AiP74LVC2G240
Dual Inverting Buffer/Line Driver；3-state

Product Specification

Specification Revision History：

Version	Date	Description
2025-08-A0	2025-08	New
2025-09-A1	2025-09	Modify the parameters

Contents

1、General Description

The AiP74LVC2G240 is a dual inverting buffer/line driver with 3-state outputs.
The input can be driven from either 3.3V or 5V devices. This feature allows the use of these devices as translators in mixed 3.3V and 5V environment

Features:

- Wide supply voltage range from 1.65V to 5.5V
- Inputs accept voltages to 5.5 V
- ±24mA output drive at 3.0V
- High-impedance when V_{CC}=0V
- Temperature range:-40℃ to +125℃
- Packaging information: TSSOP8/VSSOP8/XSON8

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74LVC2G240TA8.TR	TSSOP8	AiPHW 2G240	3000 PCS/reel	3000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm
AiP74LVC2G240YA8.TR	VSSOP8	AiP HWXX	3000 PCS/reel	3000 PCS/box	Dimensions of plastic enclosure: 2.0mm×2.3mm Pin spacing: 0.50mm
AiP74LVC2G240EB8.TR	XSON8	HW XX	5000 PCS/reel	25000 PCS/box	Dimensions of plastic enclosure: 1.35mm×1.0mm Pin spacing: 0.35mm

Note 1: “XX” refers to variable content, meaning year and package batch serial number.
Note 2: 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

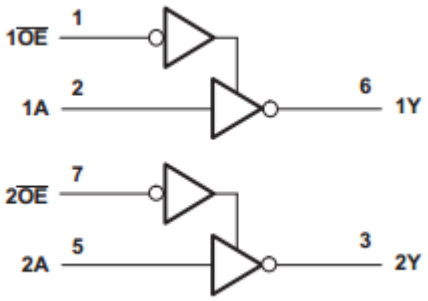
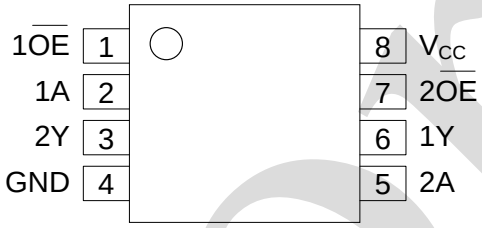


Figure 1. Logic symbol

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	$1\overline{OE}$	output enable input(active LOW)
2	1A	data input
3	2Y	data output
4	GND	ground (0V)
5	2A	data input
6	1Y	data output
7	$2\overline{OE}$	output enable input(active LOW)
8	V_{CC}	supply voltage

2.4、Function Table

Input		Output
$n\overline{OE}$	nA	nY
L	L	H
L	H	L
H	X	Z

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

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	+6.5	V
input voltage	V_I	-	-0.5	+6.5	V
output voltage	V_O	Active mode	-0.5	V_{CC}+0.5	V
		Power-down mode; V_{CC}=0V	-0.5	+6.5	V
supply current	I_{CC}	-	-	100	mA
ground current	I_{GND}	-	-100	-	mA
input clamping current	I_{IK}	V_I < 0V	-50	-	mA
output current	I_O	V_O=0V to V_{CC}	-	±50	mA
output clamping current	I_{OK}	V_O > V_{CC} or V_O < 0V	-	±50	mA
storage temperature	T_{stg}	-	-65	+150	℃
soldering temperature	T_L	10s	260		℃

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{CC}	-	1.65	-	5.5	V
input voltage	V_I	-	0	-	5.5	V
output voltage	V_O	-	0	-	V_{CC}	V
ambient temperature	T_{amb}	-	-40	-	+125	℃

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

(T_{amb}=-40℃ to +85℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Vcc	Conditions	Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	1.65V to 1.95V	-	0.65Vcc	-	5.5	V
		2.3V to 2.7V	-	1.7	-	-	V
		3V to 3.6V	-	2	-	-	V
		4.5V to 5.5V	-	0.7Vcc	-	-	V
LOW-level input voltage	V_{IL}	1.65V to 1.95V	-	-	-	0.35Vcc	V
		2.3V to 2.7V	-	-	-	0.7	V
		3V to 3.6V	-	-	-	0.8	V
		4.5V to 5.5V	-	-	-	0.3Vcc	V
HIGH-level output voltage	V_{OH}	1.65V to 5.5V	I_O=-100uA	V_{CC}-0.1	-	-	V
		1.65V	I_O=-4mA	1.2	-	-	V
		2.3V	I_O=-8mA	1.9	-	-	V
		2.7V	I_O=-12mA	2.4	-	-	V
		3.0V	I_O=-24mA	2.3	-	-	V
		4.5V	I_O=-32mA	3.8	-	-	V
LOW-level output voltage	V_{OL}	1.65V to 5.5V	I_O=100uA	-	-	0.10	V
		1.65V	I_O=4mA	-	-	0.45	V
		2.3V	I_O=8mA	-	-	0.30	V
		2.7V	I_O=12mA	-	-	0.40	V
		3.0V	I_O=24mA	-	-	0.55	V
		4.5V	I_O=32mA	-	-	0.55	V
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	±0.1	±1	uA
OFF-state output current	I_{OZ}	3.6V	V_I=V_{IH} or V_{IL}; V_O=5.5V or GND	-	±0.1	±2	uA
power-off leakage current	I_{OFF}	0V	V_I or V_O=5.5V	-	±0.1	±2	uA
supply current	I_{CC}	1.65V to 5.5V	V_I=V_{CC} or GND; I_O=0A	-	0.1	4	uA
additional supply current	ΔI_{CC}	2.3V to 5.5V	per input pin; V_I= V_{CC}-0.6V; I_O=0A	-	5	500	uA

Note: All typical values are measured at T_{amb}=25℃.

3.3.2、DC Characteristics 2

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

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	1.65V to 1.95V	-	0.65Vcc	-	5.5	V
		2.3V to 2.7V	-	1.7	-	-	V
		3V to 3.6V	-	2	-	-	V
		4.5V to 5.5V	-	0.7Vcc	-	-	V
LOW-level input voltage	V_{IL}	1.65V to 1.95V	-	-	-	0.35Vcc	V
		2.3V to 2.7V	-	-	-	0.7	V
		3V to 3.6V	-	-	-	0.8	V
		4.5V to 5.5V	-	-	-	0.3Vcc	V
HIGH-level output voltage	V_{OH}	1.65V to 5.5V	I_O=-100uA	V_{CC}-0.1	-	-	V
		1.65V	I_O=-4mA	0.95	-	-	V
		2.3V	I_O=-8mA	1.7	-	-	V
		2.7V	I_O=-12mA	1.9	-	-	V
		3.0V	I_O=-24mA	2.0	-	-	V
		4.5V	I_O=-32mA	3.4	-	-	V
LOW-level output voltage	V_{OL}	1.65V to 5.5V	I_O=100uA	-	-	0.10	V
		1.65V	I_O=4mA	-	-	0.70	V
		2.3V	I_O=8mA	-	-	0.45	V
		2.7V	I_O=12mA	-	-	0.60	V
		3.0V	I_O=24mA	-	-	0.80	V
		4.5V	I_O=32mA	-	-	0.80	V
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	±1	uA
OFF-state output current	I_{OZ}	3.6V	V_I=V_{IH} or V_{IL}; V_O=5.5V or GND	-	-	±2	uA
power-off leakage current	I_{OFF}	0V	V_I or V_O=5.5V	-	-	±2	uA
supply current	I_{CC}	1.65V to 5.5V	V_I=5.5V or GND; I_O=0A	-	-	4	uA
additional supply current	ΔI_{CC}	2.3V to 5.5V	one input at V_{CC}-0.6V; I_O=0A	-	-	500	uA

3.3.3、AC Characteristics 1

(T_{amb}=-40℃ to +85℃, voltages are referenced to GND (ground = 0V), unless otherwise specified.)

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
nA to nY propagation delay	t_{pd}	1.65V to 1.95V	see Figure 3	1	4.1	9.5	ns
		2.3V to 2.7V		0.5	2.6	5.2	ns
		2.7V		1	3	5.5	ns
		3V to 3.6V		0.5	2.5	4.6	ns
		4.5V to 5.5V		0.5	2	4	ns
$n\overline{OE}$ to nY enable time	t_{en}	1.65V to 1.95V	see Figure 4	1.5	4.5	10.3	ns
		2.3V to 2.7V		1	2.9	5.6	ns
		2.7V		1.5	3.4	5.6	ns
		3V to 3.6V		0.5	2.5	4.7	ns
		4.5V to 5.5V		0.5	2	3.8	ns
$n\overline{OE}$ to nY disable time	t_{dis}	1.65V to 1.95V	see Figure 4	1	3.5	11.6	ns
		2.3V to 2.7V		0.5	1.9	5.8	ns
		2.7V		1	2.8	4.5	ns
		3V to 3.6V		1	2.7	4.4	ns
		4.5V to 5.5V		0.5	1.9	3.4	ns

Note: Typical values are measured at T_{amb}=25℃ and V_{CC}=1.8V, 2.5V, 2.7V, 3.3V and 5.0V respectively.

3.3.4、AC Characteristics 2

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

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
nA to nY propagation delay	t_{pd}	1.65V to 1.95V	see Figure 3	1	-	11.9	ns
		2.3V to 2.7V		0.5	-	6.5	ns
		2.7V		1		6.9	ns
		3V to 3.6V		0.5	-	5.8	ns
		4.5V to 5.5V		0.5	-	5	ns
$n\overline{OE}$ to nY enable time	t_{en}	1.65V to 1.95V	see Figure 4	1.5	-	12.9	ns
		2.3V to 2.7V		1	-	7	ns
		2.7V		1.5		7	ns
		3V to 3.6V		0.5	-	5.9	ns
		4.5V to 5.5V		0.5	-	4.8	ns
$n\overline{OE}$ to nY disable time	t_{dis}	1.65V to 1.95V	see Figure 4	1	-	14.1	ns
		2.3V to 2.7V		0.5	-	7.6	ns
		2.7V		1		5.8	ns
		3V to 3.6V		1	-	5.7	ns
		4.5V to 5.5V		0.5	-	4.6	ns

4、Testing Circuit

4.1、AC Testing Circuit

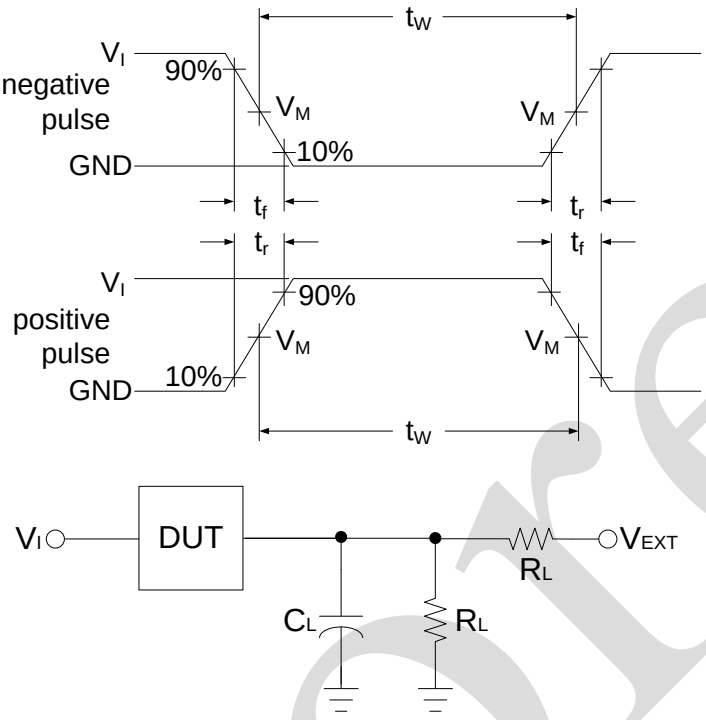


Figure 2. AC Testing Circuit

Definitions for test circuit:

R_L=Load resistance.

C_L=Load capacitance including jig and probe capacitance.

4.2、Test Data

Supply voltage	Input		Load		V_{EXT}		
V_{CC}	V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}	t_{PLZ}, t_{PZL}	t_{PHZ}, t_{PZH}
1.65V to 1.95V	V_{CC}	≤ 2ns	30pF	1kΩ	open	2×V_{CC}	GND
2.3V to 2.7V	V_{CC}	≤ 2ns	30pF	500Ω	open	2×V_{CC}	GND
2.7V	2.7V	≤ 2.5ns	50pF	500Ω	open	6V	GND
3V to 3.6V	2.7V	≤ 2.5ns	50pF	500Ω	open	6V	GND
4.5V to 5.5V	V_{CC}	≤ 2.5ns	50pF	500Ω	open	2×V_{CC}	GND

4.3、AC Testing Waveforms

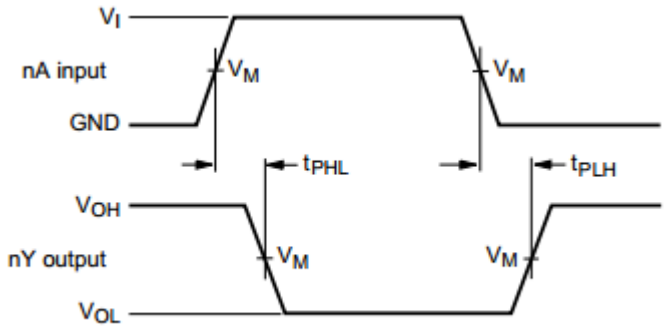


Figure 3. The data input (nA) to output (nY) propagation delays

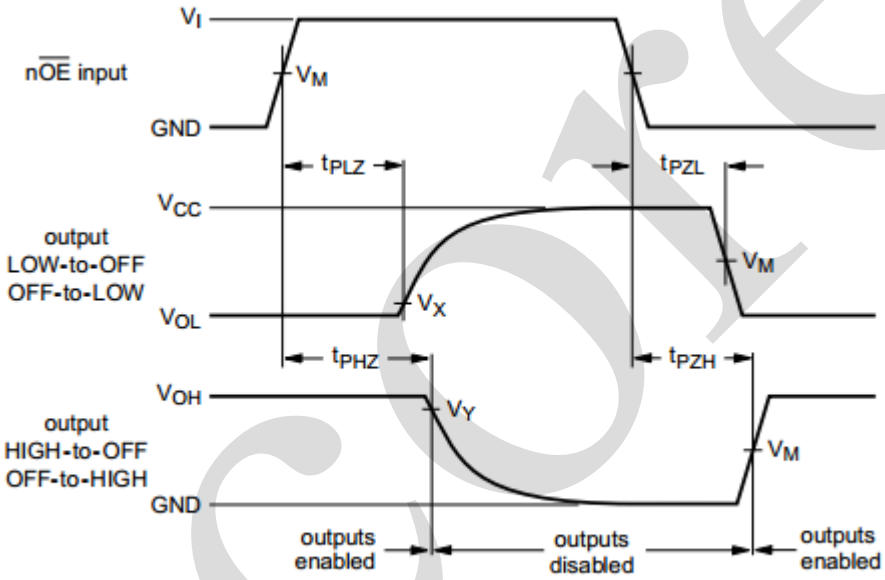


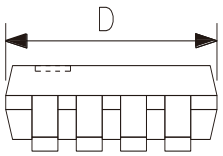
Figure 4. enable and disable times for input ($n\overline{OE}$)

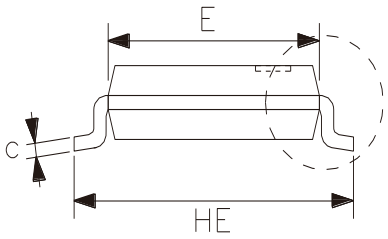
4.4、Measurement Points

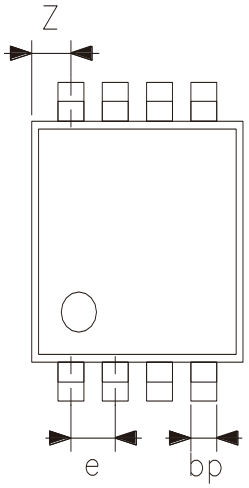
Supply voltage	Input	Output		
V_{CC}	V_M	V_M	V_X	V_Y
1.65V to 1.95V	$0.5\times V_{CC}$	$0.5\times V_{CC}$	V_{OL}+0.15V	V_{OH}-0.15V
2.3V to 2.7V	$0.5\times V_{CC}$	$0.5\times V_{CC}$	V_{OL}+0.15V	V_{OH}-0.15V
2.7V	1.5V	1.5V	V_{OL}+0.3V	V_{OH}-0.3V
3V to 3.6V	1.5V	1.5V	V_{OL}+0.3V	V_{OH}-0.3V
4.5V to 5.5V	$0.5\times V_{CC}$	$0.5\times V_{CC}$	V_{OL}+0.3V	V_{OH}-0.3V

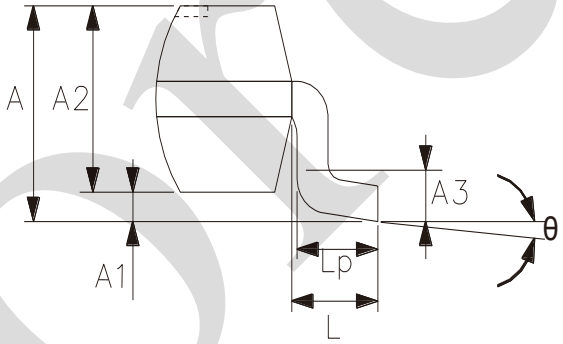
5、Package Information

5.1、TSSOP8



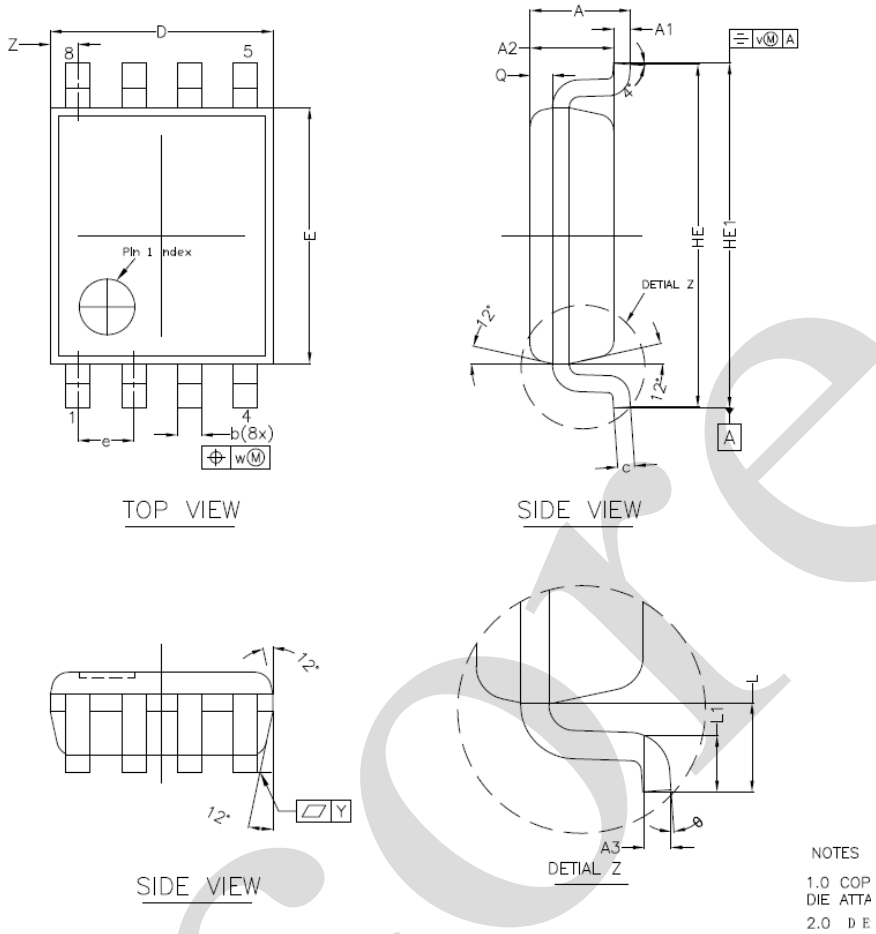






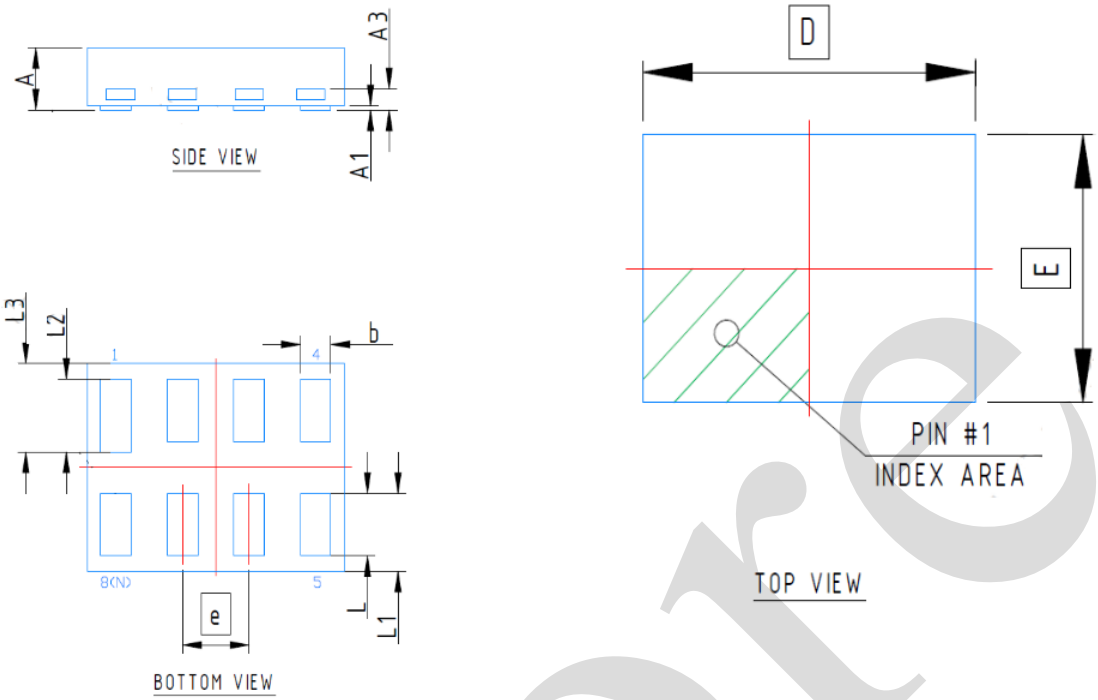
2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	—	1.10
A1	0	0.15
A2	0.75	0.95
A3	0.25	
bp	0.22	0.38
c	0.08	0.18
D	2.90	3.10
E	2.90	3.10
HE	3.90	4.10
L	0.50	
Lp	0.33	0.47
e	0.65	
Z	0.35	0.70
θ	0°	8°

5.2、VSSOP8



2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	—	1.00
A1	0.00	0.15
A2	0.60	0.85
A3	0.12	
Q	0.19	0.21
b	0.17	0.27
c	0.08	0.23
D	1.90	2.10
E	2.20	2.40
HE	3.00	3.20
HE1	3.00	3.40
e	0.50	
L	0.40	
L1	0.15	0.40
Y	0.10	
Z	0.10	0.40
θ	0°	8°

5.3、XSON8



2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	0.28	0.32
A1	0.00	0.05
A3	0.10	
b	0.11	0.21
D	1.35	
E	1.00	
e	0.35	
L	0.25	0.35
L1	0.275	0.475
L2	0.30	0.40
L3	0.325	0.525

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

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