



AiP74LVT/LVTH16240

16-Bit Inverting Buffer/Driver; 3-State

Product Specification

Specification Revision History:

Version	Date	Description
2025-08-A0	2025-08	New
2025-12-A1	2025-12	Modify the parameters



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1、General Description

The AiP74LVT16240; AiP74LVTH16240 is an inverting 16-bit buffer that is ideal for driving bus lines.

Features:

- Wide supply voltage range from 2.7V to 3.6V
- Output capability: +64mA and -32mA
- Specified from -40°C to +125°C
- Packaging information: TSSOP48

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74LVT16240 TA48.TR	TSSOP48	74LVT16240	2000 PCS/reel	2000 PCS/box	Dimensions of plastic enclosure: 12.5mm×6.1mm Pin spacing: 0.5mm
AiP74LVTH16240 TA48.TR	TSSOP48	74LVTH16240	2000 PCS/reel	2000 PCS/box	Dimensions of plastic enclosure: 12.5mm×6.1mm Pin spacing: 0.5mm

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

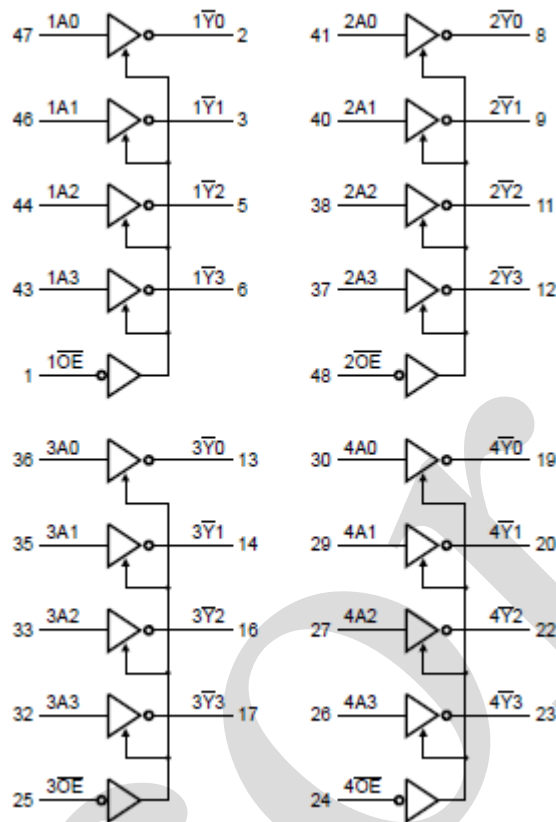


Figure 1. Logic symbol

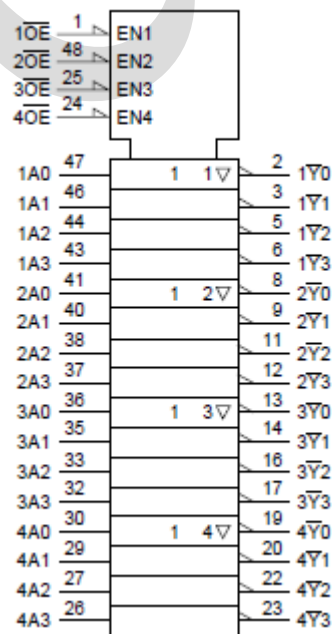
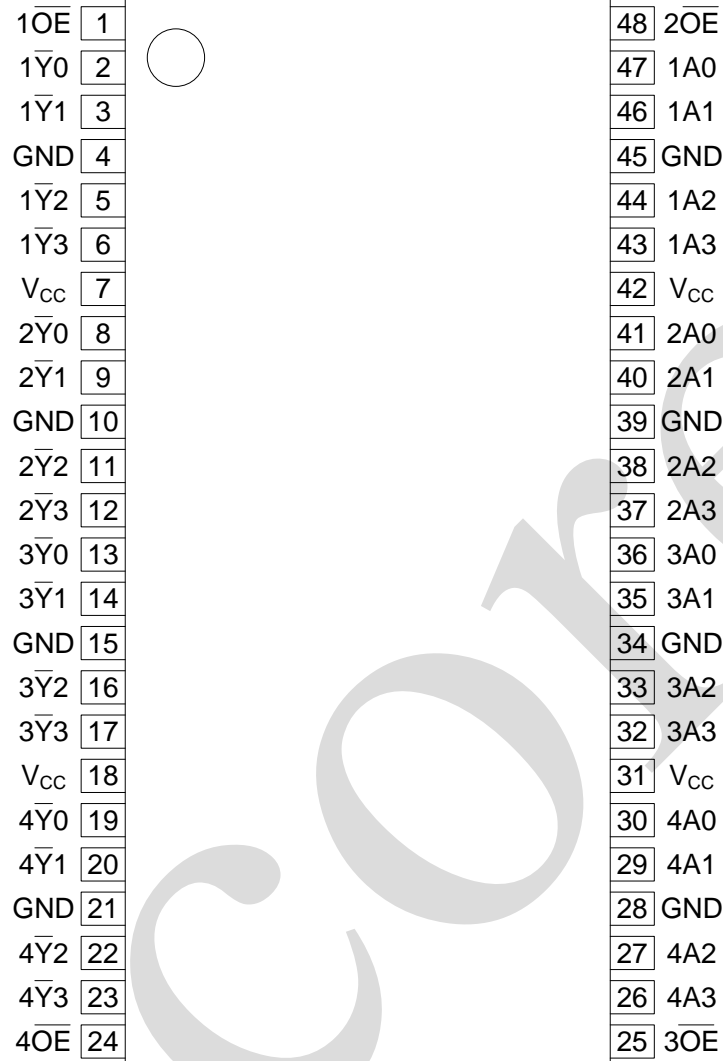


Figure 2. IEC logic symbol



2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1,48,25,24	1OE,2OE,3OE,4OE	output enable input (active LOW)
2,3,5,6	1Y0,1Y1,1Y2,1Y3	data outputs
8,9,11,12	2Y0,2Y1,2Y2,2Y3	data outputs
13,14,16,17	3Y0,3Y1,3Y2,3Y3	data outputs
19,20,22,23	4Y0,4Y1,4Y2,4Y3	data outputs
4,10,15,21,28,34,39,45	GND	ground (0V)
7,18,31,42	V _{cc}	supply voltage
47,46,44,43	1A0,1A1,1A2,1A3	data inputs
41,40,38,37	2A0,2A1,2A2,2A3	data inputs
36,35,33,32	3A0,3A1,3A2,3A3	data inputs
30,29,27,26	4A0,4A1,4A2,4A3	data inputs



2.4、Function Table

Control	Input	Output
$\overline{\text{nOE}}$	$\overline{\text{nAn}}$	$\overline{\text{nYn}}$
L	L	H
L	H	L
H	X	Z

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care; Z=high-impedance OFF-state.

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	+4.6	V
input voltage	V_I	-	-0.5	+7.0	V
output voltage	V_O	output in OFF-state or HIGH-state	-0.5	+7.0	V
input clamping current	I_{IK}	$V_I < 0V$	-50	-	mA
output clamping current	I_{OK}	$V_O < 0V$	-50	-	mA
output current	I_O	output in LOW-state	-	128	mA
		output in HIGH-state	-64	-	mA
storage temperature	T_{stg}	-	-65	+150	°C
junction temperature	T_j	-	-	150	°C
soldering temperature	T_L	10s	260		°C
electrostatic discharge	ESD	HBM	3000		V

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{CC}	-	2.7	-	3.6	V
input voltage	V_I	-	0	-	5.5	V
ambient temperature	T_{amb}	in free-air	-40	-	+125	°C



3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
input clamping voltage	V_{IK}	$V_{CC}=2.7\text{V}; I_{IK}=-18\text{mA}$	-1.2	-0.85	-	V	
HIGH-level input voltage	V_{IH}	$V_{CC}=3.3\text{V}$	2.0	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=3.3\text{V}$	-	-	0.8	V	
HIGH-level output voltage	V_{OH}	$I_{OH}=-100\mu\text{A}; V_{CC}=2.7\text{V}$ to 3.6V	$V_{CC}-0.2$	V_{CC}	-	V	
		$I_{OH}=-8\text{mA}; V_{CC}=2.7\text{V}$	2.4	2.5	-	V	
		$I_{OH}=-32\text{mA}; V_{CC}=3.0\text{V}$	2.0	2.3	-	V	
LOW-level output voltage	V_{OL}	$V_{CC}=2.7\text{V}$	$I_{OL}=100\mu\text{A}$	-	0.07	0.2	V
			$I_{OL}=24\text{mA}$	-	0.3	0.5	V
		$V_{CC}=3.0\text{V}$	$I_{OL}=16\text{mA}$	-	0.25	0.4	V
			$I_{OL}=32\text{mA}$	-	0.3	0.5	V
			$I_{OL}=64\text{mA}$	-	0.4	0.55	V
input leakage current	I_I	all input pins; $V_{CC}=0\text{V}$ or $3.6\text{V}; V_I=5.5\text{V}$	-	-	10	μA	
		control pins; $V_{CC}=3.6\text{V};$ $V_I=V_{CC}$ or GND	-	-	± 1.0	μA	
		data pins; $V_{CC}=3.6\text{V}$	$V_I=V_{CC}$	-	-	1	μA
			$V_I=0\text{V}$	-5	-	-	μA
power-off leakage current	I_{OFF}	$V_{CC}=0\text{V};$ V_I or $V_O=0\text{V}$ to 4.5V	-	-	± 100	μA	
bus hold LOW current	I_{BHL}	$V_{CC}=3\text{V}; V_I=0.8\text{V}$	75	135	-	μA	
bus hold HIGH current	I_{BHH}	$V_{CC}=3\text{V}; V_I=2.0\text{V}$	-	-135	-75	μA	
bus hold LOW overdrive current	I_{BHLO}	nAn input; $V_{CC}=0\text{V}$ to $3.6\text{V};$ $V_I=3.6\text{V}$	500	-	-	μA	
bus hold HIGH overdrive current	I_{BHHO}	nAn input; $V_{CC}=0\text{V}$ to $3.6\text{V};$ $V_I=3.6\text{V}$	-	-	-500	μA	
output leakage current	I_{LO}	output in HIGH-state when $V_O>V_{CC};$ $V_O=5.5\text{V}; V_{CC}=3.0\text{V}$	-	-	125	μA	
power-up/ power-down output current	$I_{O(pu/pd)}$	$V_{CC}\leq 1.2\text{V}; V_O=0.5\text{V}$ to $V_{CC};$ $V_I=\text{GND}$ or $V_{CC};$ nOE = don't care	-	-	± 100	μA	
OFF-state output current	I_{OZ}	$V_{CC}=3.6\text{V};$ $V_I=V_{IH}$ or V_{IL}	output HIGH: $V_O=3.0\text{V}$	-	-	5	μA
			output LOW: $V_O=0.5\text{V}$	-5	-	-	μA



supply current	I _{CC}	V _{CC} =3.6V; V _I =GND or V _{CC} ; I _O =0A	output HIGH	-	-	0.12	mA
			output LOW	-	-	0.12	mA
			outputs disabled	-	-	0.12	mA
additional supply current	ΔI _{CC}	per input pin; V _{CC} =3.0V to 3.6V; one input at V _{CC} -0.6V, other inputs at V _{CC} or GND	-	-	0.3	mA	

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
input clamping voltage	V _{IK}	V _{CC} =2.7V; I _{IK} =-18mA	-1.2	-	-	V	
HIGH-level input voltage	V _{IH}	V _{CC} =3.3V	2.0	-	-	V	
LOW-level input voltage	V _{IL}	V _{CC} =3.3V	-	-	0.8	V	
HIGH-level output voltage	V _{OH}	I _{OH} =-100uA; V _{CC} =2.7V to 3.6V	V _{CC} -0.2	-	-	V	
		I _{OH} =-8mA; V _{CC} =2.7V	2.4	-	-	V	
		I _{OH} =-32mA; V _{CC} =3.0V	2.0	-	-	V	
LOW-level output voltage	V _{OL}	V _{CC} =2.7V	I _{OL} =100uA	-	-	0.2	V
			I _{OL} =24mA	-	-	0.5	V
		V _{CC} =3.0V	I _{OL} =16mA	-	-	0.4	V
			I _{OL} =32mA	-	-	0.5	V
			I _{OL} =64mA	-	-	0.55	V
input leakage current	I _I	all input pins; V _{CC} =0V or 3.6V; V _I =5.5V	-	-	10	uA	
		control pins; V _{CC} =3.6V; V _I =V _{CC} or GND	-	-	±10	uA	
		data pins; V _{CC} =3.6V	V _I =V _{CC}	-	-	10	uA
		V _I =0V	-10	-	-	uA	
power-off leakage current	I _{OFF}	V _{CC} =0V; V _I or V _O =0V to 4.5V	-	-	±100	uA	
bus hold LOW current	I _{BHL}	V _{CC} =3V; V _I =0.8V	75	-	-	uA	
bus hold HIGH current	I _{BHH}	V _{CC} =3V; V _I =2.0V	-	-	-75	uA	
bus hold LOW overdrive current	I _{BHLO}	nAn input; V _{CC} =0V to 3.6V; V _I =3.6V	500	-	-	uA	
bus hold HIGH overdrive current	I _{BHHO}	nAn input; V _{CC} =0V to 3.6V; V _I =3.6V	-	-	-500	uA	
output leakage current	I _{LO}	output in HIGH-state when V _O >V _{CC} ; V _O =5.5V; V _{CC} =3.0V	-	-	125	uA	



power-up/ power-down output current	$I_{O(pu/pd)}$	$V_{CC} \leq 1.2V$; $V_O = 0.5V$ to V_{CC} ; $V_I = GND$ or V_{CC} ; $\overline{nOE} = \text{don't care}$	-	-	± 100	μA	
OFF-state output current	I_{OZ}	$V_{CC} = 3.6V$; $V_I = V_{IH}$ or V_{IL}	output HIGH: $V_O = 3.0V$	-	-	10	μA
			output LOW: $V_O = 0.5V$	-10	-	-	μA
supply current	I_{CC}	$V_{CC} = 3.6V$; $V_I = GND$ or V_{CC} ; $I_O = 0A$	output HIGH	-	-	0.25	mA
			output LOW	-	-	0.25	mA
			outputs disabled	-	-	0.25	mA
		$V_{CC} = 3.6V$; $V_I = GND$ or V_{CC} ; $I_O = 0A$	output HIGH	-	-	0.4	mA
			output LOW	-	-	0.4	mA
			outputs disabled	-	-	0.4	mA
additional supply current	ΔI_{CC}	per input pin; $V_{CC} = 3.0V$ to $3.6V$; one input at $V_{CC} - 0.6V$, other inputs at V_{CC} or GND	-	-	0.6	mA	



3.3.3、AC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
LOW to HIGH propagation delay	t_{PLH}	$n\bar{A}n$ to $n\bar{Y}n$; see Figure 4	$V_{CC}=2.7\text{V}$	-	-	5.6	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	4.5	ns
HIGH to LOW propagation delay	t_{PHL}	$n\bar{A}n$ to $n\bar{Y}n$; see Figure 4	$V_{CC}=2.7\text{V}$	-	-	5.6	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	4.5	ns
OFF-state to HIGH propagation delay	t_{PZH}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	7.0	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	5.6	ns
OFF-state to LOW propagation delay	t_{PZL}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	7.4	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	5.6	ns
HIGH to OFF-state propagation delay	t_{PHZ}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	7.0	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	6.3	ns
LOW to OFF-state propagation delay	t_{PLZ}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	6.2	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	5.6	ns

3.3.4、AC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
LOW to HIGH propagation delay	t_{PLH}	$n\bar{A}n$ to $n\bar{Y}n$; see Figure 4	$V_{CC}=2.7\text{V}$	-	-	6.7	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	5.3	ns
HIGH to LOW propagation delay	t_{PHL}	$n\bar{A}n$ to $n\bar{Y}n$; see Figure 4	$V_{CC}=2.7\text{V}$	-	-	6.7	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	5.3	ns
OFF-state to HIGH propagation delay	t_{PZH}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	8.4	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	6.7	ns
OFF-state to LOW propagation delay	t_{PZL}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	9.0	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	6.7	ns
HIGH to OFF-state propagation delay	t_{PHZ}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	8.4	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	7.6	ns
LOW to OFF-state propagation delay	t_{PLZ}	$n\bar{O}E$ to $n\bar{Y}n$; see Figure 5	$V_{CC}=2.7\text{V}$	-	-	7.4	ns
			$V_{CC}=3.0\text{V}$ to 3.6V	-	-	6.7	ns



4、Testing Circuit

4.1、AC Testing Circuit

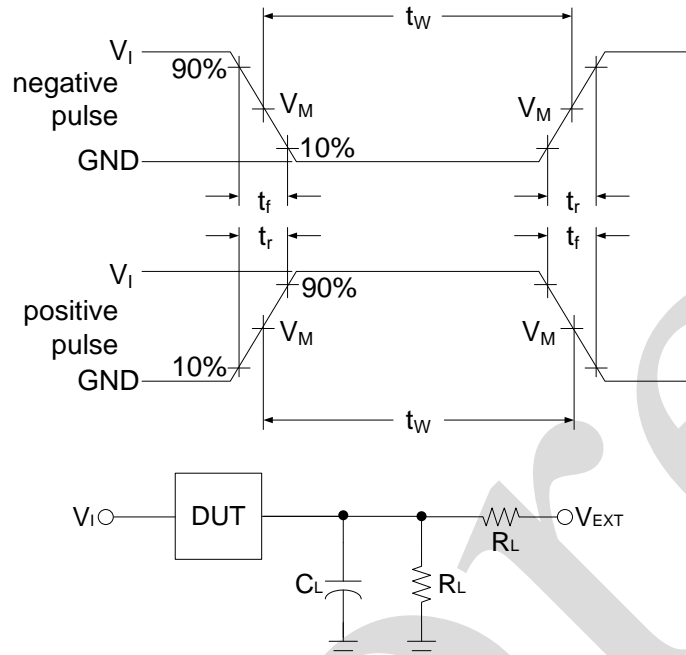


Figure 3. Test circuit for measuring switching times

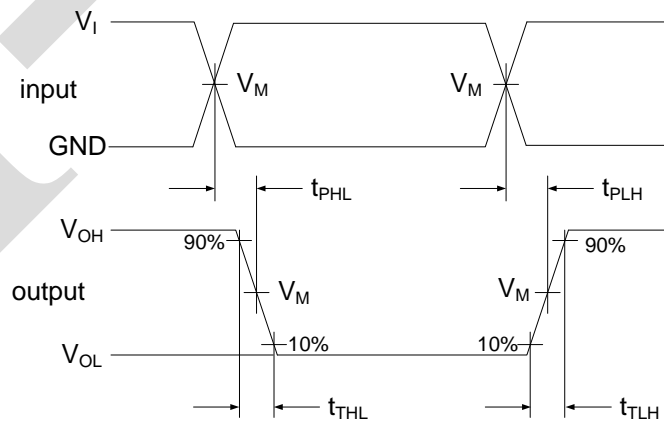
C_L includes probe and jig capacitance.

R_L =Load resistance.

4.2、Test Data

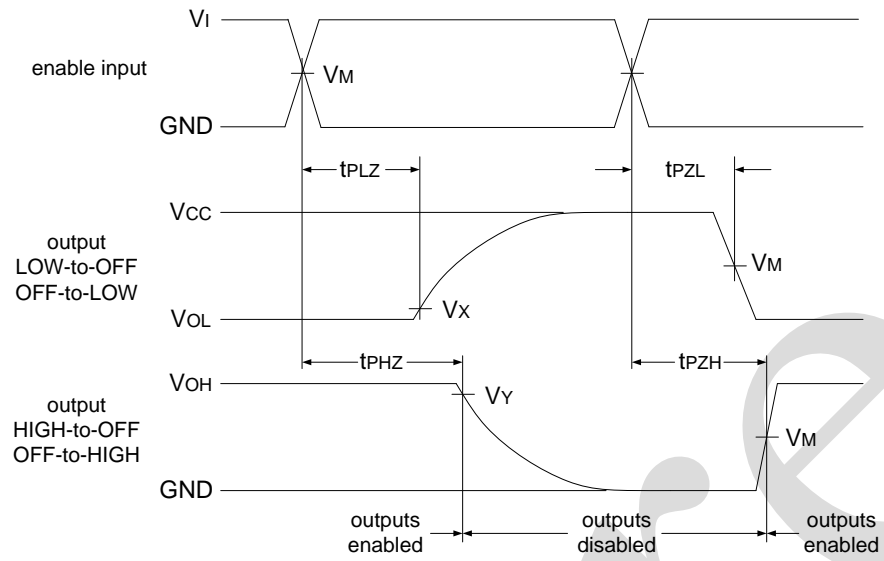
Supply voltage	Input		Load		V_{EXT}		
	V_I	$t_r = t_f$	C_L	R_L	t_{PLH}/t_{PHL}	t_{PLZ}/t_{PZL}	t_{PHZ}/t_{PZH}
2.7V to 3.6V	V_{CC}	$\leq 3ns$	50pF	500 Ω	Open	$2 \times V_{CC}$	GND

4.3、AC Testing Waveforms



V_{OL} and V_{OH} are typical voltage output levels that occur with the output load.

Figure 4. Propagation delay input (nAn) to output (nYn)



V_{OL} and V_{OH} are typical voltage output levels that occur with the output load.

Figure 5. 3-state output enable and disable times

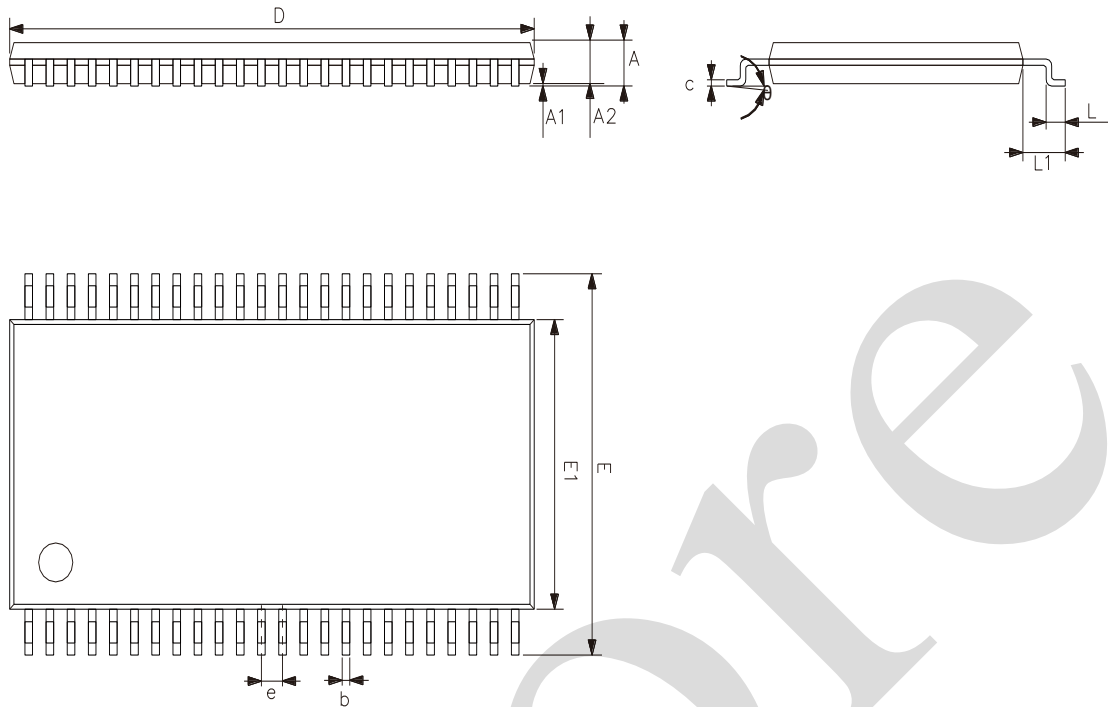
4.4. Measurement Points

Input	Output		
V_M	V_M	V_X	V_Y
$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL}+0.3V$	$V_{OH}-0.3V$



5、Package Information

5.1、TSSOP48



2023/12/A	Dimensions In Millimeters		
	Symbol	Min	Max
A	—		1.20
A1	0.03		0.15
A2	0.82		1.05
b	0.17		0.27
c	0.12		0.22
D	12.40		12.60
E	7.90		8.30
E1	6.00		6.20
e	0.50		
L	0.35		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.

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