AiP74AHC/AHCT1G126
Single Buffer/Line Driver; 3-State

Product Specification

Specification Revision History：

Version	Date	Description
2024-08-A0	2024-08	New
2024-11-A1	2024-11	Modify the parameters

Contents

1、General Description

AiP74AHC1G126 and AiP74AHCT1G126 are single buffer/line drivers with 3-state output.

Features:

- Power supply voltage range:
  AiP74AHC1G126: 2V to 5.5V
  AiP74AHCT1G126: 4.5V to 5.5V
- Low power dissipation
- Specified from -40℃ to +125℃
- Packaging information: XSON6/SOT353/SOT23-5

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74AHC1G126GB235.TR	SOT23-5	AiP EE	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing: 0.95mm
AiP74AHCT1G126GB235.TR	SOT23-5	AiP EF	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing: 0.95mm
AiP74AHCT1G126GC353.TR	SOT353	EFXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing: 0.65mm
AiP74AHC1G126GC353.TR	SOT353	EEXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing: 0.65mm
AiP74AHC1G126EA6.TR	XSON6	EE XX	5000PCS/reel	25000PCS/box	Dimensions of plastic enclosure: 1.45mm×1.0mm Pin spacing: 0.5mm
AiP74AHCT1G126EA6.TR	XSON6	EF XX	5000PCS/reel	25000PCS/box	Dimensions of plastic enclosure: 1.45mm×1.0mm Pin spacing: 0.5mm
AiP74AHC1G126ED6.TR	XSON6	EE XX	5000PCS/reel	25000PCS/box	Dimensions of plastic enclosure: 1.0mm×1.0mm Pin spacing: 0.35mm
AiP74AHCT1G126ED6.TR	XSON6	EF XX	5000PCS/reel	25000PCS/box	Dimensions of plastic enclosure: 1.0mm×1.0mm Pin spacing: 0.35mm

Note 1: “XX” refers to variable content, meaning 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

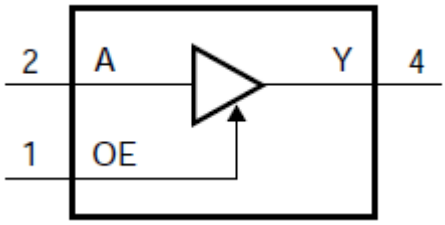


Figure 1. Logic symbol

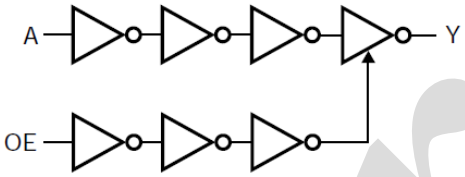
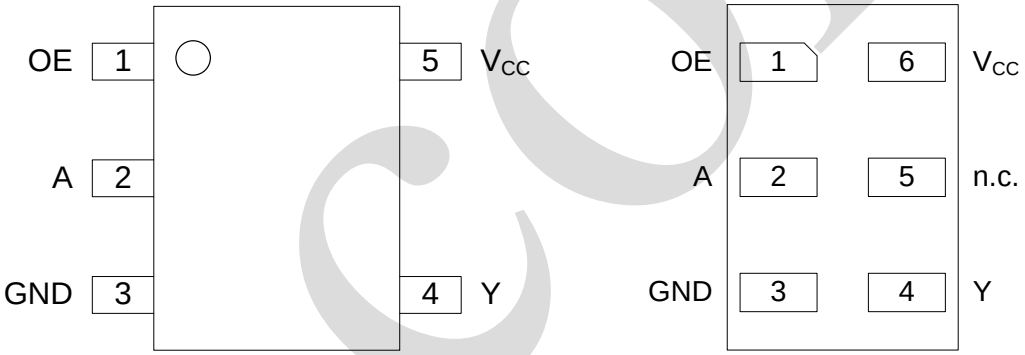


Figure 2. Logic diagram

2.2、Pin Configurations



SOT353/SOT23-5 **XSON6**

2.3、Pin Description

Pin No.		Pin Name	Description
SOT353/SOT23-5	XSON6		
1	1	OE	output enable input
2	2	A	data input
3	3	GND	ground (0V)
4	4	Y	data output
-	5	n.c.	not connected
5	6	V_{CC}	supply voltage

2.4、Function Table

Control	Input	Output
OE	**A**	**Y**
H	L	L
H	H	H
L	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

(T_{amb}=25℃, All voltage referenced to GND, unless otherwise specified)

Characteristic	Symbol	Conditions	Min.	Max.	Unit
supply voltage	V_{CC}	-	-0.5	+7.0	V
input voltage	V_I	-	-0.5	+7.0	V
input clamping current	I_{IK}	V_I<-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}	-	-	75	mA
ground current	I_{GND}	-	-75	-	mA
storage temperature	T_{stg}	-	-65	+150	℃
soldering temperature	T_L	10s	260		℃

3.2、Recommended Operating Conditions

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC1G126						
supply voltage	V_{CC}	-	2.0	5.0	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	℃
AiP74AHCT1G126						
supply voltage	V_{CC}	-	4.5	5.0	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
AiP74AHC1G126							
HIGH-level input voltage	V_{IH}	2.0V	-	1.5	-	-	V
		3.0V	-	2.1	-	-	V
		5.5V	-	3.85	-	-	V
LOW-level input voltage	V_{IL}	2.0V	-	-	-	0.5	V
		3.0V	-	-	-	0.9	V
		5.5V	-	-	-	1.65	V
HIGH-level output voltage	V_{OH}	2.0V	I_O=-50uA	1.9	2.0	-	V
		3.0V	I_O=-50uA	2.9	3.0	-	V
		4.5V	I_O=-50uA	4.4	4.5	-	V
		3.0V	I_O=-4mA	2.48	-	-	V
		4.5V	I_O=-8mA	3.8	-	-	V
LOW-level output voltage	V_{OL}	2.0V	I_O=50uA	-	0	0.1	V
		3.0V	I_O=50uA	-	0	0.1	V
		4.5V	I_O=50uA	-	0	0.1	V
		3.0V	I_O=4mA	-	-	0.44	V
		4.5V	I_O=8mA	-	-	0.44	V
OFF-state output current	I_{OZ}	5.5V	V_I=V_{CC} or GND	-	-	±2.5	uA
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	1.0	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	20	uA
AiP74AHCT1G126							
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=-50uA	4.4	4.5	-	V
		4.5V	I_O=-8mA	3.8	-	-	V
LOW-level output voltage	V_{OL}	4.5V	I_O=50uA	-	0	0.1	V
		4.5V	I_O=8mA	-	-	0.44	V
OFF-state output current	I_{OZ}	5.5V	V_I=V_{CC} or GND	-	-	±2.5	uA
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	1.0	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	20	uA
additional supply current	ΔI_{CC}	5.5V	per input pin; V_I=3.4V; other inputs at V_{CC} or GND	-	-	1.5	mA

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Vcc	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC1G126							
HIGH-level input voltage	V_{IH}	2.0V	-	1.5	-	-	V
		3.0V	-	2.1	-	-	V
		5.5V	-	3.85	-	-	V
LOW-level input voltage	V_{IL}	2.0V	-	-	-	0.5	V
		3.0V	-	-	-	0.9	V
		5.5V	-	-	-	1.65	V
HIGH-level output voltage	V_{OH}	2.0V	I_O=-50uA	1.9	-	-	V
		3.0V	I_O=-50uA	2.9	-	-	V
		4.5V	I_O=-50uA	4.4	-	-	V
		3.0V	I_O=-4mA	2.4	-	-	V
		4.5V	I_O=-8mA	3.7	-	-	V
LOW-level output voltage	V_{OL}	2.0V	I_O=50uA	-	-	0.1	V
		3.0V	I_O=50uA	-	-	0.1	V
		4.5V	I_O=50uA	-	-	0.1	V
		3.0V	I_O=4mA	-	-	0.55	V
		4.5V	I_O=8mA	-	-	0.55	V
OFF-state output current	I_{OZ}	5.5V	V_I=V_{CC} or GND	-	-	±10	uA
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	2.0	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	40	uA
AiP74AHCT1G126							
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=-50uA	4.4	-	-	V
		4.5V	I_O=-8mA	3.7	-	-	V
LOW-level output voltage	V_{OL}	4.5V	I_O=50uA	-	-	0.1	V
		4.5V	I_O=8mA	-	-	0.55	V
OFF-state output current	I_{OZ}	5.5V	V_I=V_{CC} or GND	-	-	±10	uA
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	2.0	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	40	uA
additional supply current	ΔI_{CC}	5.5V	per input pin; V_I=3.4V; other inputs at V_{CC} or GND	-	-	1.5	mA

3.3.3、AC Characteristics 1

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

Parameter	Symbol	Vcc	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC1G126							
A to Y propagation delay	t_{PLH}, t_{PHL}	3.0V to 3.6V[1]	C_L=15pF see Figure 4	-	4.4	9.5	ns
		3.0V to 3.6V[1]	C_L=50pF see Figure 4	-	6.3	13.0	ns
		4.5V to 5.5V[2]	C_L=15pF see Figure 4	-	3.4	6.5	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 4	-	4.7	8.5	ns
OE to Y enable time	t_{PZL}, t_{PZH}	3.0V to 3.6V[1]	C_L=15pF see Figure 5	-	4.9	9.5	ns
		3.0V to 3.6V[1]	C_L=50pF see Figure 5	-	7.0	13.0	ns
		4.5V to 5.5V[2]	C_L=15pF see Figure 5	-	3.6	6.3	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 5	-	5.4	9.0	ns
OE to Y disable time	t_{PLZ}, t_{PHZ}	3.0V to 3.6V[1]	C_L=15pF see Figure 5	-	6.3	11.5	ns
		3.0V to 3.6V[1]	C_L=50pF see Figure 5	-	9.0	15.0	ns
		4.5V to 5.5V[2]	C_L=15pF see Figure 5	-	4.3	8.0	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 5	-	6.1	10.0	ns
AiP74AHCT1G126							
A to Y propagation delay	t_{PLH}, t_{PHL}	4.5V to 5.5V[2]	C_L=15pF see Figure 4	-	3.4	6.5	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 4	-	4.7	8.5	ns
OE to Y enable time	t_{PZL}, t_{PZH}	4.5V to 5.5V[2]	C_L=15pF see Figure 5	-	3.4	6.3	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 5	-	4.8	9.0	ns
OE to Y disable time	t_{PLZ}, t_{PHZ}	4.5V to 5.5V[2]	C_L=15pF see Figure 5	-	4.0	8.0	ns
		4.5V to 5.5V[2]	C_L=50pF see Figure 5	-	5.7	10.0	ns

Note:

[1] Typical values are measured at V_{CC}=3.3V.

[2] Typical values are measured at V_{CC}=5V.

3.3.4、AC Characteristics 2

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

Parameter	Symbol	Vcc	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC1G126							
A to Y propagation delay	t_{PLH}, t_{PHL}	3.0V to 3.6V	C_L=15pF see Figure 4	-	-	10.0	ns
		3.0V to 3.6V	C_L=50pF see Figure 4	-	-	14.5	ns
		4.5V to 5.5V	C_L=15pF see Figure 4	-	-	7.0	ns
		4.5V to 5.5V	C_L=50pF see Figure 4	-	-	9.5	ns
OE to Y enable time	t_{PZL}, t_{PZH}	3.0V to 3.6V	C_L=15pF see Figure 5	-	-	10.0	ns
		3.0V to 3.6V	C_L=50pF see Figure 5	-	-	14.5	ns
		4.5V to 5.5V	C_L=15pF see Figure 5	-	-	7.0	ns
		4.5V to 5.5V	C_L=50pF see Figure 5	-	-	9.5	ns
OE to Y disable time	t_{PLZ}, t_{PHZ}	3.0V to 3.6V	C_L=15pF see Figure 5	-	-	12.5	ns
		3.0V to 3.6V	C_L=50pF see Figure 5	-	-	16.5	ns
		4.5V to 5.5V	C_L=15pF see Figure 5	-	-	8.5	ns
		4.5V to 5.5V	C_L=50pF see Figure 5	-	-	11.0	ns
AiP74AHCT1G126							
A to Y propagation delay	t_{PLH}, t_{PHL}	4.5V to 5.5V	C_L=15pF see Figure 4	-	-	7.0	ns
		4.5V to 5.5V	C_L=50pF see Figure 4	-	-	9.5	ns
OE to Y enable time	t_{PZL}, t_{PZH}	4.5V to 5.5V	C_L=15pF see Figure 5	-	-	6.5	ns
		4.5V to 5.5V	C_L=50pF see Figure 5	-	-	9.0	ns
OE to Y disable time	t_{PLZ}, t_{PHZ}	4.5V to 5.5V	C_L=15pF see Figure 5	-	-	8.5	ns
		4.5V to 5.5V	C_L=50pF see Figure 5	-	-	11.5	ns

4、Testing Circuit

4.1、AC Testing Circuit

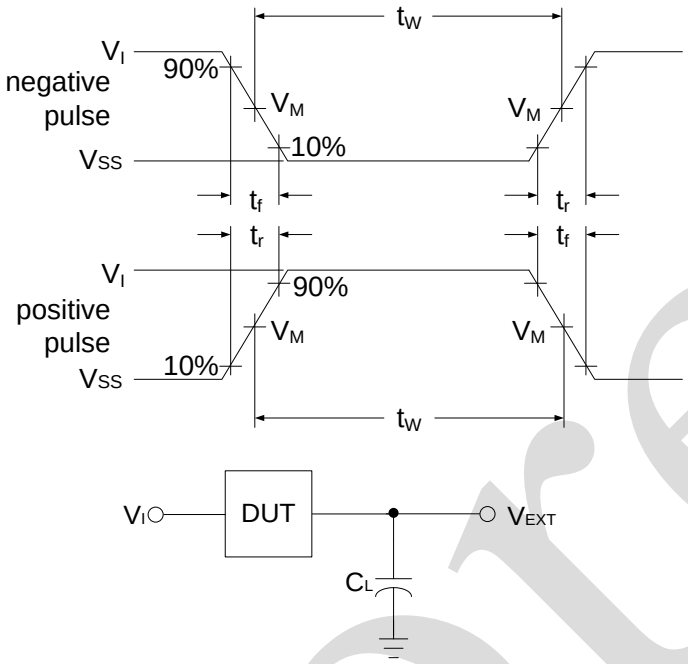


Figure 3. Test circuit for measuring switching times

Definitions test circuit:

C_L=Load capacitance including jig and probe capacitance.

4.2、Test Data

Type	Inputs		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}
AiP74AHC1G126	V_{CC}	≤3.0ns	15pF, 50pF	1kΩ	Open	V_{CC}	GND
AiP74AHCT1G126	3.0V	≤3.0ns	15pF, 50pF	1kΩ	Open	V_{CC}	GND

4.3、AC Testing Waveforms

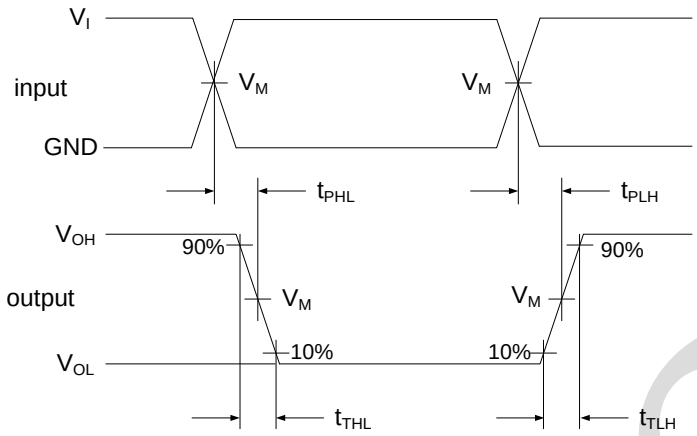


Figure 4. Input (A) to output (Y) propagation delays

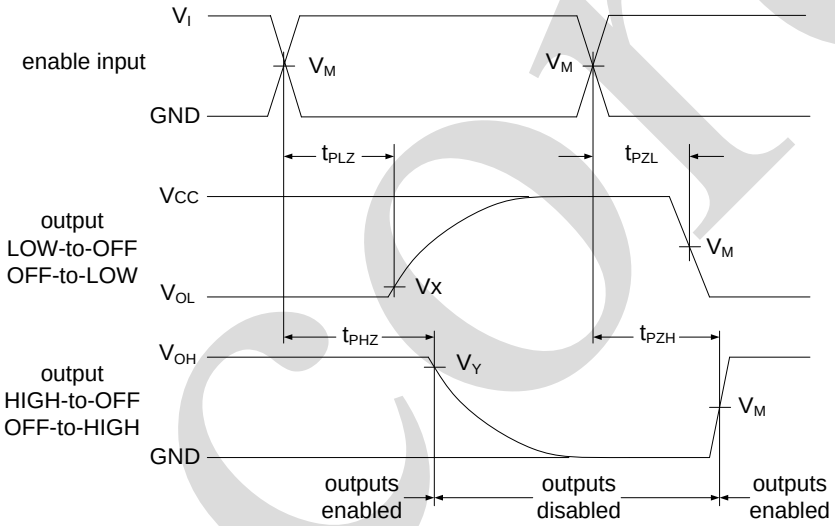


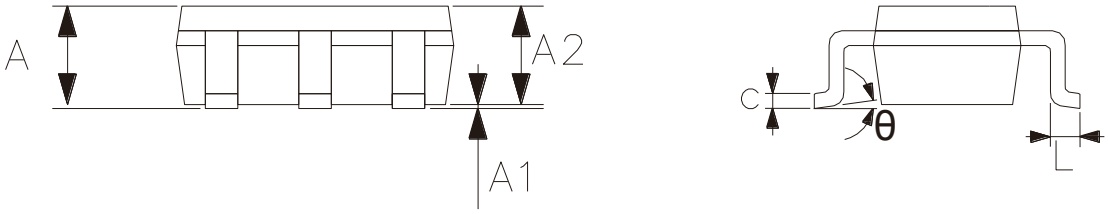
Figure 5. Enable and disable times

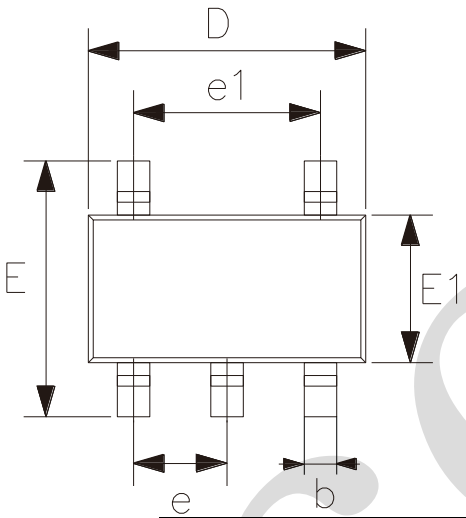
4.4、Measurement Points

Type	Input	Outputs		
	V_M	V_M	V_X	V_Y
AiP74AHC1G126	$0.5\times V_{CC}$	$0.5\times V_{CC}$	V_{OL}+0.3V	V_{OH}-0.3V
AiP74AHCT1G126	1.5V	$0.5\times V_{CC}$	V_{OL}+0.3V	V_{OH}-0.3V

5、Package Information

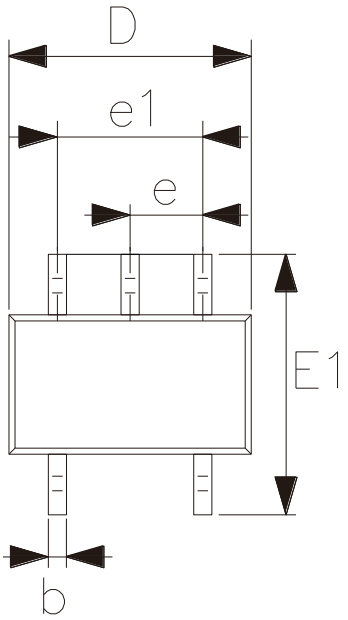
5.1、SOT23-5

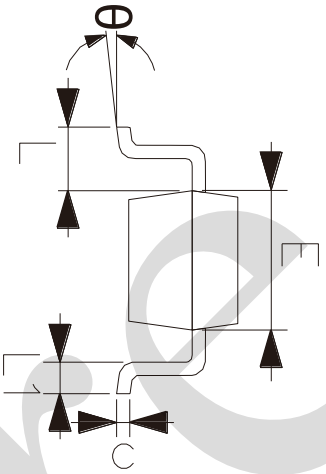


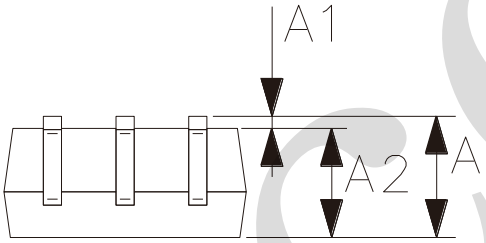


2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	—	1.26
A1	0.00	0.12
A2	1.00	1.20
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
E	2.60	3.00
E1	1.50	1.70
e	0.95	
e1	1.80	2.00
L	0.30	0.60
θ	0°	8°

5.2、SOT353

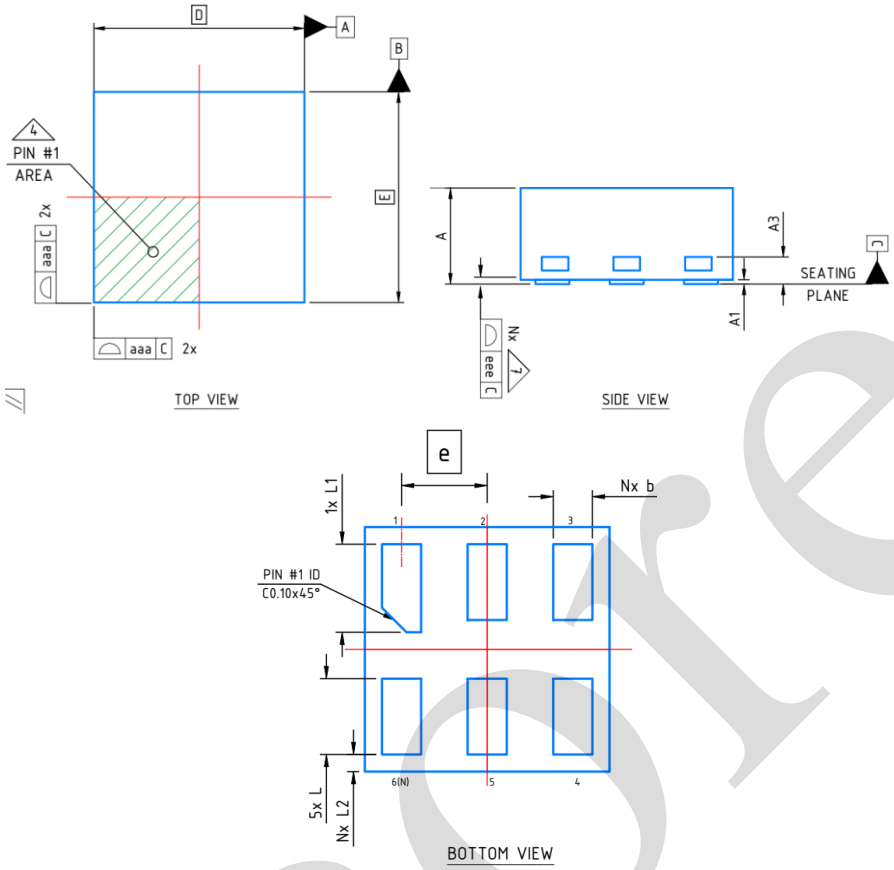






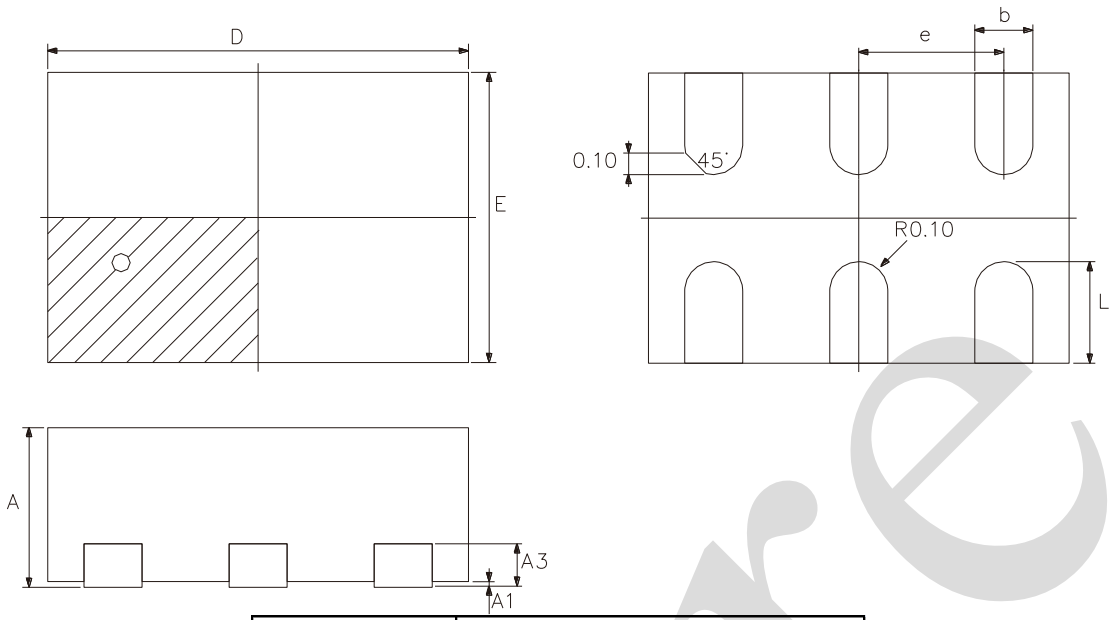
2023/12/A	Dimensions In Millimeters	
Symbol	**Min.**	**Max.**
A	0.90	1.10
A1	0.00	0.10
A2	0.90	1.00
b	0.15	0.35
c	0.11	0.175
D	2.00	2.20
E	1.15	1.35
E1	2.15	2.45
e	0.65	
e1	1.20	1.40
L	0.525	
L1	0.26	0.46
θ	0°	8°

5.3、XSON6-1*1*0.45



2025/03/B	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	0.32	0.50
A1	0	0.05
A3	0.1-0.13 REF	
b	0.10	0.21
D	1.00	
E	1.00	
e	0.35	
L	0.25	0.36
L1	0.30	0.41
L2	0.02	0.12

5.4、XSON6-1*1.45*0.55



2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	0.51	0.60
A1	0.00	0.05
A3	0.15	
b	0.15	0.25
D	1.45	
E	1.00	
e	0.50	
L	0.25	0.45

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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