



AiP74ACT244

Octal Buffer and Driver

Product Specification

Specification Revision History:

Version	Date	Description
2023-06-A1	2023-06	New
2024-03-A2	2024-03	Modify the parameters
2024-03-A3	2024-03	Modify the parameters



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1、General Description

The AiP74ACT244 is octal buffer and driver with 3-state output.

Features:

- Supply voltage range: 4.5V to 5.5V
- Input levels: 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
AiP74ACT244DA20.TB	DIP20	74ACT244	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm
AiP74ACT244SA20.TB	SOP20	74ACT244	35 PCS/tube	80 tube/box	2800 PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74ACT244TA20.TB	TSSOP20	74ACT244	70 PCS/tube	200 tube/box	14000 PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing: 0.65mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74ACT244SA20.TR	SOP20	74ACT244	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74ACT244TA20.TR	TSSOP20	74ACT244	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

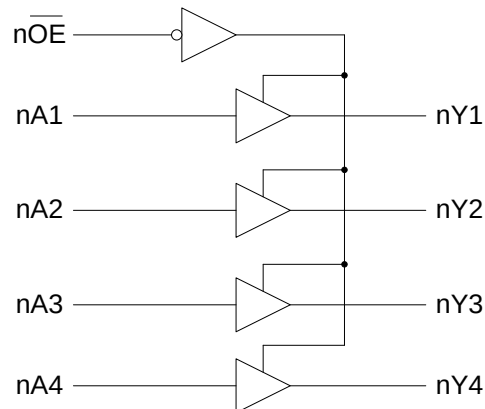


Figure 1. Logic symbol

2.2、Pin Configurations

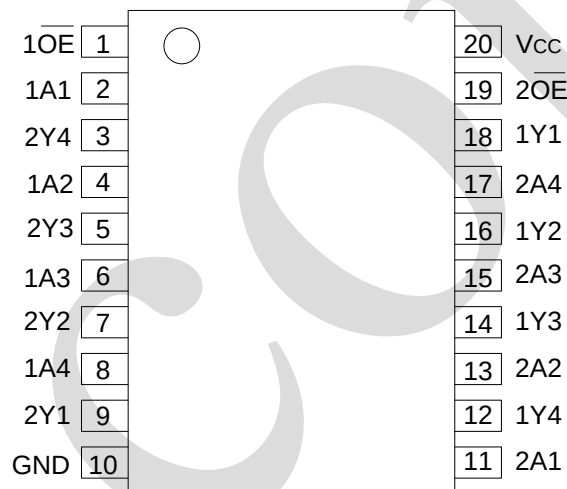


Figure 2. Pin configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	1OE	enable input
2	1A1	data input
3	2Y4	data output
4	1A2	data input
5	2Y3	data output
6	1A3	data input
7	2Y2	data output
8	1A4	data input
9	2Y1	data output
10	GND	ground (0V)
11	2A1	data input
12	1Y4	data output
13	2A2	data input
14	1Y3	data output
15	2A3	data input
16	1Y2	data output
17	2A4	data input
18	1Y1	data output
19	2OE	enable input
20	V _{CC}	supply voltage

2.4、Function Table

Input		Output
nOE	nAn	nYn
L	H	H
L	L	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	+7	V
continuous supply current	I_{CC}	-	-	200	mA
continuous ground current	I_{GND}	-	-200	-	mA
input clamping current	I_{IK}	$V_I < 0V$ or $V_I > V_{CC}$	-	± 20	mA
output clamping current	I_{OK}	$V_O < 0V$ or $V_O > V_{CC}$	-	± 20	mA
continuous output current	I_O	$V_O = 0$ to V_{CC}	-	± 50	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
supply voltage	V_{CC}	-	4.5	-	5.5	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
High-level output current	I_{OH}	-	-	-	-24	mA
Low-level output current	I_{OL}	-	-	-	24	mA
ambient temperature	T_{amb}	-	-40	-	+125	°C

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

($T_{amb} = -40^{\circ}C$ to $+85^{\circ}C$, 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}	4.5~5.5V	-	2	-	-	V
LOW-level input voltage	V_{IL}	4.5~5.5V	-	-	-	0.8	V
HIGH-level output voltage	V_{OH}	4.5V	$I_O = -50\mu A$	4.4	4.49	-	V
			$I_O = -24mA$	3.76	-	-	V
		5.5V	$I_O = -50\mu A$	5.4	-	-	V
			$I_O = -24mA$	4.76	-	-	V
			$I_O = -75mA$	3.85	-	-	V
LOW-level output voltage	V_{OL}	4.5V	$I_O = 50\mu A$	-	0.001	0.1	V
			$I_O = 24mA$	-	-	0.5	V
		5.5V	$I_O = 50\mu A$	-	0.001	0.1	V
			$I_O = 24mA$	-	-	0.44	V
			$I_O = 75mA$	-	-	1.65	V
input leakage current	I_I	5.5V	$V_I = V_{CC}$ or GND	-	-	± 1	μA
supply current	I_{CC}	5.5V	$V_I = V_{CC}$ or GND; $I_O = 0A$	-	-	40	μA
additional	ΔI_{CC}	5.5V	One input at $V_I = V_{CC} - 2.1V$;	-	-	1.5	mA



supply current			Other inputs at V_{CC} or GND; $I_O=0A$				
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3.3.2、DC Characteristics 2

($T_{amb}=-40^{\circ}C$ to $+125^{\circ}C$, 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}	4.5~5.5V	-	2	-	-	V
LOW-level input voltage	V_{IL}	4.5~5.5V	-	-	-	0.8	V
HIGH-level output voltage	V_{OH}	4.5V	$I_O=-50uA$	4.4	-	-	V
			$I_O=-24mA$	3.76	-	-	V
		5.5V	$I_O=-50uA$	5.4	-	-	V
			$I_O=-24mA$	4.76	-	-	V
			$I_O=-75mA$	3.85	-	-	V
LOW-level output voltage	V_{OL}	4.5V	$I_O=50uA$	-	-	0.1	V
			$I_O=24mA$	-	-	0.5	V
		5.5V	$I_O=50uA$	-	-	0.1	V
			$I_O=24mA$	-	-	0.44	V
			$I_O=75mA$	-	-	1.65	V
input leakage current	I_I	5.5V	$V_I=V_{CC}$ or GND	-	-	± 1	μA
supply current	I_{CC}	5.5V	$V_I=V_{CC}$ or GND; $I_O=0A$	-	-	40	μA
additional supply current	ΔI_{CC}	5.5V	One input at $V_I=V_{CC}-2.1V$; Other inputs at V_{CC} or GND; $I_O=0A$	-	-	1.5	mA

3.3.3、AC Characteristics 1

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

Parameter	Symbol	V_{CC}	Conditions		Min.	Typ.	Max.	Unit
nAn to nYn propagation delay	t_{PLH}, t_{PHL}	5.5V	$C_L=50pF$ $R_L=50\Omega$	see Figure 4	1.5	-	10	ns
nOE to nAn/nYn enable time	t_{PZH}, t_{PZL}	5.5V		see Figure 5	1.0	-	10.5	ns
nOE to nAn/nYn enable time	t_{PLZ}, t_{PHZ}	5.5V		see Figure 5	1.5	-	10.5	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	V_{CC}	Conditions		Min.	Typ.	Max.	Unit
nAn to nYn propagation delay	t_{PLH}, t_{PHL}	5.5V	$C_L = 50\text{pF}$ $R_L = 50\Omega$	see Figure 4	-	-	12	ns
nOE to nAn/nYn enable time	t_{PZH}, t_{PZL}	5.5V		see Figure 5	-	-	12.5	ns
nOE to nAn/nYn enable time	t_{PLZ}, t_{PHZ}	5.5V		see Figure 5	-	-	12.5	ns

4、Testing Circuit

4.1、AC Testing Circuit

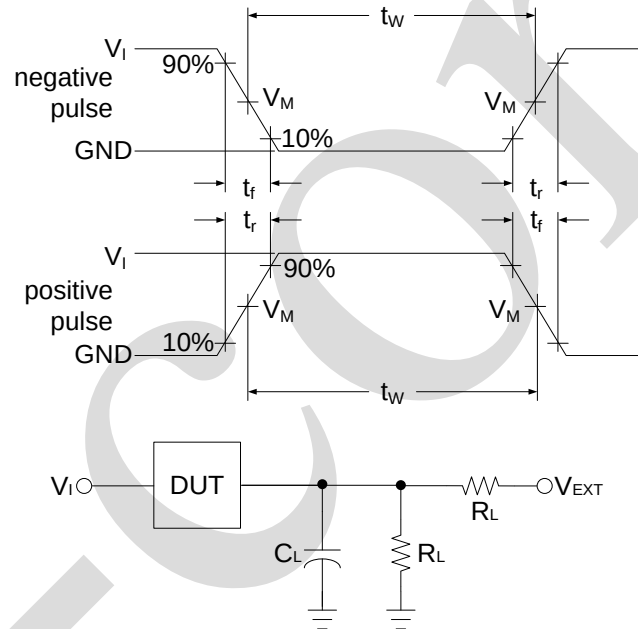


Figure 3. Test circuit for measuring switching times

C_L includes probe and jig 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}
5.5V	V_{CC}	3.0ns	50pF	500Ω	Open	$2 \times V_{CC}$	GND



4.3、AC Testing Waveforms

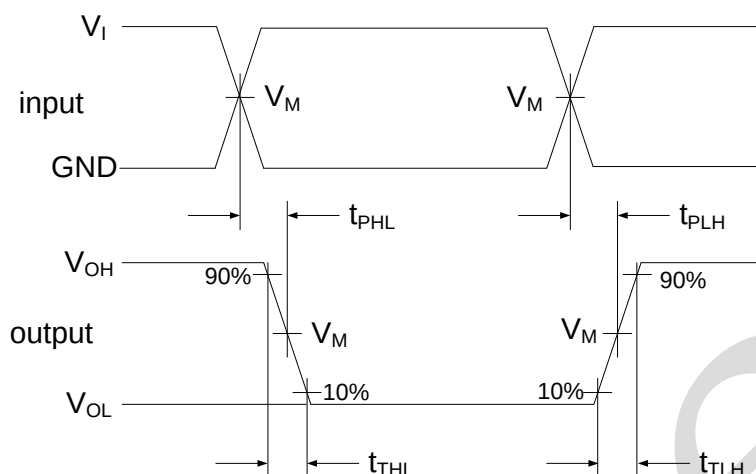


Figure 4. The data input (A) to output (Y) propagation delays

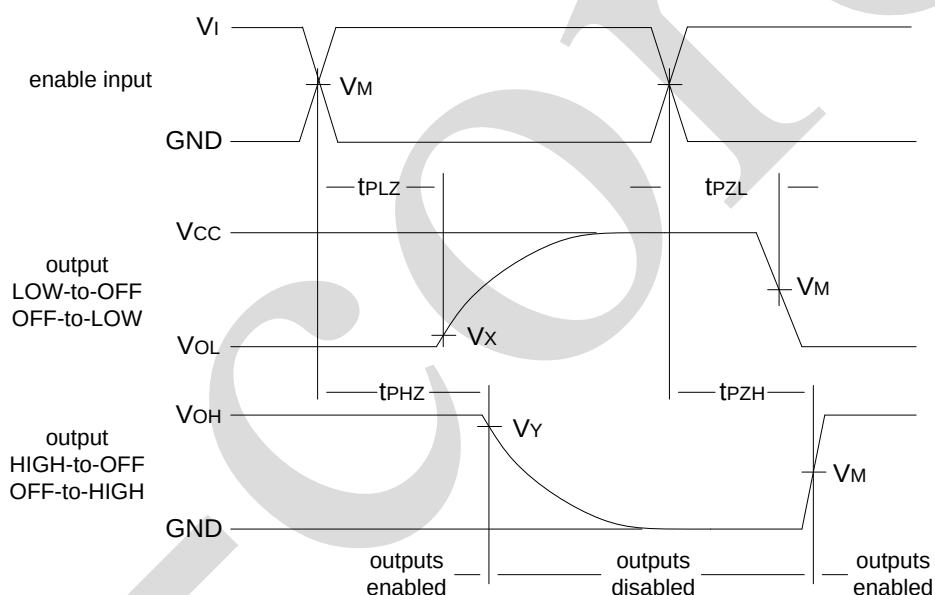


Figure 5. 3-state enable and disable times

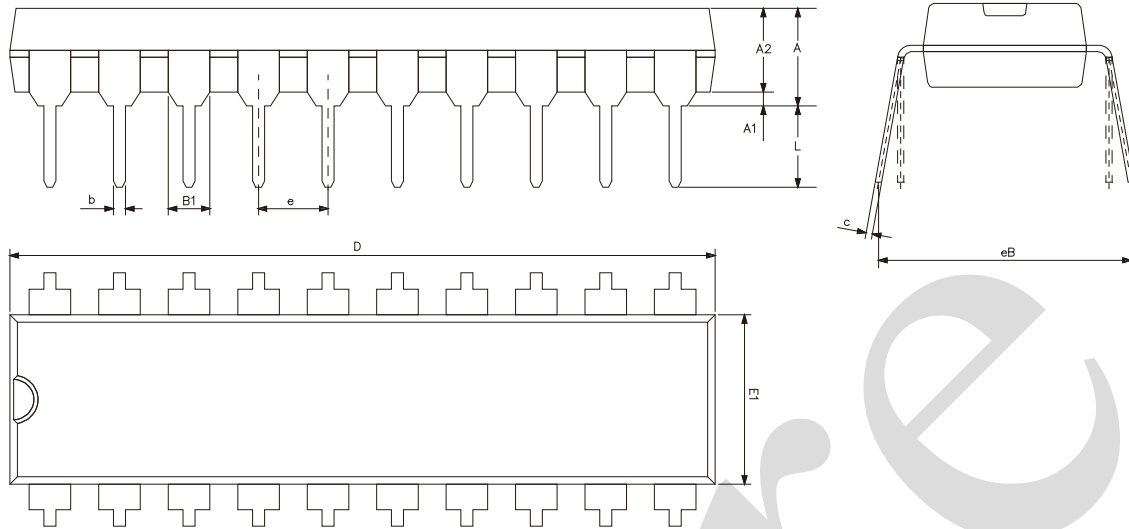
4.4、Measurement Points

Supply voltage	Input	Output		
V_{CC}	V_M	V_M	V_X	V_Y
5.5V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$



5、Package Information

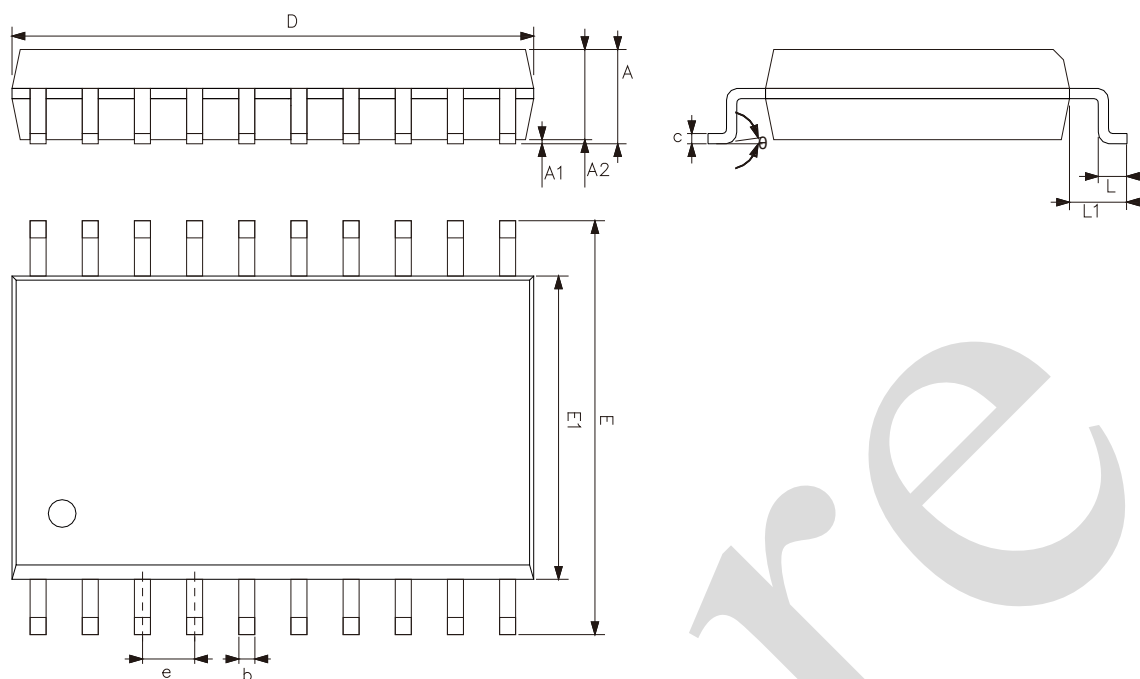
5.1、DIP20



Symbol	Dimensions (mm)	
	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



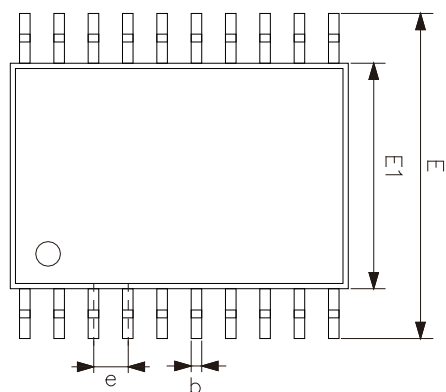
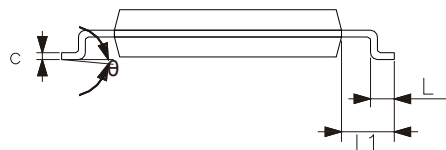
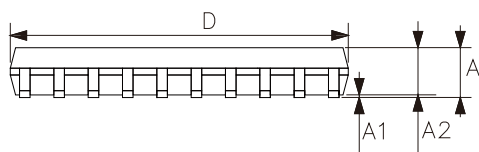
5.2、SOP20



Symbol	Dimensions (mm)	
	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



Symbol	Dimensions (mm)	
	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

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