
L	0.41	1.00
L1	1.30	1.50
θ	0°	8°

5.2、SSOP24



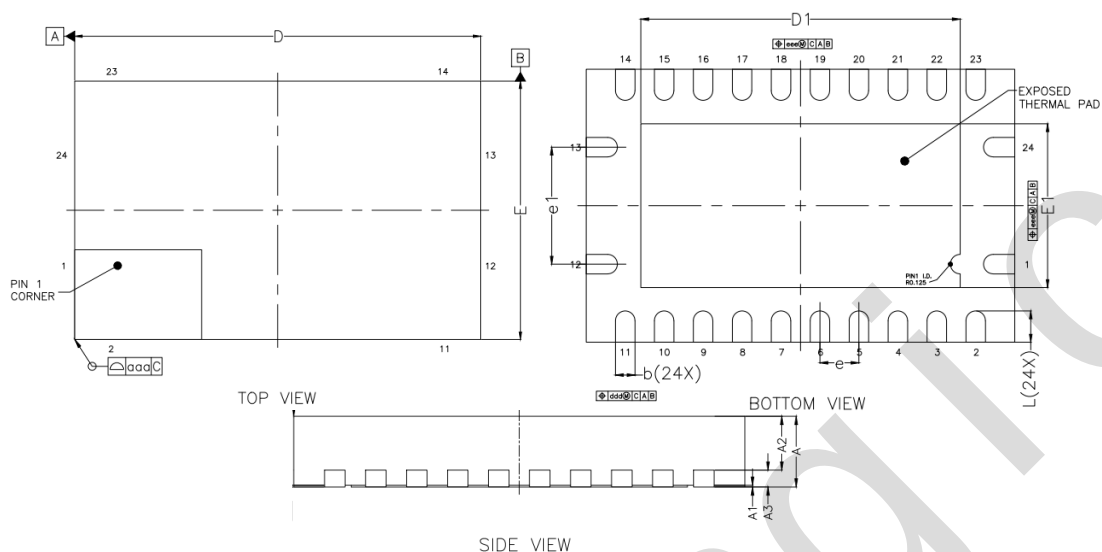
2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	1.60	2.00
A1	0.05	0.25
A2	1.40	1.85
b	0.28	0.37
c	0.15	0.20
D	8.00	8.40
E	7.60	8.00
E1	5.10	5.50
e	0.65	
L	0.55	1.10
L1	1.15	1.35
θ	0°	8°

5.3、TSSOP24



2023/12/A	Dimensions In Millimeters	
Symbol	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	7.70	7.90
E	6.20	6.60
E1	4.30	4.50
e	0.65	
L	0.45	0.75
θ	0°	8°

5.4、DHVQFN24



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	0.80	1.00
A1	0.00	0.05
A2	0.60	0.70
A3	0.20	
D	5.40	5.60
E	3.40	3.60
e	0.50	
e1	1.50	
b	0.18	0.30
L	0.30	0.50
D1	3.95	4.25
E1	1.95	2.25



6、Statements And Notes

Recommended carefully reading this information before the use of this product;

The information in this document are subject to change without notice;

This information is using to the reference only, the company is not responsible for any loss;

The company is not responsible for the any infringement of the third party patents or other rights of the responsibility.