



AiP24580

Quad Operational Amplifier

Product Specification

Specification Revision History:

Version	Date	Description
2024-09-A0	2024-09	New
2024-11-A1	2024-11	Modify the parameters
2024-11-A2	2024-11	Modify the parameters
2025-06-A3	2025-06	Add DIP14/TSSOP14 package form



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1、General Description

AiP24580 is a quad low-noise operational amplifiers, specially designed for audio control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the low voltage source.

Features:

- Operating voltage: $\pm 2V$ to $\pm 18V$
- Low input noise voltage: $0.8\mu V_{rms}$ (Typ.)
- Wide GBW: 12MHz (Typ.)
- Low distortion: 0.0005%
- Slew rate: $5V/\mu s$
- Packing form: SOP14, DIP14, TSSOP14

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP24580DA14.TB	DIP14	AiP24580	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm

Reel packing specifications:

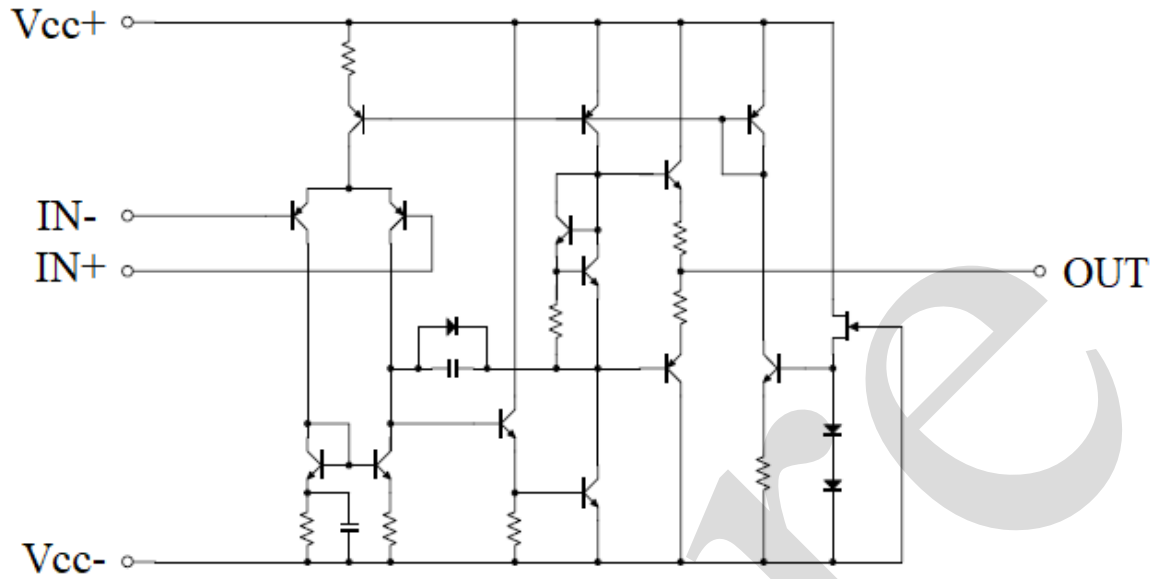
Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP24580SA14.TR	SOP14	AiP24580	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
AiP24580TA14.TR	TSSOP14	AiP24580	5000PCS/reel	10000PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.

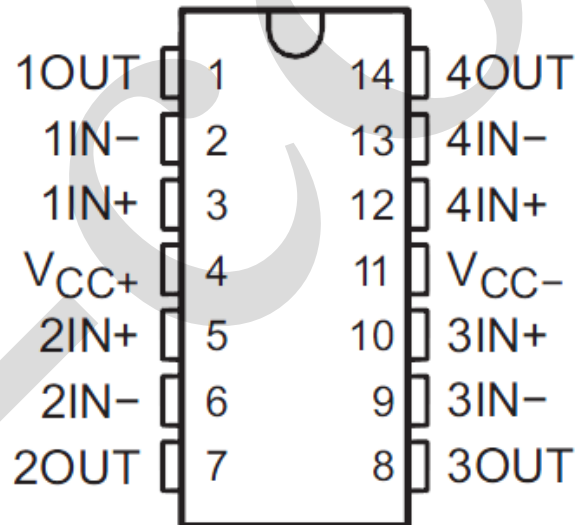


2、Block Diagram And Pin Description

2.1、Block Diagram



2.2、Pin Configurations



**2.3、Pin Description**

Pin No.	Pin Name	Description
1	1OUT	1 channel output
2	1IN-	1 channel negative input
3	1IN+	1 channel positive input
4	V _{CC+}	Power supply
5	2IN+	2 channel positive input
6	2IN-	2 channel negative input
7	2OUT	2 channel output
8	3OUT	3 channel output
9	3IN-	3 channel negative input
10	3IN+	3 channel positive input
11	V _{CC-}	Ground
12	4IN+	4 channel positive input
13	4IN-	4 channel negative input
14	4OUT	4 channel output

3、Electrical Parameter**3.1、Absolute Maximum Ratings**(T_{amb}=25℃, unless otherwise specified)

Characteristic	Symbol	Conditions		Value	Unit
Power supply voltage	V _{CC}	-		±18	V
Input Voltage	V _{ICM}	-		±18	V
Differential Input Voltage	V _{ID}	-		±36	V
Thermal resistance	θ _{JA}	DIP14		88	°C/W
		SOP14		131	
		TSSOP14		175	
Maximum junction temperature	T _J	-		150	°C
Storage temperature	T _{stg}	-		-65 to 150	°C
Soldering temperature	T _L	10s	DIP	245	°C
			SOP/TSSOP	260	°C

Note:

Maximum power dissipation is a function of T_{J(max)}, θ_{JA}, and T_A.The maximum allowable power dissipation at any allowable ambient temperature is P_D = (T_{J(max)} - T_A)/θ_{JA}.Operating at the absolute maximum T_J of 150℃ can affect reliability.**3.2、Recommended Operating Conditions**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V _{CC}	±2	-	±18	V
Operating temperature	T _{amb}	-40	-	85	℃



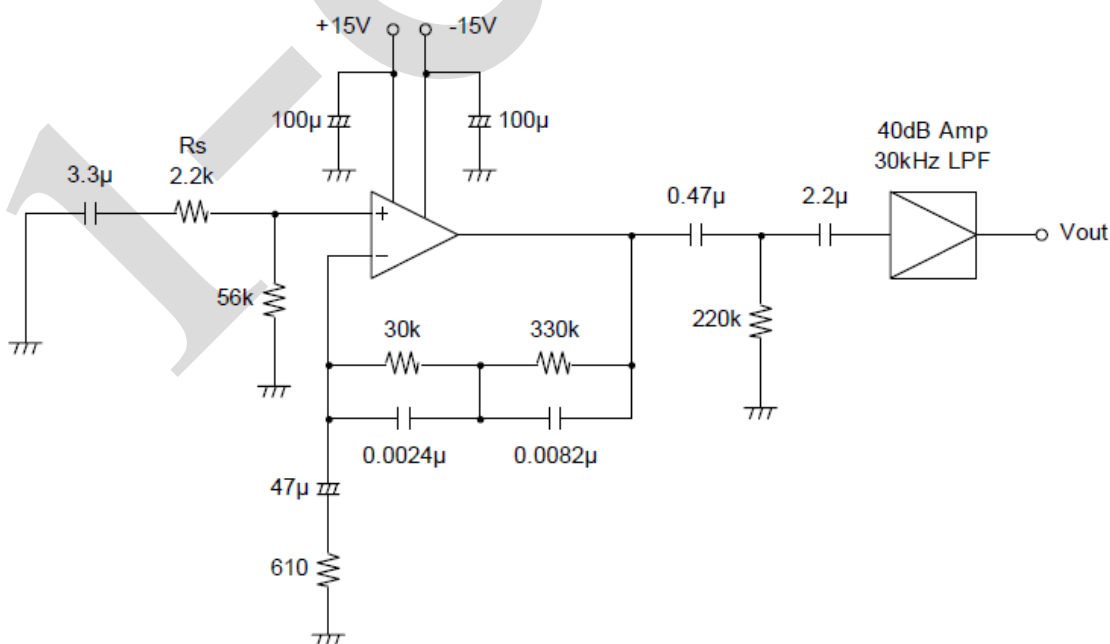
3.3、Electrical Characteristics

($T_{amb}=25^{\circ}\text{C}$, $V_{CC}=\pm 15\text{V}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input offset voltage	V_{IO}	$V_O=0$	-	0.3	3	mV
Input offset current	I_{IO}	$V_O=0$	-	5	200	nA
Input bias current	I_{IB}	$V_O=0$	-	150	500	nA
Voltage gain	A_{VD}	$V_O=\pm 10\text{V}$, $R_L=2\text{K}\Omega$	90	110	-	dB
Output swing	V_{OM}	$R_L=2\text{K}\Omega$	± 12	± 13.5	-	V
Common mode input voltage	V_{ICR}	—	± 12	± 13.5	-	V
Common mode rejection ratio	CMRR	$V_{CC}=15\text{V}$, $V_{IN}=\pm 5\text{V}$	80	110	-	dB
Supply voltage rejection ratio	PSRR	$R_S\leq 10\text{k}\Omega$, $V_{CC}=\pm 9\sim\pm 15\text{V}$	80	110	-	dB
Supply current	I_{CC}	Followed, no load	-	9	12	mA
Slew rate	SR(+)	$V_O=\pm 10\text{V}$, $R_L=2\text{K}\Omega$, $C_L=100\text{pF}$	-	5	-	V/us
Gain bandwidth product	GBP	$f=10\text{kHz}$	-	12	-	MHz
Total harmonic distortion	THD	$A_V=20\text{dB}$, $V_O=5\text{V}$, $R_L=2\text{K}\Omega$, $f=1\text{kHz}$	-	0.0005	-	%
Equivalent input noise voltage	V_{NI}	$R_S=2.2\text{k}\Omega$, 30kHz LPF	-	0.8	-	μV_{rms}
Channel disturbance	Crosstalk	followed, $V_{I(sin)}=100\text{mV}_{rms}$, $f=1\text{kHz}$	—	110	—	dB

4、Testing Circuit

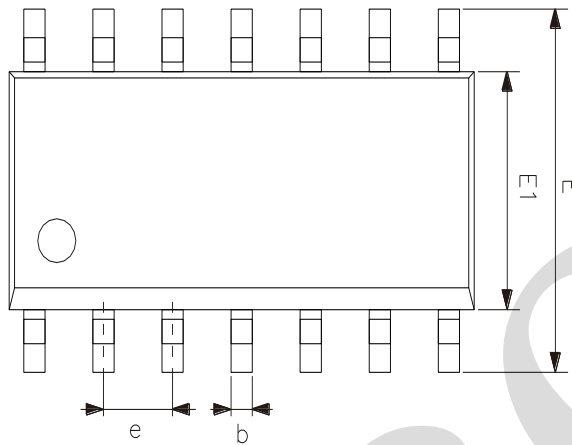
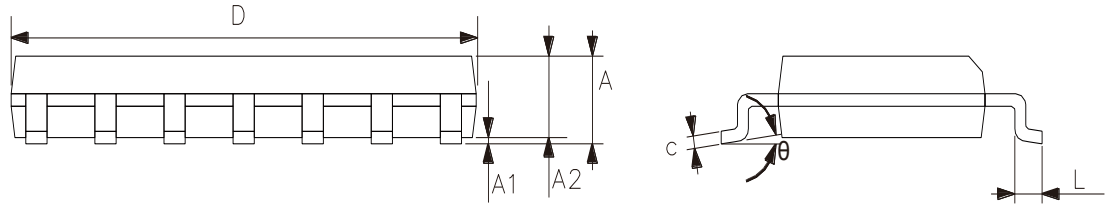
4.1、Noise Voltage Testing Circuit



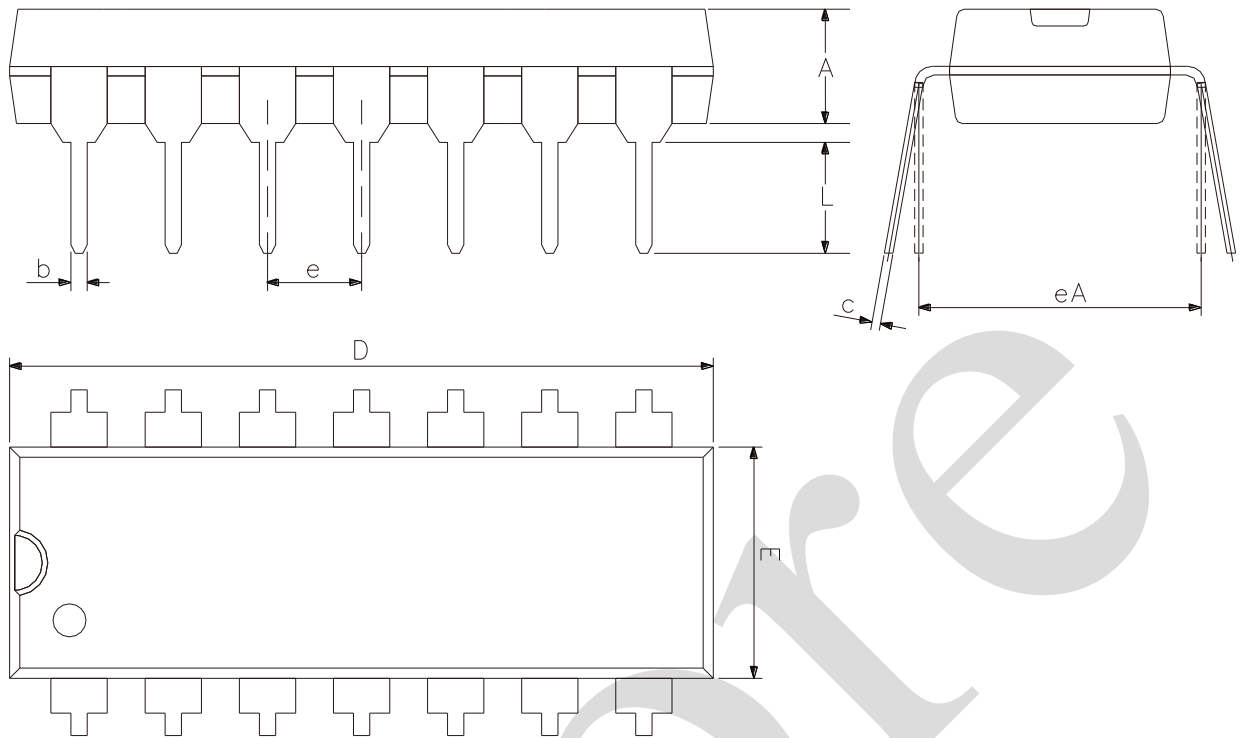


5、Package Information

5.1、SOP14



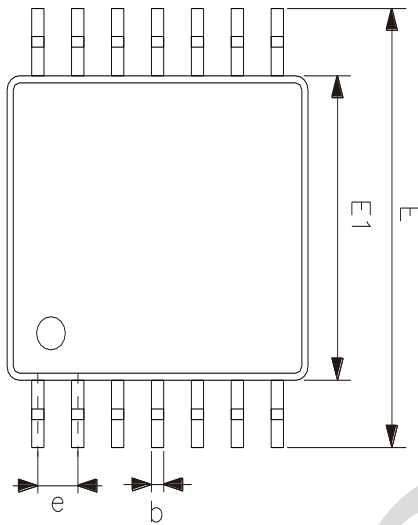
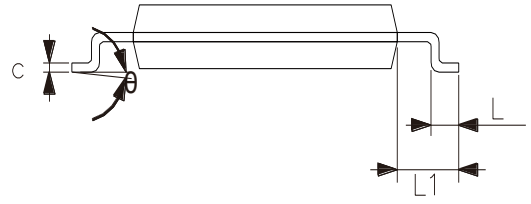
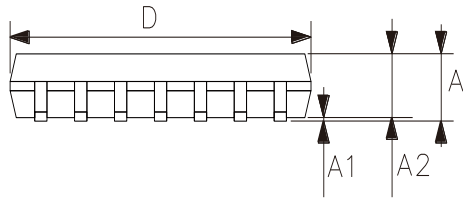
2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	1.50	1.75
A1	0.05	0.25
A2	1.30	—
b	0.33	0.50
c	0.19	0.25
D	8.43	8.76
E	5.80	6.25
E1	3.75	4.00
e	1.27	
L	0.40	0.89
θ	0°	8°

**5.2、DIP14**

2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	3.05	3.60
b	0.33	0.56
c	0.20	0.36
D	18.80	19.40
E	6.20	6.60
e	2.54	
eA	7.62	10.90
L	2.92	—



5.3、TSSOP14



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	4.90	5.10
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
L1	1.00	
θ	0°	8°

Note: The package dimensions do not include flash and burrs, and the dimensions of flash and burrs shall not exceed 0.15mm.



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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