DUAL LOW NOISE OPERATIONAL AMPLIFIERS AZ4580

General Description

The AZ4580 is a dual low noise operational amplifier. It is specifically designed for audio systems to improve tone control; it can also be used in pre-amplifier, industrial measurement tools and applications where gain and phase matched channels are mandatory.

The IC features monolithic silicon chip, internal frequency compensation, low noise, low distortion, high gain and high bandwidth. The AZ4580 can operate under dual power supply voltage up to ±18V or single power supply up to 36V.

Features

- Operating voltage: ±2V ~ ±18V
- Large DC voltage gain: 110dB typ.
- Low input noise voltage: 0.7 μV_{RMS} typ.
- Wide gain bandwidth product: 15 MHz typ.
- Low distortion: 0.0005% typ.
- Slew rate: 7V/μs typ.
- Package outline: DIP8, SOIC8

Applications

- Audio AC-3 decoded system
- Audio amplifier

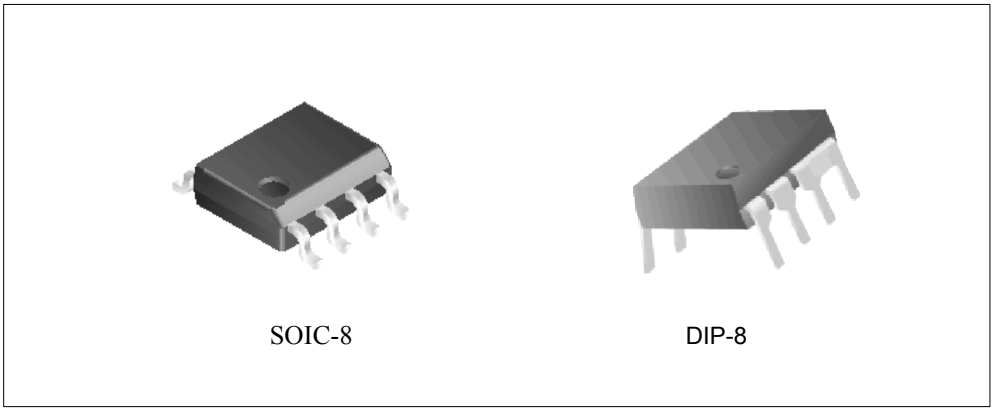
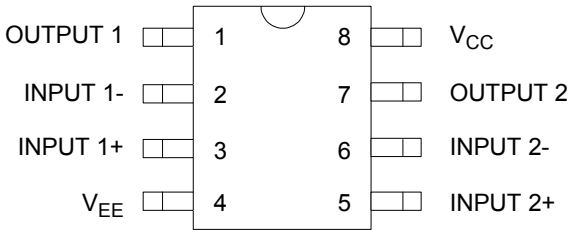


Figure 1. Package Types of AZ4580

Pin Configuration



Top View

Figure 2. Pin configuration of AZ4580

Functional Block Diagram

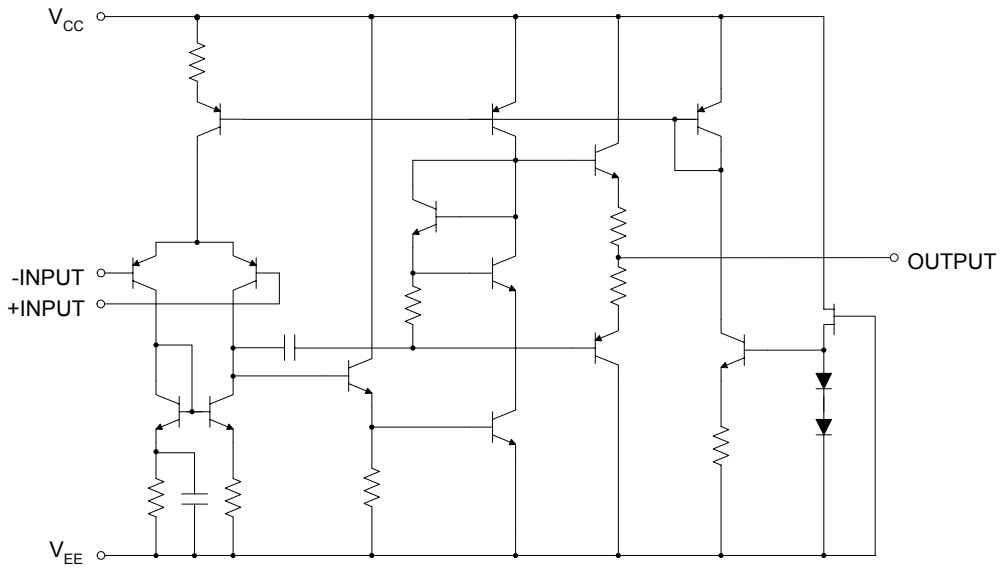


Figure 3. Representative Schematic Diagram of AZ4580

Ordering Information

Package	Temperature Range	Part Number	Packing Type
SOIC-8	-40°C to 85°C	4580M	Tube, Reel
DIP-8		AZ4580P	Tube

Absolute Maximum Ratings (Note 1)

Parameter	Min.	Max.		Unit
Power Supply Voltage	V_{CC}	+ 20		V
	V_{EE}	- 20		
Differential Input Voltage	V_{ID}	± 30		V
Input Voltage	V_{IC}	± 15		V
Power Dissipation		DIP-8	800	mW
		SOIC-8	800	
Operating Temperature Range	T_{OP}	-40 to 85		°C
Storage Range	T_{STG}	-60 to 150		°C
ESD (Human Body Mode)		4000		V
ESD (Machine Mode)		350		

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operation Ratings" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operation Conditions

Parameter	Min.	Max.	Unit
Supply Voltage	± 2	± 18	V

Electrical Characteristics

Operating Conditions: V_{CC} = +15V, V_{EE} = - 15V, T_A= 25°C unless otherwise specified.

Parameter	Conditions	Min.	Typ.	Max.	Unit
Supply Current	no load	-	4	7	mA
Input Offset Voltage	R_S≤10KΩ	-	0.5	3	mV
Input Offset Current		-	5	100	nA
Input Bias Current		-	150	500	nA
Input Common Mode Voltage Range		±12	± 13.5	-	V
Common Mode Rejection Ratio	V_{CM}=0V to V_{CC}-1.5V, R_S≤10KΩ	80	110	-	dB
Large Signal Voltage Gain	R_L=2KΩ, V_O=±10V	90	110	-	dB
Power Supply Rejection Ratio	R_S≤10KΩ	80	110	-	dB
Slew Rate	R_L≥2KΩ	-	7	-	V / μS
Gain Bandwidth Product	R_L=2KΩ, f=10KHz	-	15	-	MHz
Total Harmonic Distortion	A_V=20dB, V_O=5V R_L=2KΩ, f=1KHz	-	0.0005	-	%
Equivalent Input Noise Voltage	RIAA R_S=2.2KΩ, 30KHz LPF	-	0.7		μV_{RMS}

Typical Characteristics

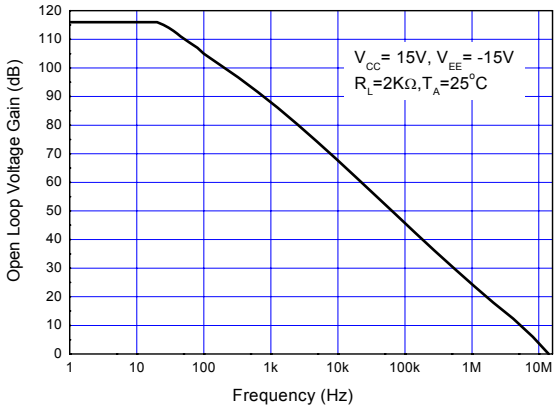


Figure 4. Open Loop Voltage Gain vs. Frequency

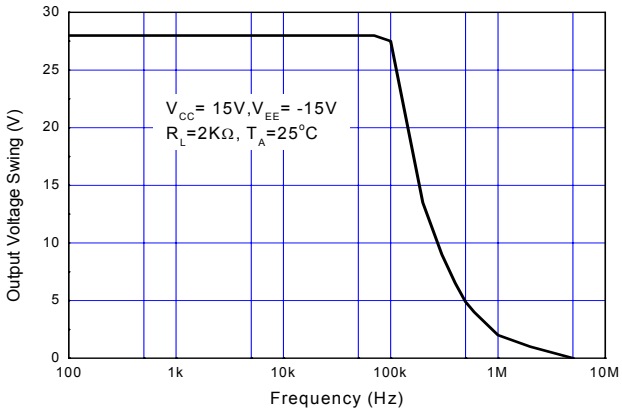


Figure 5. Maximum Output Voltage Swing vs. Frequency

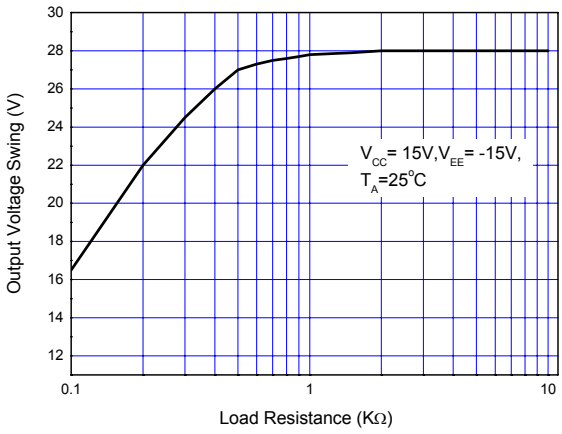


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

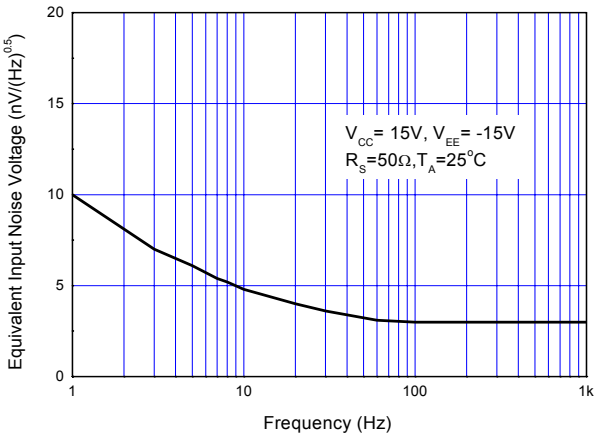


Figure 7. Equivalent Input Noise Voltage vs. Frequency

Typical Characteristics (Continued)

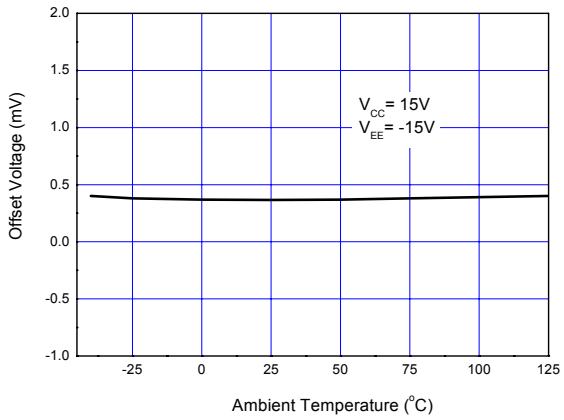


Figure 8. Input Offset Voltage vs. Temperature

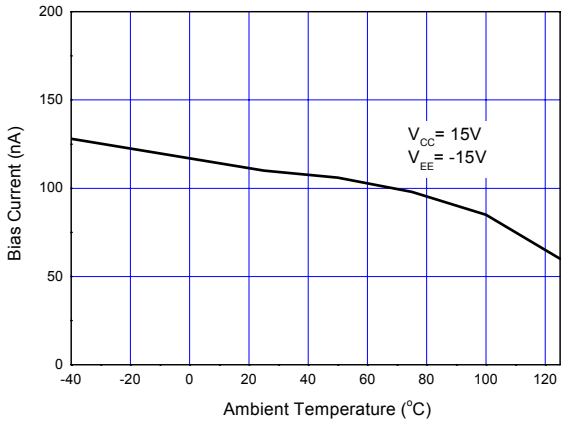


Figure 9. Input Bias Current vs. Temperature

Typical Applications

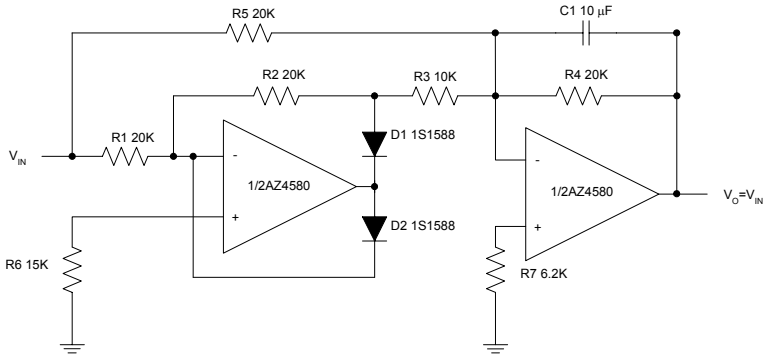


Figure 10. AC/DC Converter

Typical Applications (Continued)

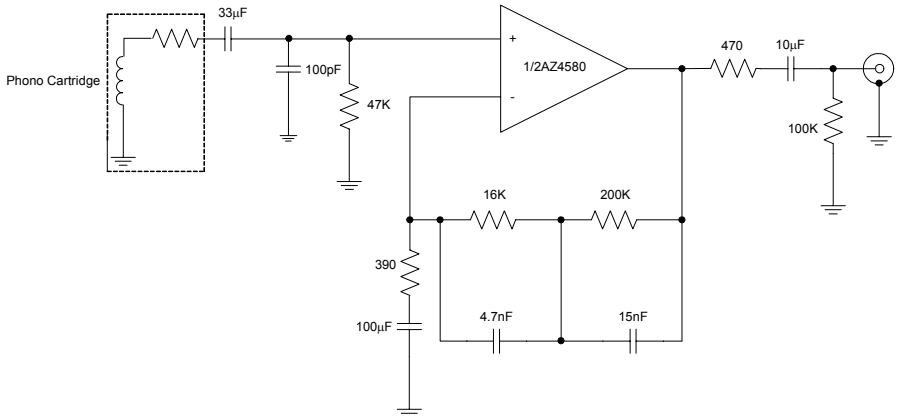


Figure11. RIAA Preamp

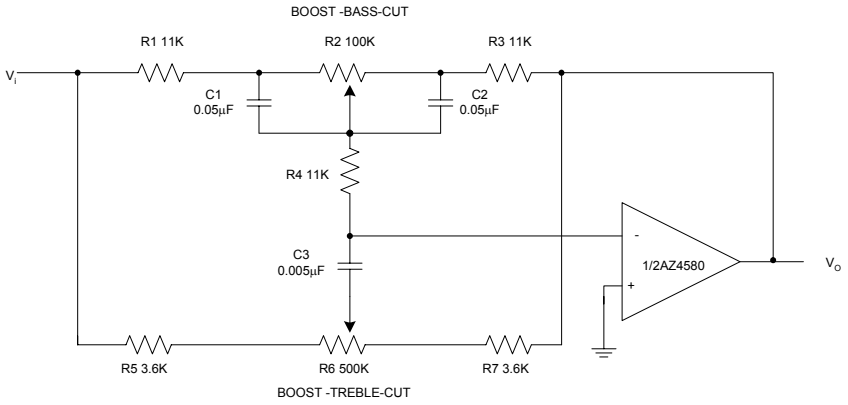
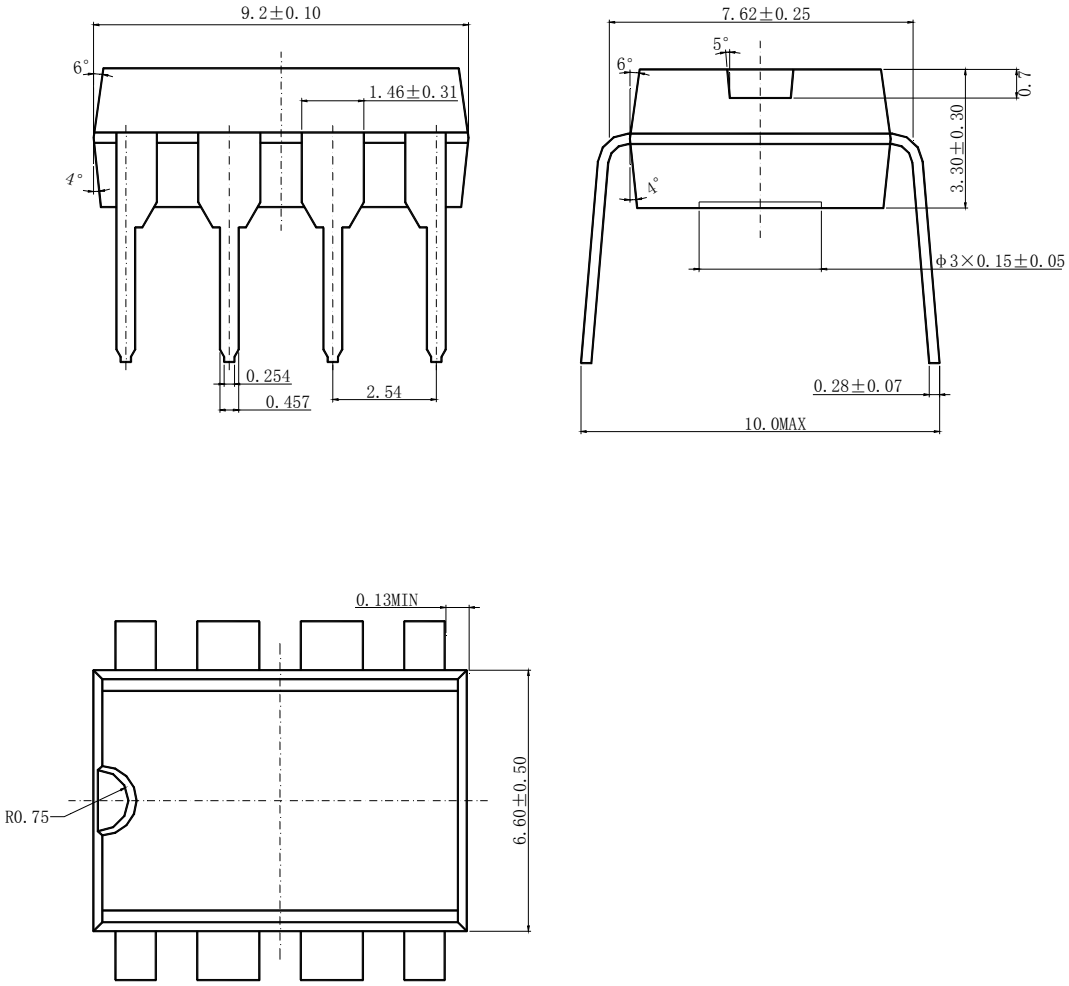


Figure12. Tone Control

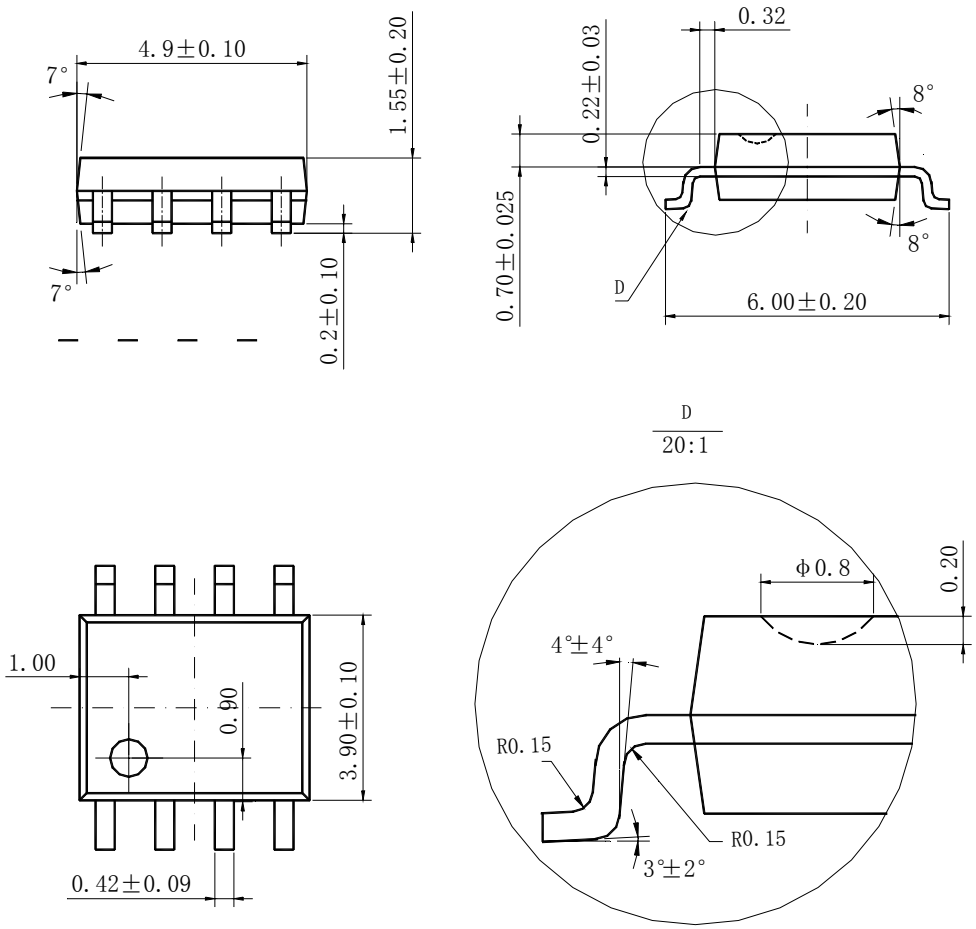
Mechanical Dimensions

DIP - 8



Mechanical Dimensions (Continued)

SOIC - 8





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