



AiP4580

Dual Operational Amplifier

Product Specification

Specification Revision History :

Version	Date	Description
2019-12-A1	2019-12	New
2022-01-A2	2022-01	Modify Ordering Information
2022-03-A3	2022-03	Modify supply voltage range
2022-06-A4	2022-06	Add packing information of SIP8
2023-10-B1	2023-10	Update the template



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1、General Description

AiP4580 is the dual operational amplifier, specially designed for improving the 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 $\pm 2V \sim \pm 18V$
- Low Input Noise Voltage $0.8\mu V_{rms}$ typ.
- Wide GBW $15MHz$ typ.
- Low Distortion 0.0005% typ.
- Slew Rate $5V/\mu s$ typ.
- Packing Form: SOP8/DIP8/MSOP8/SIP8

**Ordering Information:****Tube packing specifications:**

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP4580SA8.TB	SOP8	AiP4580	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 1.27mm
AiP4580MA8.TB	MSOP8	AiP4580	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm
AiP4580DA8.TB	DIP8	AiP4580	50 PCS/tube	40 tube/box	2000 PCS/box	Dimensions of plastic enclosure: 9.2mm×6.4mm Pin spacing: 2.54mm
AiP4580SIP8.TB	SIP8	AiP4580	25 PCS/tube	60 tube/box	1500 PCS/box	Dimensions of plastic enclosure: 19.2mm×6.5mm Pin spacing: 2.54mm

Reel packing specifications:

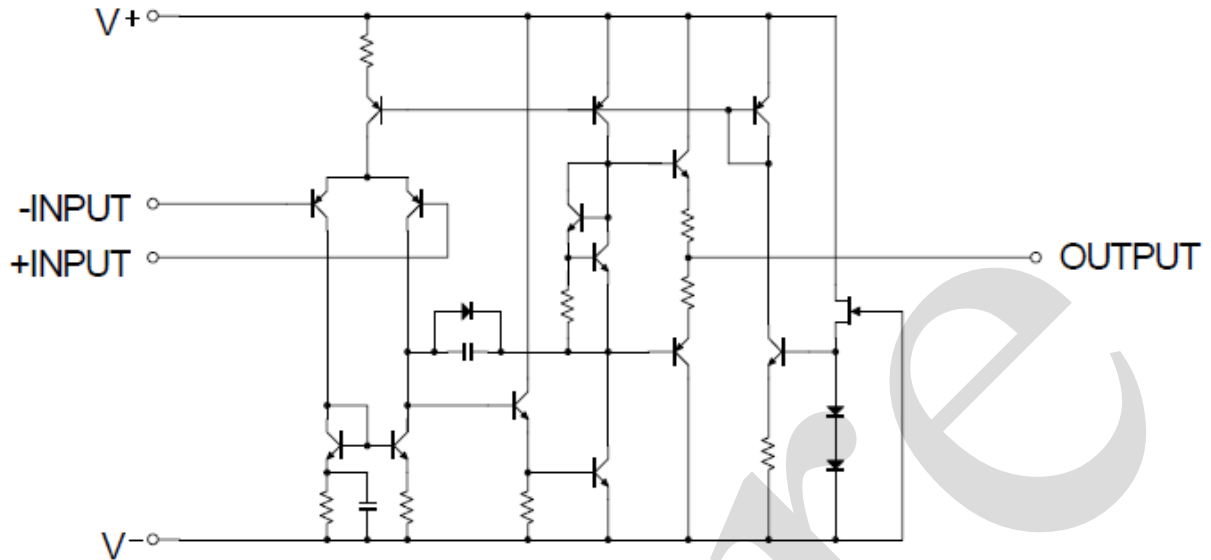
Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP4580SA8.TR	SOP8	AiP4580	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing:1.27mm
AiP4580MA8.TR	MSOP8	AiP4580	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing:0.65mm

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

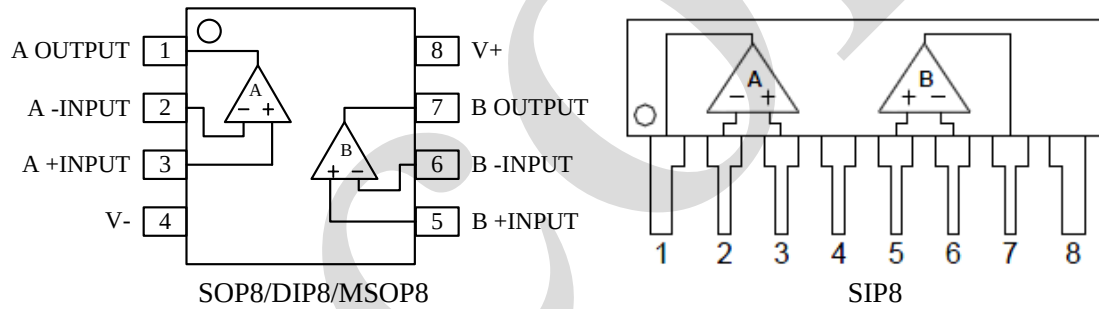


2、Block Diagram And Pin Description

2.1、Block Diagram



2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	A OUTPUT	Output A	5	B +INPUT	Positive input B
2	A -INPUT	Negative input A	6	B -INPUT	Negative input B
3	A +INPUT	Positive input A	7	B OUTPUT	Output B
4	V-	Negative power supply	8	V+	Positive power supply



3、Electrical Parameter

3.1、Absolute Maximum Ratings

(T_{amb}=25℃, unless otherwise specified)

Characteristic		Symbol	Conditions		Value	Unit
Power Supply Voltage		V+/V-	-		±20	V
Input Voltage		V _{ICM}	-		±18	V
Differential Input Voltage		V _{ID}	-		±36	V
Thermal resistance	DIP8	θ_{JA}	-		110	℃/W
	SOP8		-		160	
	MSOP8		-		210	
	SIP8		-		110	
Operating Temperature Range		T _{amb}	-		-40 to 85	℃
Storage Temperature Range		T _{stg}	-		-65 to 150	℃
Soldering Temperature		T _L	10s	SIP	245	℃
				DIP	250	
				SOP8/MSOP8	260	

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 $P_D = (T_{J(max)} - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150℃ can affect reliability.

3.2、Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V+/V-	±2	-	±18	V
Operating Temperature Range	T _{amb}	-40	—	85	℃

3.3、Electrical Characteristics

3.3.1、DC Characteristics

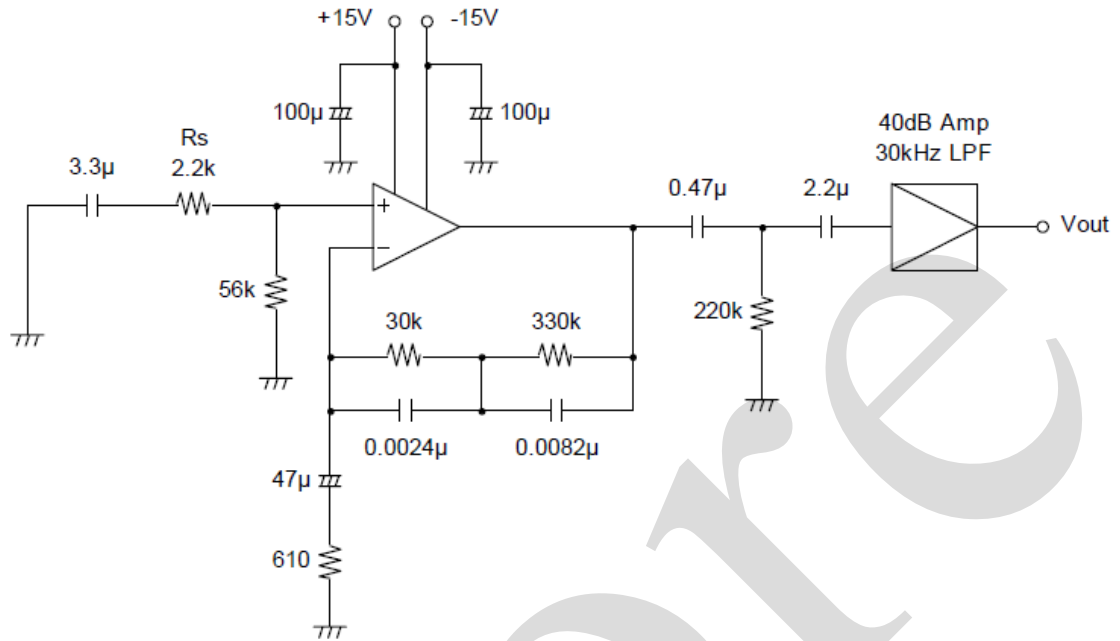
(unless otherwise specified, T_{amb}=25℃, V+/V-=±15V)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Offset Voltage	V _{IO}	V _O =0, R _S =100Ω	-	0.5	3	mV
Input Offset Current	I _{IO}	V _O =0, R _S =100Ω	-	5	200	nA
Input Bias Current	I _{IB}	V _O =0, R _S =100Ω	-	100	500	nA
Voltage Gain	A _{VD}	V _O =±10V, R _L =2KΩ	90	110	-	dB
Output Swing	V _{OM}	R _L =2KΩ	±12	±13.5	-	V
Common Mode Input Voltage Range	V _{ICR}	—	±12	±13.5	-	V
Common Mode Rejection Ratio	CMRR	V _O =0	80	110	-	dB
Supply Voltage Rejection Ratio	PSRR	R _S =100Ω	80	110	-	dB
Supply Current	I _{CC}	-	-	6	9	mA
Slew Rate	SR(+)	V _I =10V, R _L =2KΩ, C _L =100pF	-	5	-	V/us
Gain Bandwidth Product	BW	f=10kHz	-	15	-	MHz
Total Harmonic Distortion	THD	A _V =20dB, V _O =5V, R _L =2KΩ, f=1kHz	-	0.0005	-	%
Equivalent Input Noise Voltage	V _{NI}	R _S =2.2KΩ, 30kHz LPF	-	0.8	-	uVrms



4、Testing Circuit

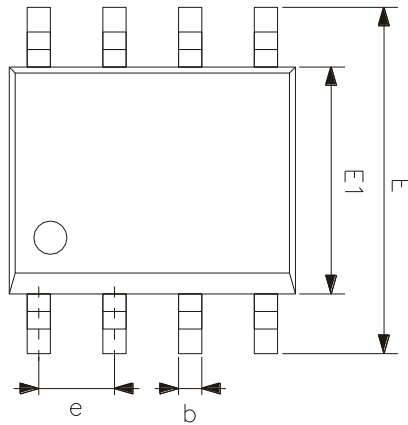
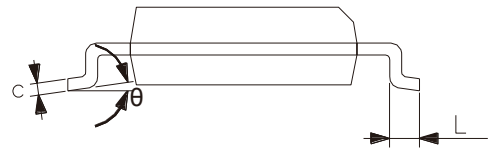
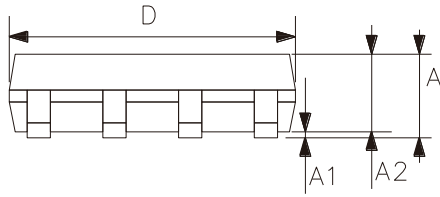
4.1、Noise testing circuit





5、Package Information

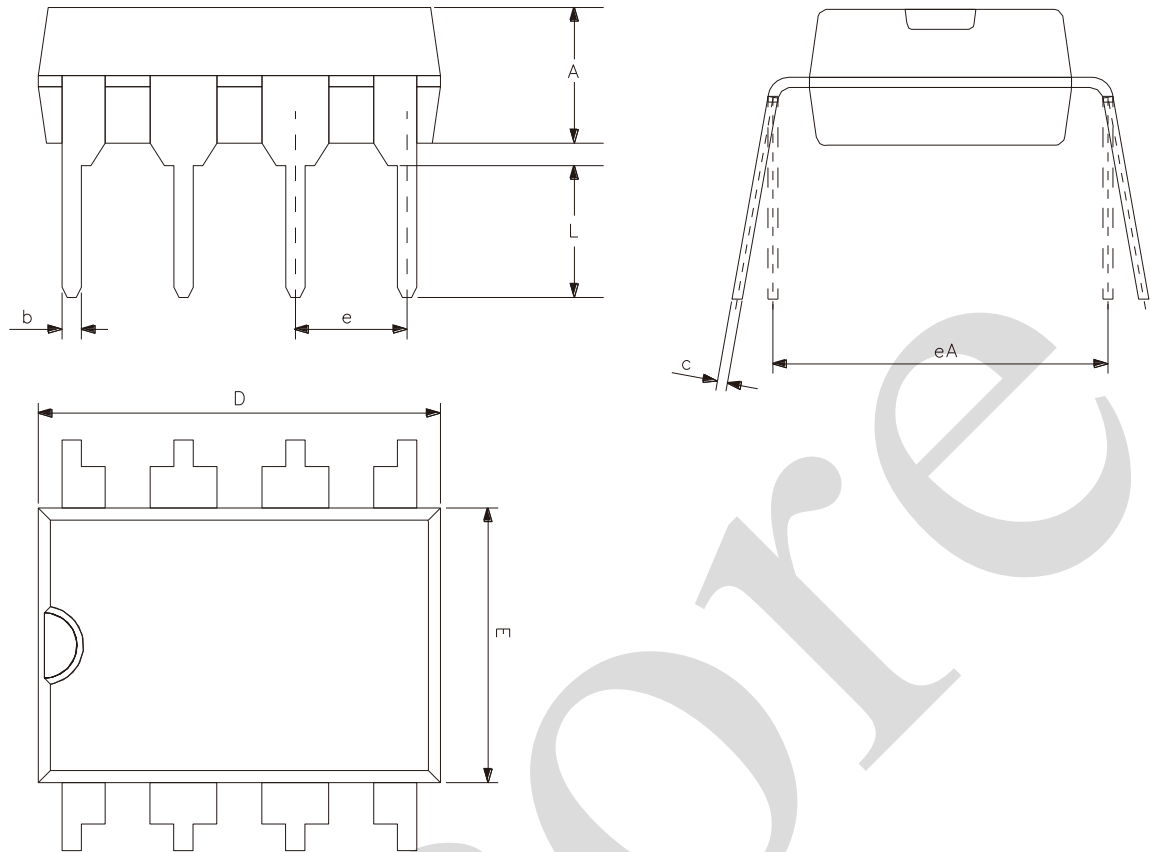
5.1、SOP8



Symbol	Dimensions (mm)	
	Min.	Max.
A	1.35	1.80
A1	0.05	0.25
A2	1.25	1.55
D	4.70	5.10
E	5.80	6.30
E1	3.70	4.10
b	0.306	0.51
c	0.19	0.25
e	1.27	
L	0.40	0.89
θ	0°	8°



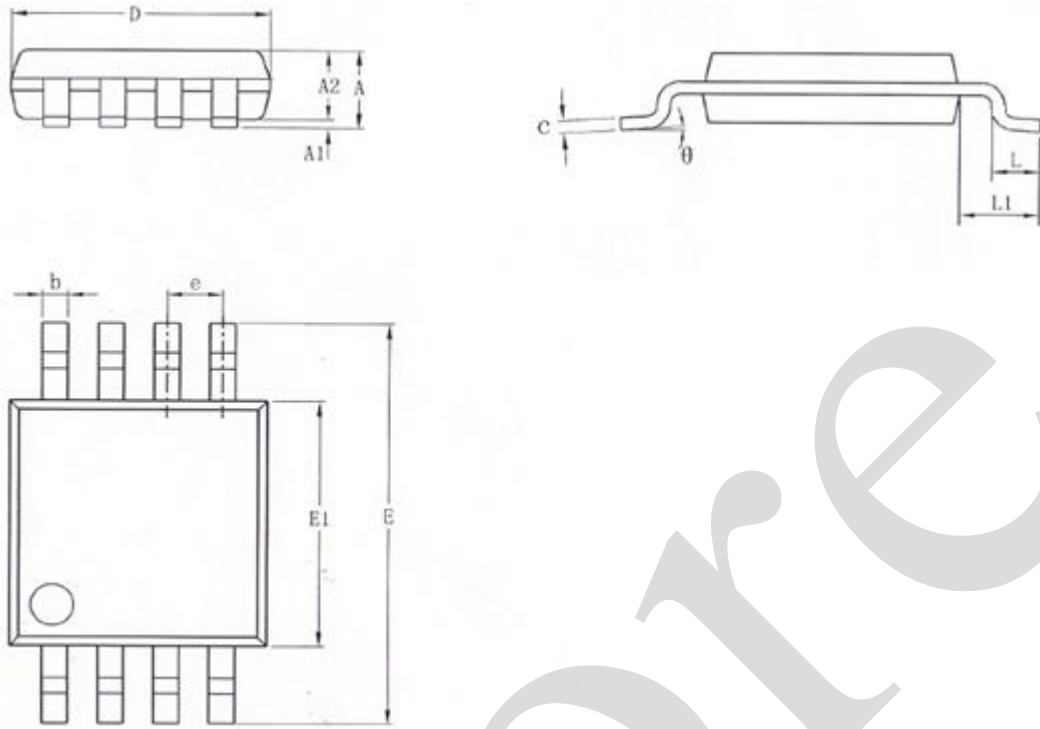
5.2、DIP8



Symbol	Dimensions (mm)	
	Min.	Max.
A	3.00	3.60
b	0.36	0.56
c	0.20	0.36
D	9.00	9.45
E	6.15	6.60
e	2.54	
eA	7.62	9.30
L	3.00	—



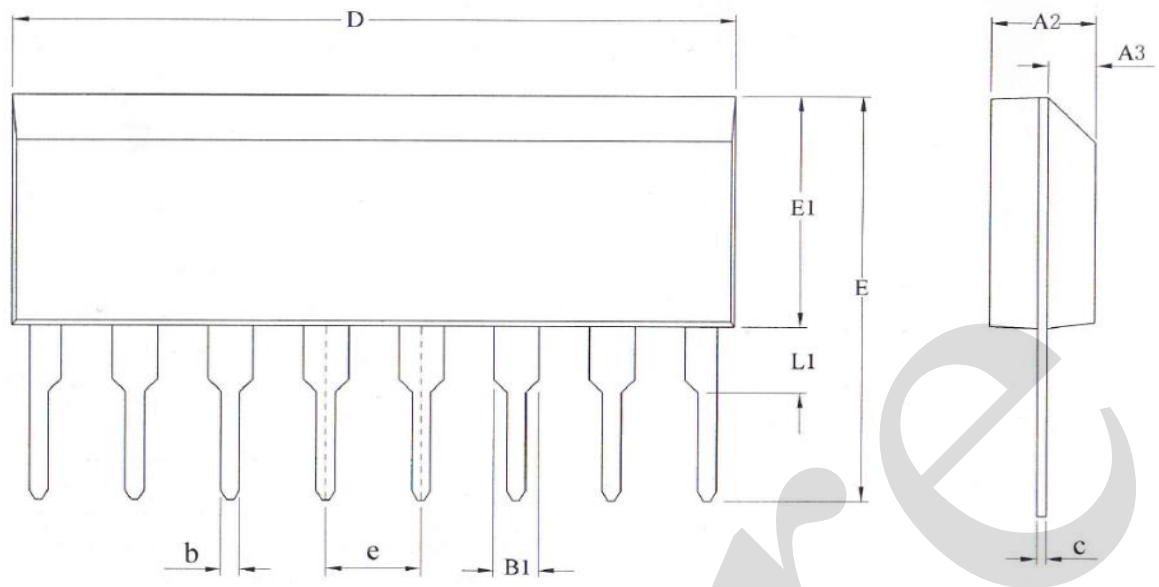
5.3、MSOP8



Symbol	Dimensions (mm)	
	Min.	Max.
A	—	1.10
A1	0.05	0.15
A2	0.75	0.95
b	0.22	0.38
c	0.08	0.23
D	2.90	3.10
E	4.70	5.10
E1	2.90	3.10
e	0.65	
L	0.40	0.80
L1	0.95	
θ	0 °	8 °



5.4、SIP8



Symbol	Dimensions (mm)	
	Min.	Max.
A2	2.70	2.90
A3	1.35	1.45
b	0.48	0.56
B1	1.20	
c	0.25	0.29
D	19.10	19.30
e	2.54	
E	11.20	11.60
E1	6.40	6.60
L1	1.30	1.70



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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