AiP74AHC245/AHCT245
Octal Bus Transceiver; 3-State

Product Specification

Specification Revision History：

Version	Date	Description
2025-06-A0	2025-06	New
2025-09-A1	2025-09	Modify the parameters

Contents

1、General Description

The AiP74AHC/AHCT245 is an octal bus transceiver with 3-state outputs.

Features:

- Supply voltage range:
  AiP74AHC245: 2.0V to 5.5V
  AiP74AHCT245: 4.5V to 5.5V
- Low power consumption
- Temperature range:-40℃ to +125℃
- Packaging information: DIP20/SOP20/TSSOP20

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74AHC245DA20.TB	DIP20	74AHC245	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm
AiP74AHCT245DA20.TB	DIP20	74AHCT245	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74AHC245SA20.TR	SOP20	74AHC245	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74AHCT245SA20.TR	SOP20	74AHCT245	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74AHC245TA20.TR	TSSOP20	74AHC245	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing: 0.65mm
AiP74AHCT245TA20.TR	TSSOP20	74AHCT245	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 6.5mm×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

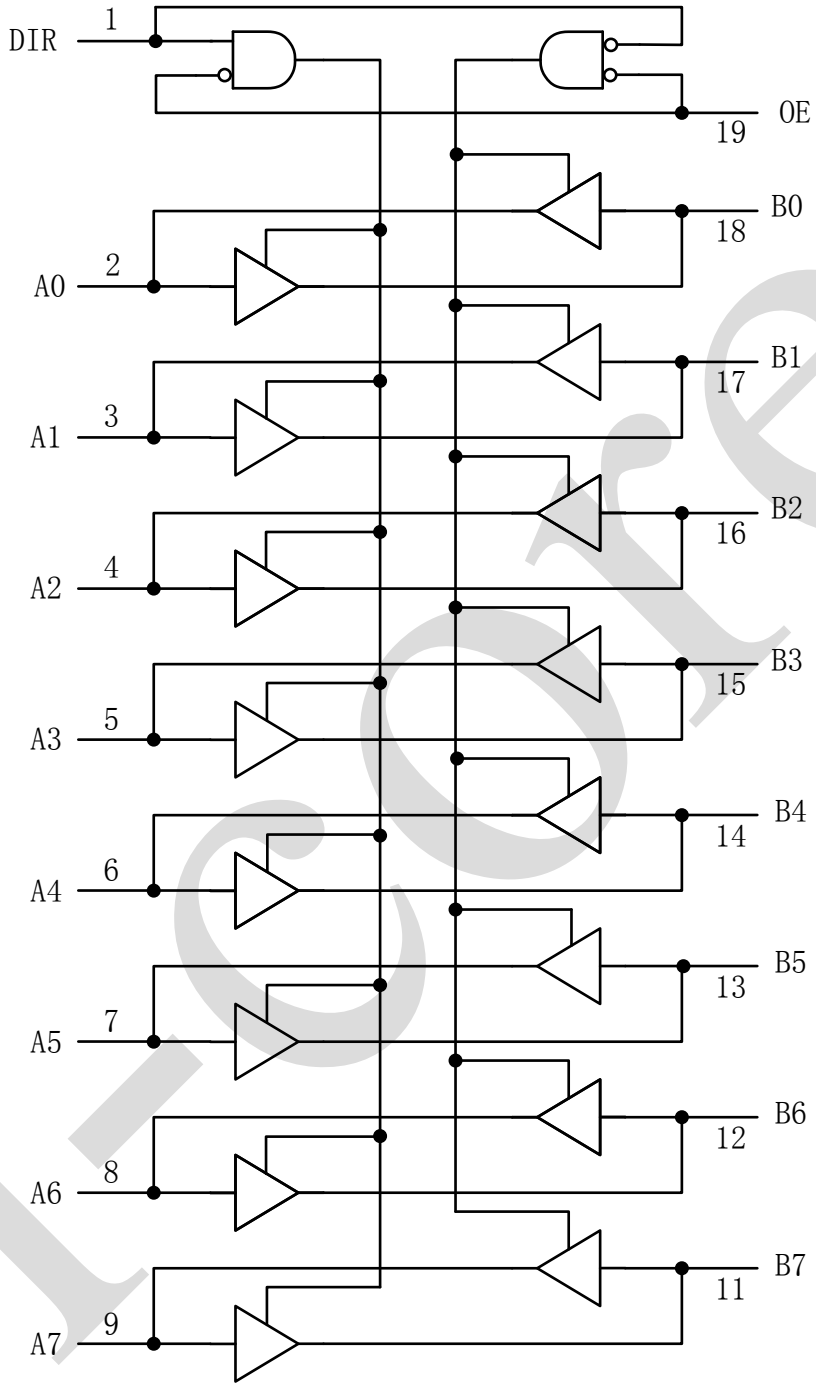
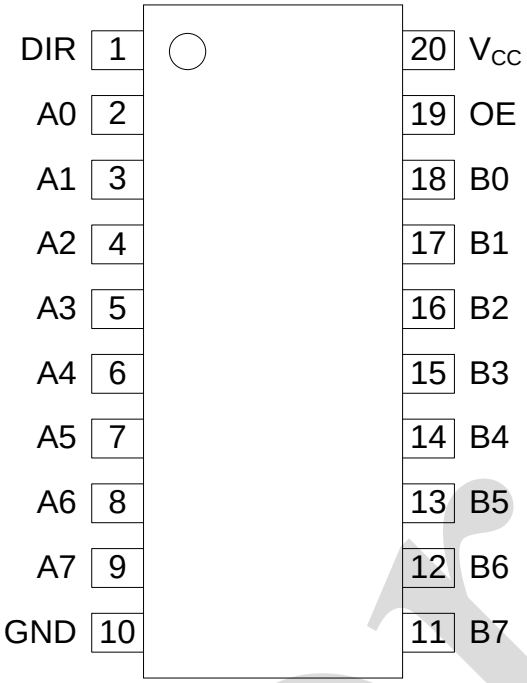


Figure 1. Block diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	DIR	direction control input
2	A0	data input/output
3	A1	data input/output
4	A2	data input/output
5	A3	data input/output
6	A4	data input/output
7	A5	data input/output
8	A6	data input/output
9	A7	data input/output
10	GND	ground (0V)
11	B7	data input/output
12	B6	data input/output
13	B5	data input/output
14	B4	data input/output
15	B3	data input/output
16	B2	data input/output
17	B1	data input/output
18	B0	data input/output
19	OE	output enable input (active LOW)
20	V_{CC}	supply voltage

2.4、Function Table

Control		Input	Output
OE	**DIR**	**An**	**Bn**
L	L	A=B	input
L	H	input	B=A
H	X	Z	Z
H	X	Z	Z

Note: H=HIGH voltage level; L=LOW voltage level; 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	+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	DIP	245		℃
			SOP/TSSOP	260		℃

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC245						
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	℃
AiP74AHCT245						
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	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC245							
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
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	1.0	uA
OFF-state output current	Ioz	5.5V	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND	-	-	±2.5	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	10	uA
AiP74AHCT245							
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
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	1.0	uA
OFF-state output current	Ioz	5.5V	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND	-	-	±2.5	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	10	uA
additional supply current	ΔI_{CC}	5.5V	One input at 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	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC245							
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
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	2.0	uA
OFF-state output current	Ioz	5.5V	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND	-	-	±10	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	40	uA
AiP74AHCT245							
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
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	2.0	uA
OFF-state output current	Ioz	5.5V	V_I=V_{IH} or V_{IL}; V_O=V_{CC} or GND	-	-	±10	uA
supply current	I_{CC}	5.5V	V_I=V_{CC} or GND; Io=0A	-	-	40	uA
additional supply current	ΔI_{CC}	5.5V	One input at 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℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	V_{CC}	Conditions		Min.	Typ.	Max.	Unit
AiP74AHC245								
An to Bn, Bn to An propagation delay	t_{PLH}, t_{PHL}	3.0V to 3.6V	C_L=15pF	See Figure 3	-	-	10.0	ns
			C_L=50pF		-	-	13.5	ns
		4.5V to 5.5V	C_L=15pF		-	-	6.5	ns
			C_L=50pF		-	-	8.5	ns
OE to An and Bn enable time	t_{en}	3.0V to 3.6V	C_L=15pF	See Figure 4	-	-	15.5	ns
			C_L=50pF		-	-	19.0	ns
		4.5V to 5.5V	C_L=15pF		-	-	10.0	ns
			C_L=50pF		-	-	12.0	ns
OE to An and Bn disable time	t_{dis}	3.0V to 3.6V	C_L=15pF		-	-	15.5	ns
			C_L=50pF		-	-	18.0	ns
		4.5V to 5.5V	C_L=15pF		-	-	9.2	ns
			C_L=50pF		-	-	11.0	ns
AiP74AHCT245								
An to Bn, Bn to An propagation delay	t_{PLH}, t_{PHL}	4.5V to 5.5V	C_L=15pF	See Figure 3	-	-	8.5	ns
		4.5V to 5.5V	C_L=50pF		-	-	9.5	ns
OE to An and Bn enable time	t_{en}	4.5V to 5.5V	C_L=15pF	See Figure 4	-	-	15.0	ns
		4.5V to 5.5V	C_L=50pF		-	-	16.0	ns
OE to An and Bn disable time	t_{dis}	4.5V to 5.5V	C_L=15pF		-	-	15.5	ns
		4.5V to 5.5V	C_L=50pF		-	-	16.5	ns

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
AiP74AHC245								
An to Bn, Bn to An propagation delay	t_{PLH}, t_{PHL}	3.0V to 3.6V	C_L=15pF	See Figure 3	-	-	10.5	ns
			C_L=50pF		-	-	15.0	ns
		4.5V to 5.5V	C_L=15pF		-	-	7.0	ns
			C_L=50pF		-	-	9.5	ns
OE to An and Bn enable time	t_{en}	3.0V to 3.6V	C_L=15pF	See Figure 4	-	-	16.5	ns
			C_L=50pF		-	-	21.0	ns
		4.5V to 5.5V	C_L=15pF		-	-	11.0	ns
			C_L=50pF		-	-	13.5	ns
OE to An and Bn disable time	t_{dis}	3.0V to 3.6V	C_L=15pF		-	-	16.0	ns
			C_L=50pF		-	-	20.0	ns
		4.5V to 5.5V	C_L=15pF		-	-	10.0	ns
			C_L=50pF		-	-	12.5	ns
AiP74AHCT245								
An to Bn, Bn to An propagation delay	t_{PLH}, t_{PHL}	4.5V to 5.5V	C_L=15pF	See Figure 3	-	-	10.0	ns
		4.5V to 5.5V	C_L=50pF		-	-	11.0	ns
OE to An and Bn enable time	t_{en}	4.5V to 5.5V	C_L=15pF	See Figure 4	-	-	17.5	ns
		4.5V to 5.5V	C_L=50pF		-	-	18.5	ns
OE to An and Bn disable time	t_{dis}	4.5V to 5.5V	C_L=15pF		-	-	18.0	ns
		4.5V to 5.5V	C_L=50pF		-	-	19.5	ns

4、Testing Circuit

4.1、AC Testing Circuit

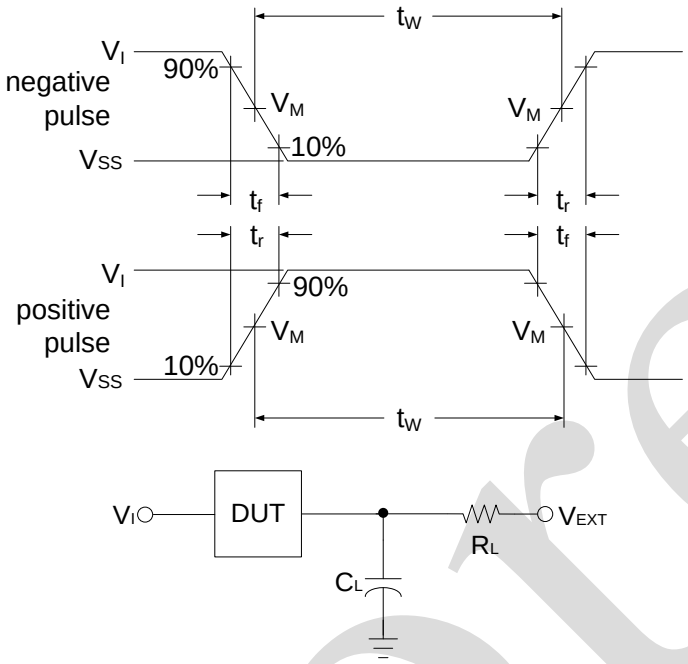


Figure 2. Test circuit for measuring switching times

C_L includes probe and jig capacitance.

4.2、Test Data

Type	Input		Load		V_{EXT}		
	V_I	$t_r = t_f$	C_L	RL	t_{PLH}/t_{PHL}	t_{PLZ}/t_{PZL}	t_{PHZ}/t_{PZH}
AiP74AHC245	V_{CC}	3.0ns	15pF, 50pF	1KΩ	Open	V_{CC}	GND
AiP74AHCT245	3.0V	3.0ns	15pF, 50pF	1KΩ	Open	V_{CC}	GND

4.3、AC Testing Waveforms

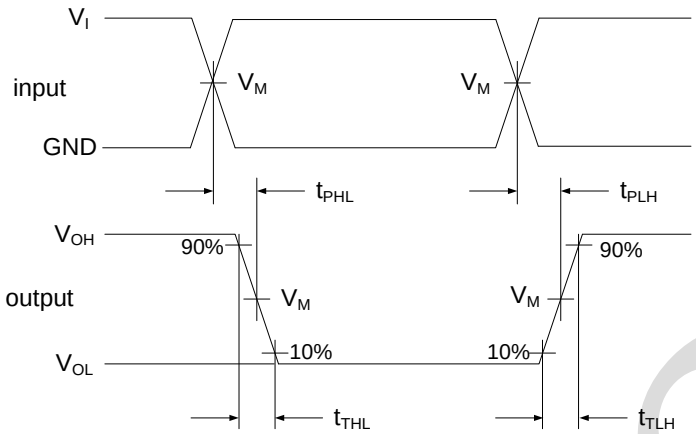


Figure 3. input to output propagation delay

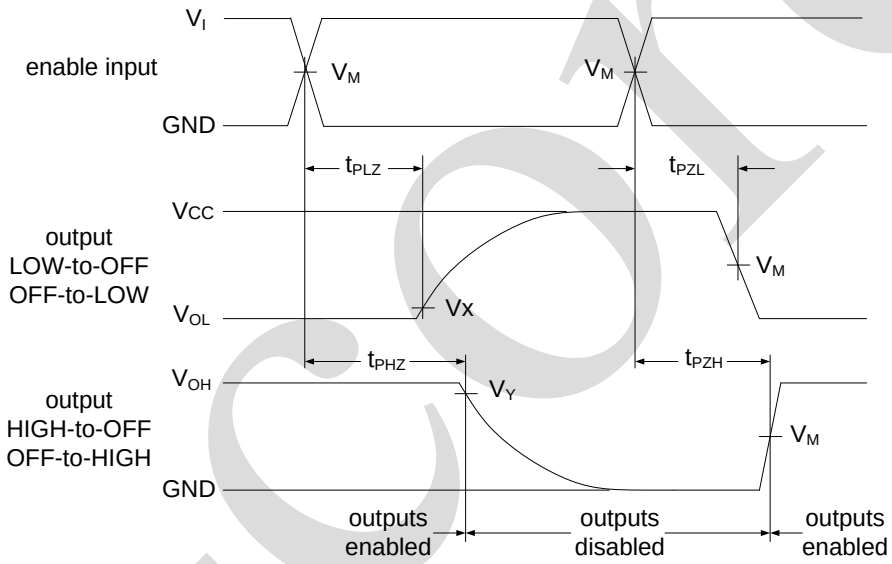


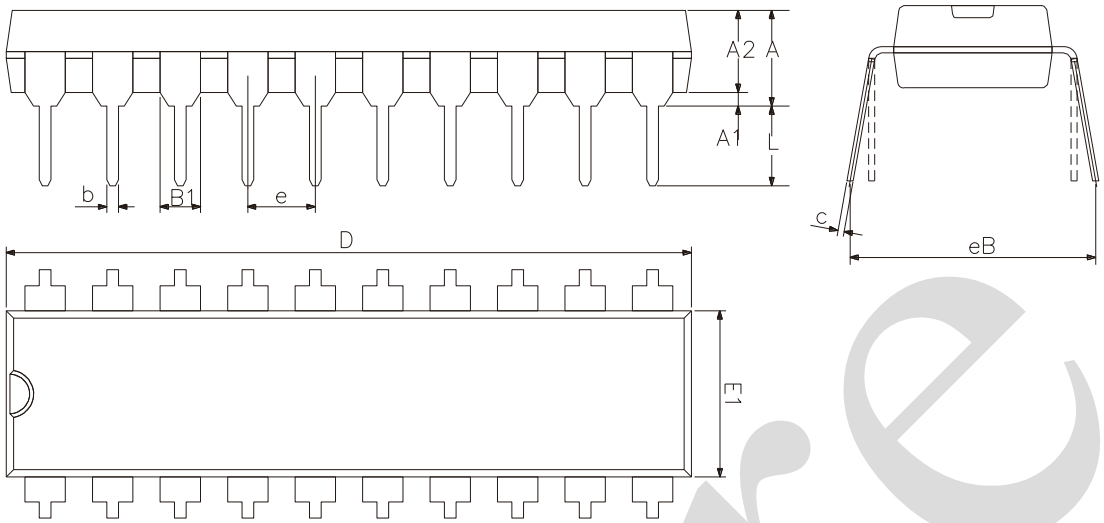
Figure 4. enable and disable times

4.4、Measurement Points

Type	Input	Output		
	V_M	V_M	V_X	V_Y
AiP74AHC245	$0.5\times V_{CC}$	$0.5\times V_{CC}$	$0.1\times V_{CC}$	$0.9\times V_{CC}$
AiP74AHCT245	1.3V	1.3V	$0.1\times V_{CC}$	$0.9\times V_{CC}$

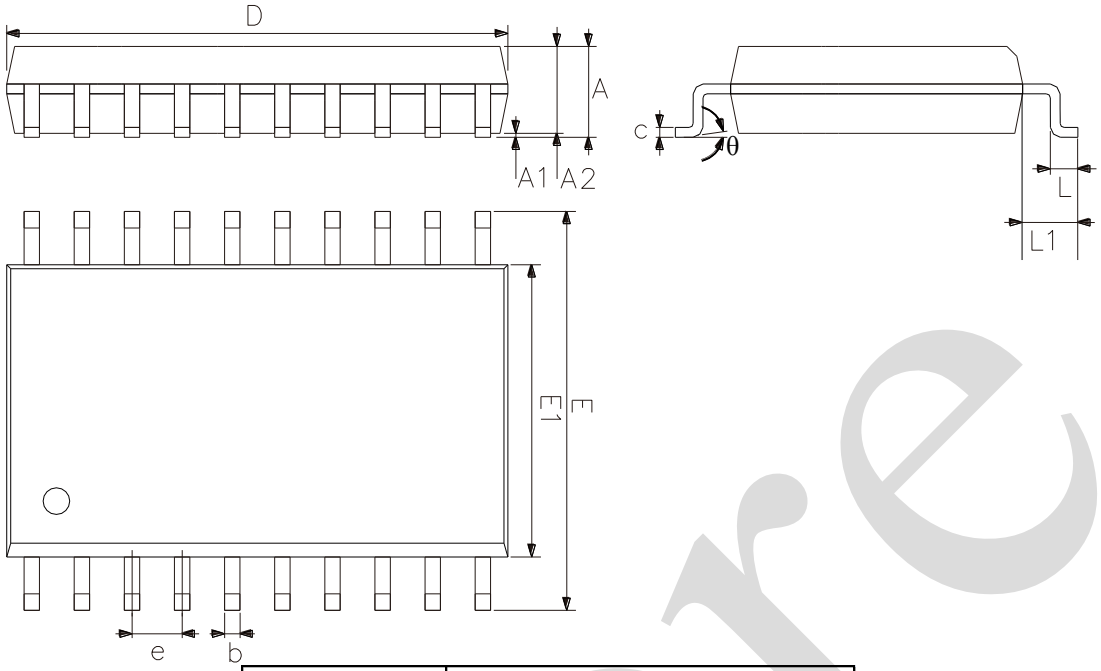
5、Package Information

5.1、DIP20



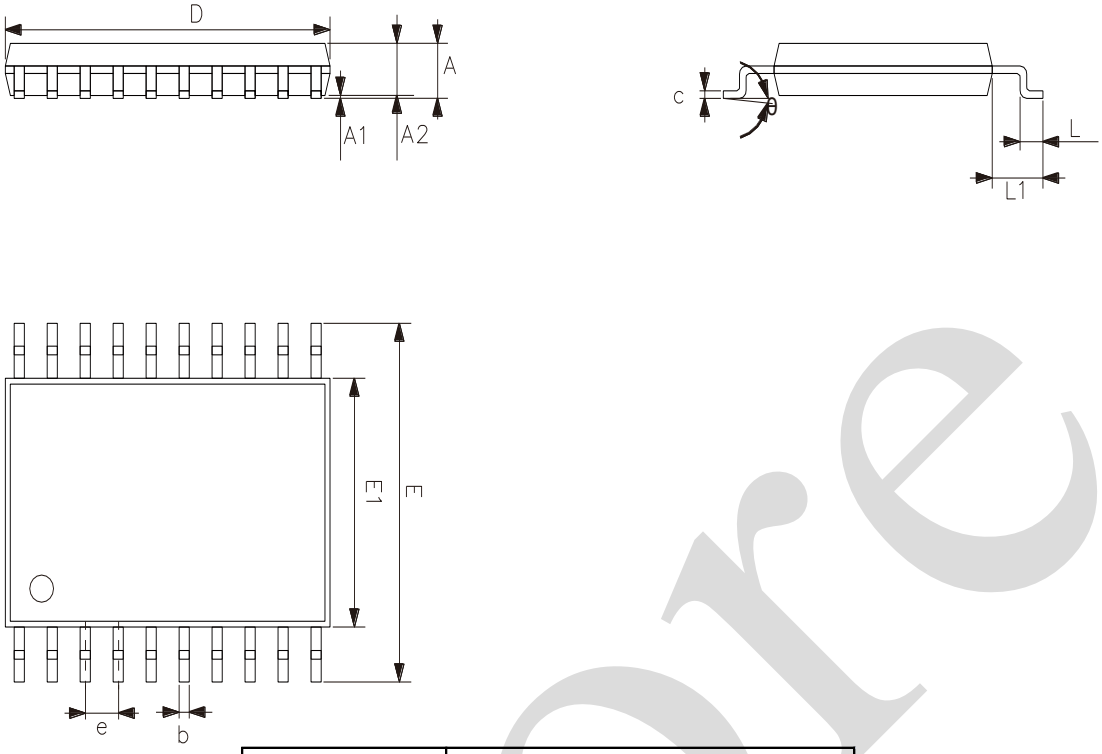
2023/12/A	Dimensions In Millimeters	
Symbol	**Min**	**Max**
A	3.60	5.33
A1	0.51	—
A2	3.20	3.60
b	0.36	0.53
B1	1.52	
c	0.204	0.36
D	25.70	26.54
E1	6.20	6.75
e	2.54	
eB	7.62	9.30
L	3.00	3.60

5.2、SOP20



2023/12/A	Dimensions In Millimeters	
Symbol	**Min.**	**Max.**
A	2.47	2.65
A1	0.05	0.30
A2	2.20	2.44
b	0.35	0.50
c	0.15	0.30
D	12.54	12.94
E	10.00	10.60
E1	7.30	7.70
e	1.27	
L	0.40	1.05
L1	1.30	1.50
θ	0°	8°

5.3、TSSOP20



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	6.40	6.60
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.

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