



AiP74AHC244/AHCT244

Octal Buffers/Drivers With 3-State Outputs

Product Specification

Specification Revision History:

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



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1、General Description

The AiP74AHC/AHCT244 is an octal buffer/line driver with 3-state outputs.

Features:

- Supply voltage range:
AiP74AHC244: 2.0V to 5.5V
AiP74AHCT244: 4.5V to 5.5V
- Input levels:
AiP74AHC244: CMOS level
AiP74AHCT244: TTL level
- Temperature range: -40°C to +125°C
- Packaging information: DIP20/SOP20/TSSOP20



Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74AHC244DA20.TB	DIP20	74AHC244	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm
AiP74AHCT244DA20.TB	DIP20	74AHCT244	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
AiP74AHC244SA20.TR	SOP20	74AHC244	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74AHCT244SA20.TR	SOP20	74AHCT244	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74AHC244TA20.TR	TSSOP20	74AHC244	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing: 0.65mm
AiP74AHCT244TA20.TR	TSSOP20	74AHCT244	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

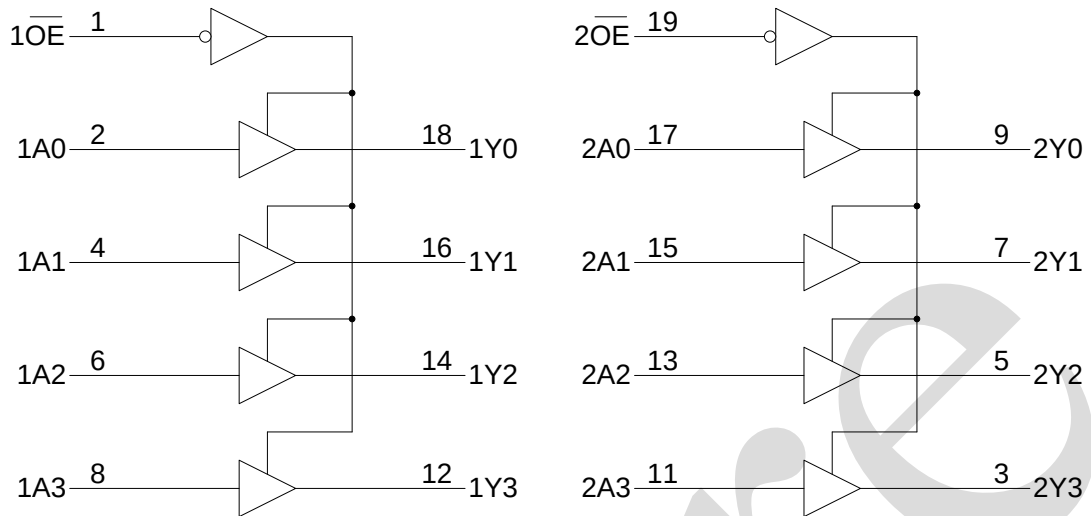
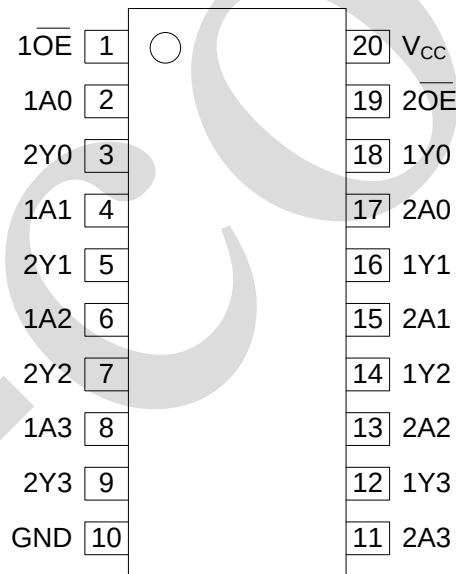


Figure 1. Block Diagram

2.2、Pin Configurations





2.3、Pin Description

Pin No.	Pin Name	Description
1	$\overline{1OE}$	output enable input (active LOW)
2	1A0	data input
3	2Y0	bus output
4	1A1	data input
5	2Y1	bus output
6	1A2	data input
7	2Y2	bus output
8	1A3	data input
9	2Y3	bus output
10	GND	ground (0 V)
11	2A3	data input
12	1Y3	bus output
13	2A2	data input
14	1Y2	bus output
15	2A1	data input
16	1Y1	bus output
17	2A0	data input
18	1Y0	bus output
19	$\overline{2OE}$	output enable input (active LOW)
20	V _{CC}	supply voltage

2.4、Function Table

Input		Output
$\overline{nOE}$	nAn	nYn
L	L	L
L	H	H
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	+7	V
supply current	I_{CC}	-	-	75	mA
ground current	I_{GND}	-	-75	-	mA
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
storage temperature	T_{stg}	-	-65	+150	°C
soldering temperature	T_L	10s	DIP	245	°C
			SOP/TSSOP	260	

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC244						
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
AiP74AHCT244						
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 $+85^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	V _{CC}	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC244							
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 =-4.0mA	2.48	-	-	V
		4.5V	I _O =-8.0mA	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 =4.0mA	-	-	0.44	V
		4.5V	I _O =8.0mA	-	-	0.44	V
input leakage current	I _I	0~5.5V	V _I =5.5V or GND	-	-	±2	uA
OFF-state output current	I _{OZ}	5.5V	V _I =V _{IH} or V _{IL} ; V _O =V _{CC} or GND	-	-	±2	uA
supply current	I _{CC}	5.5V	V _I =V _{CC} or GND; I _O =0A	-	-	2	uA
AiP74AHCT244							
HIGH-level input voltage	V _{IH}	4.5~5.5V	-	2.0	1.6	-	V
LOW-level input voltage	V _{IL}	4.5~5.5V	-	-	1.2	0.8	V
HIGH-level output voltage	V _{OH}	4.5V	I _O =-50uA	4.4	4.5	-	V
			I _O =-8.0mA	3.8	-	-	V
LOW-level output voltage	V _{OL}	4.5V	I _O =50uA	-	-	0.1	V
			I _O =8.0mA	-	-	0.44	V
input leakage current	I _I	0~5.5V	V _I =V _{CC} or GND	-	-	±2	uA
OFF-state output current	I _{OZ}	5.5V	V _I =V _{IH} or V _{IL} ; V _O =V _{CC} or GND	-	-	±2	uA
supply current	I _{CC}	5.5V	V _I =V _{CC} or GND; I _O =0A	-	-	2	uA
additional supply current	ΔI _{CC}	4.5~5.5V	One input at 3.4V; Other inputs at V _{CC} or GND; I _O =0A	-	-	1.5	mA



3.3.2、DC 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	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
AiP74AHC244							
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	$I_O = -50\mu\text{A}$	1.9	-	-	V
		3.0V	$I_O = -50\mu\text{A}$	2.9	-	-	V
		4.5V	$I_O = -50\mu\text{A}$	4.4	-	-	V
		3.0V	$I_O = -4.0\text{mA}$	2.48	-	-	V
		4.5V	$I_O = -8.0\text{mA}$	3.8	-	-	V
LOW-level output voltage	V_{OL}	2.0V	$I_O = 50\mu\text{A}$	-	-	0.1	V
		3.0V	$I_O = 50\mu\text{A}$	-	-	0.1	V
		4.5V	$I_O = 50\mu\text{A}$	-	-	0.1	V
		3.0V	$I_O = 4.0\text{mA}$	-	-	0.44	V
		4.5V	$I_O = 8.0\text{mA}$	-	-	0.44	V
input leakage current	I_I	0~5.5V	$V_I = 5.5\text{V}$ or GND	-	-	± 4	μA
OFF-state output current	I_{OZ}	5.5V	$V_I = V_{IH}$ or V_{IL} ; $V_O = V_{CC}$ or GND	-	-	± 4	μA
supply current	I_{CC}	5.5V	$V_I = V_{CC}$ or GND; $I_O = 0\text{A}$	-	-	4	μA
AiP74AHCT244							
HIGH-level input voltage	V_{IH}	4.5~5.5V	-	2.0	-	-	V
LOW-level input voltage	V_{IL}	4.5~5.5V	-	-	-	0.8	V
HIGH-level output voltage	V_{OH}	4.5V	$I_O = -50\mu\text{A}$	4.4	-	-	V
			$I_O = -8.0\text{mA}$	3.8	-	-	V
LOW-level output voltage	V_{OL}	4.5V	$I_O = 50\mu\text{A}$	-	-	0.1	V
			$I_O = 8.0\text{mA}$	-	-	0.44	V
input leakage current	I_I	0~5.5V	$V_I = V_{CC}$ or GND	-	-	± 4	μA
OFF-state output current	I_{OZ}	5.5V	$V_I = V_{IH}$ or V_{IL} ; $V_O = V_{CC}$ or GND	-	-	± 4	μA
supply current	I_{CC}	5.5V	$V_I = V_{CC}$ or GND; $I_O = 0\text{A}$	-	-	4	μA
additional supply current	ΔI_{CC}	4.5~5.5V	One input at 3.4V; Other inputs at V_{CC} or GND; $I_O = 0\text{A}$	-	-	1.5	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	V _{CC}	Conditions	Min.	Typ.	Max.	Unit	
AiP74AHC244								
nAn to nYn propagation delay	t _{PLH} , t _{PHL}	3.0~3.6V	C _L =15pF	see Figure 3	-	5.0	10.0	ns
			C _L =50pF		-	7.0	13.5	ns
		4.5~4.5V	C _L =15pF		-	3.4	6.5	ns
			C _L =50pF			5.0	8.5	ns
$\overline{\text{nOE}}$ to nYn enable time	ten	3.0~3.6V	C _L =15pF	see Figure 4	-	6.5	12.5	ns
			C _L =50pF		-	7.5	16.0	ns
		4.5~4.5V	C _L =15pF		-	4.0	8.5	ns
			C _L =50pF		-	5.5	10.5	ns
$\overline{\text{nOE}}$ to nYn disable time	tdis	3.0~3.6V	C _L =15pF		-	5.5	11.0	ns
			C _L =50pF		-	10.0	16.0	ns
		4.5~4.5V	C _L =15pF		-	4.8	8.5	ns
			C _L =50pF		-	7.0	10.5	ns
AiP74AHCT244								
nAn to nYn propagation delay	t _{PLH} , t _{PHL}	4.5~4.5V	C _L =15pF	see Figure 3	-	3.5	9.5	ns
			C _L =50pF		-	5.0	9.5	ns
$\overline{\text{nOE}}$ to nYn enable time	ten	4.5~4.5V	C _L =15pF	see Figure 4	-	3.5	12.0	ns
			C _L =50pF		-	5.5	13.0	ns
$\overline{\text{nOE}}$ to nYn disable time	tdis	4.5~4.5V	C _L =50pF		-	5.0	10.0	ns
			C _L =15pF		-	7.0	13.0	ns



3.3.4、AC Characteristics 2

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

Parameter	Symbol	V _{CC}	Conditions	Min.	Typ.	Max.	Unit	
AiP74AHC244								
nAn to nYn propagation delay	t _{PLH} , t _{PHL}	3.0~3.6V	C _L =15pF	see Figure 3	-	-	10.5	ns
			C _L =50pF		-	-	15.0	ns
		4.5~4.5V	C _L =15pF		-	-	7.0	ns
			C _L =50pF				9.5	ns
nOE ⁻ to nYn enable time	ten	3.0~3.6V	C _L =15pF	see Figure 4	-	-	13.5	ns
			C _L =50pF		-	-	18.0	ns
		4.5~4.5V	C _L =15pF		-	-	9.5	ns
			C _L =50pF		-	-	12.0	ns
nOE ⁻ to nYn disable time	tdis	3.0~3.6V	C _L =15pF		-	-	12.5	ns
			C _L =50pF		-	-	17.5	ns
		4.5~4.5V	C _L =15pF		-	-	9.0	ns
			C _L =50pF		-	-	11.5	ns
AiP74AHCT244								
nAn to nYn propagation delay	t _{PLH} , t _{PHL}	5.5V	C _L =15pF	see Figure 3	-	-	9.5	ns
			C _L =50pF		-	-	10.5	ns
nOE ⁻ to nYn enable time	ten	5.5V	C _L =15pF	see Figure 4	-	-	13.0	ns
			C _L =50pF		-	-	14.5	ns
nOE ⁻ to nYn disable time	tdis	5.5V	C _L =50pF		-	-	12.0	ns
			C _L =15pF		-	-	14.5	ns



4、Testing Circuit

4.1、AC Testing Circuit

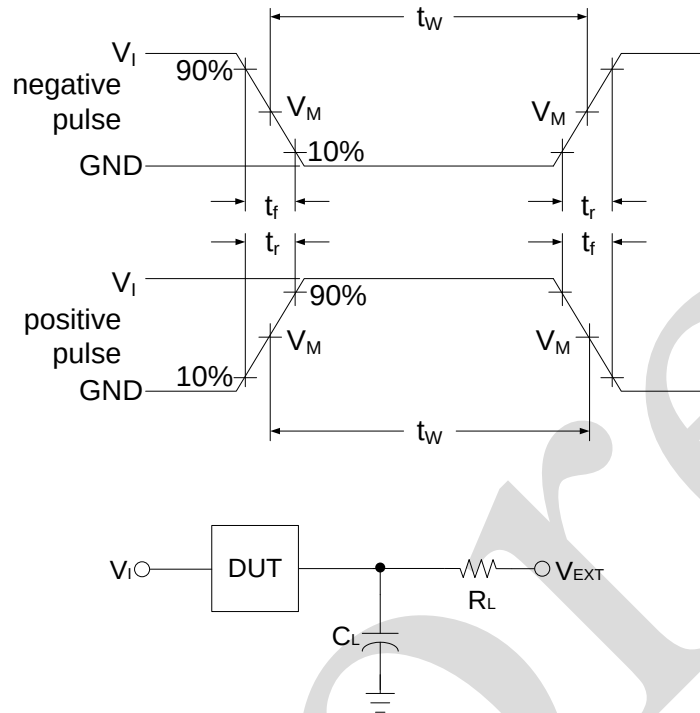


Figure 2. Test circuit for measuring switching times
 C_L includes probe and jig capacitance.

4.2、Test Data

Type	Input		Load		V_{EXT}		
	V_I	$t_r = t_f$	C_L	R_L	t_{PLH}/t_{PHL}	t_{PLZ}/t_{PZL}	t_{PHZ}/t_{PZH}
AiP74AHC244	V_{CC}	3.0ns	15pF, 50pF	1K Ω	Open	V_{CC}	GND
AiP74AHCT244	3.0V	3.0ns	15pF, 50pF	1K Ω	Open	V_{CC}	GND



4.3、AC Testing Waveforms

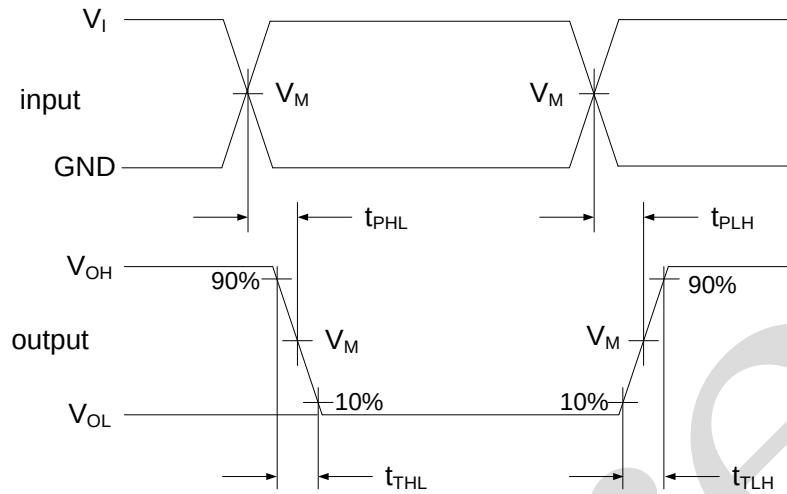


Figure 3. Propagation delay, output transition time

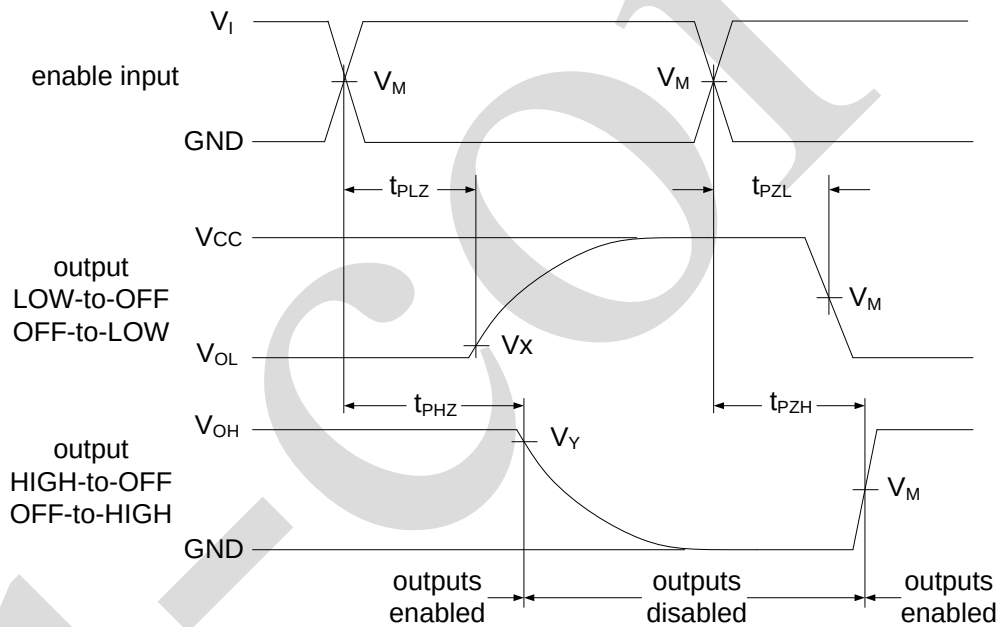


Figure 4. 3-state enable and disable times

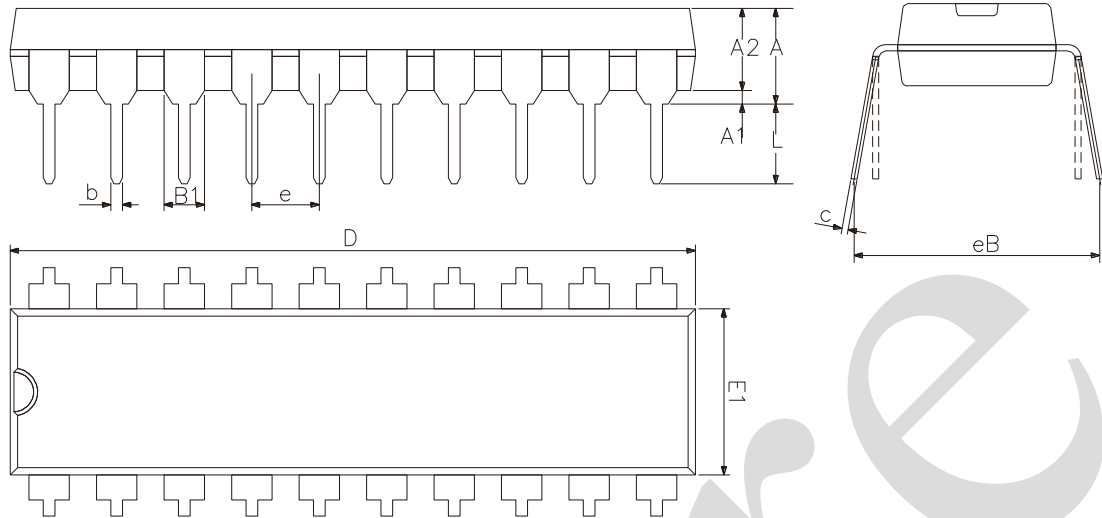
4.4、Measurement Points

Type	Input	Output		
	V_M	V_M	V_X	V_Y
AiP74AHC244	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$
AiP74AHCT244	1.3V	1.3V	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$



5、Package Information

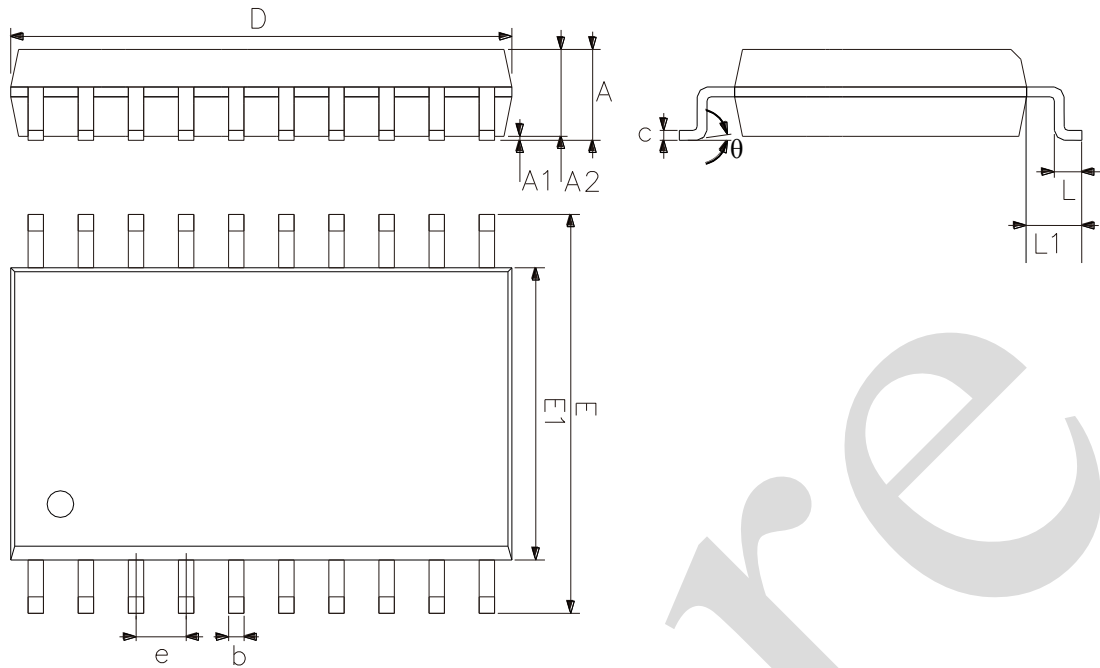
5.1、DIP20



2023/12/A	Dimensions In Millimeters	
	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



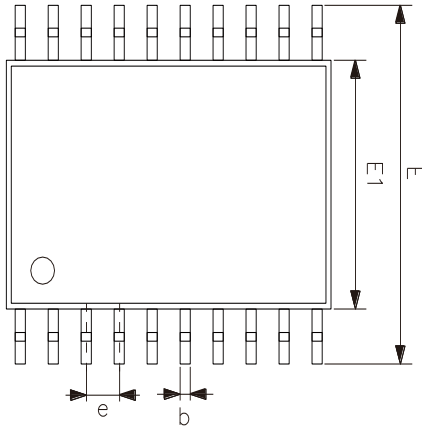
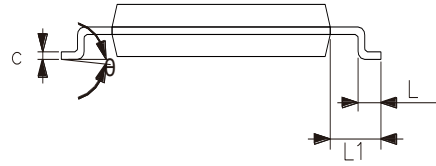
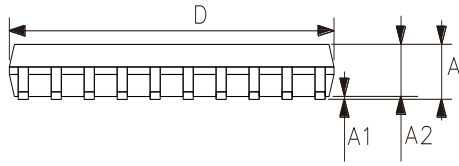
5.2、SOP20



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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