DUAL LOW NOISE OPERATIONAL AMPLIFIERS AZ4558A

General Description

The AZ4558A consists of two low noise, high performance operational amplifiers. It is specially suitable for applications in differential-in, differential-out as well as in industrial measurement tools and applications where gain and phase matched channels are mandatory.

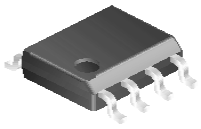
The IC features monolithic silicon chip, internal frequency compensation, low noise, low distortion, wide operating voltage range, high gain and high bandwidth. The AZ4558A can operate under dual power supply voltage up to ±18V or single power supply up to 36V.

Features

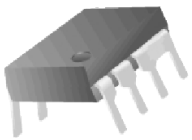
- Operating voltage: ±2V ~ ±18V
- Large DC voltage gain: 110 dB
- Low input noise voltage: $1\mu V_{RMS}$
- Wide gain bandwidth product: 7 MHz
- Slew rate: 3V/μs
- Package outline: DIP8, SOIC8

Applications

- Audio AC-3 decoded system
- Audio amplifier
- AC/DC converter



SOIC-8

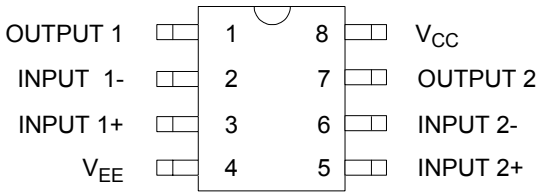


DIP-8

Figure 1. Package Types of AZ4558A

Pin Configuration

SOIC-8/DIP-8



Top View

Figure 2. Pin Configuration of AZ4558A

Functional Block Diagram

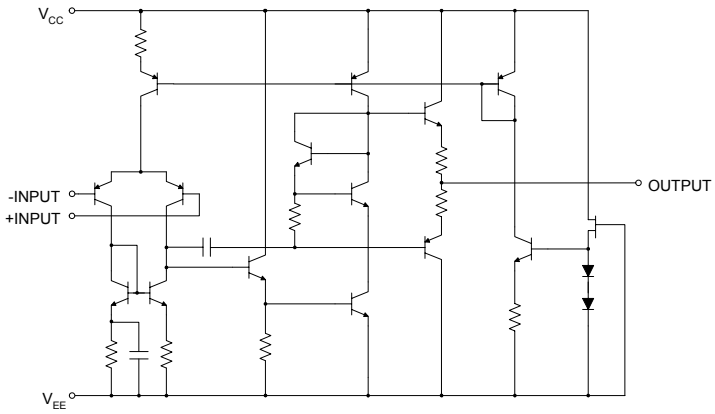


Figure 3. Representative Schematic Diagram of AZ4558A (Each Amplifier)

Ordering Information

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOIC-8	-40°C to 85°C	AZ4558AM	4558AM	Tube/Tape/Reel
DIP-8		AZ4558AP	AZ4558AP	Tube

AZ 4558A Y

Circuit Type

Package
M: SOIC-8
P: DIP-8

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value		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	P_D	DIP	800	mW
		SOIC	800	
Operating Temperature Range	T_{OP}	-40 to 85		°C
Storage Temperature Range	T_{STG}	-60 to 150		°C
ESD (Human Body Model)		3000		V
ESD (Machine Model)		400		V

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 Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating 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
Input Offset Voltage	$R_S \leq 10K\Omega$	-	0.5	3	mV
Input Bias Current		-	65	250	nA
Input Offset Current		-	5	50	nA
Supply Current		-	2.5	4	mA
Large Signal Voltage Gain	$R_L \geq 2K\Omega$, $V_O = \pm 10V$	85	110	-	dB
Common Mode Rejection Ratio	$R_S \leq 10K\Omega$	80	100	-	dB
Power Supply Rejection Ratio	$R_S \leq 10K\Omega$	80	100	-	dB
Output Voltage Swing	$R_L \geq 2K\Omega$	±10	±13	-	V
	$R_L \geq 10K\Omega$	±12	±14	-	
Output Sink Current	V-=1V, V+ =0V, V_O=2V		70		mA
Output Source Current	V+ =1V, V-=0V, V_O=2V		45		mA
Slew Rate		-	3	-	V / μS
Equivalent Input Noise Voltage	RIAA, Rs=1KΩ, 30KHz LPF	-	1	-	μV_{RMS}
Gain Bandwidth Product	f = 10KHz	-	7	-	MHz

Typical Performance Characteristics

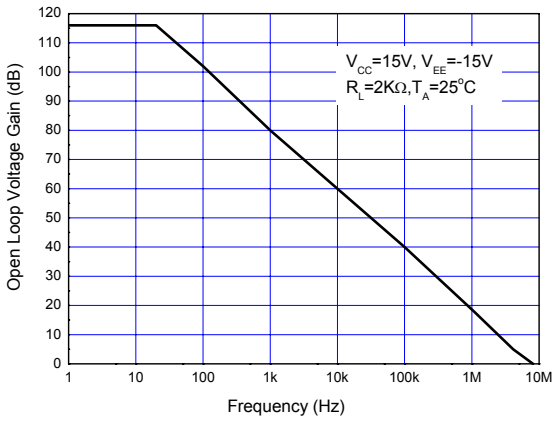


Figure 4. Open Loop Voltage Gain vs. Frequency

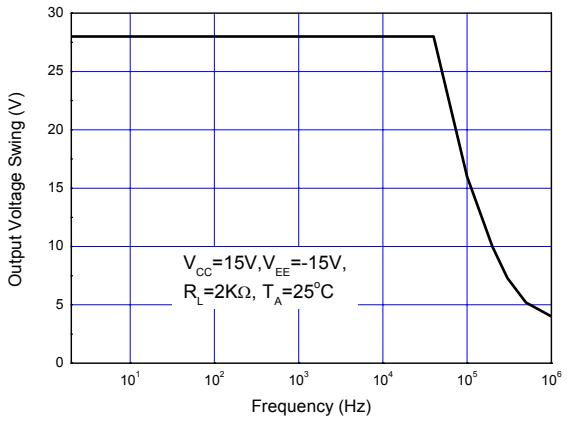


Figure 5. Maximum Output Voltage Swing vs. Frequency

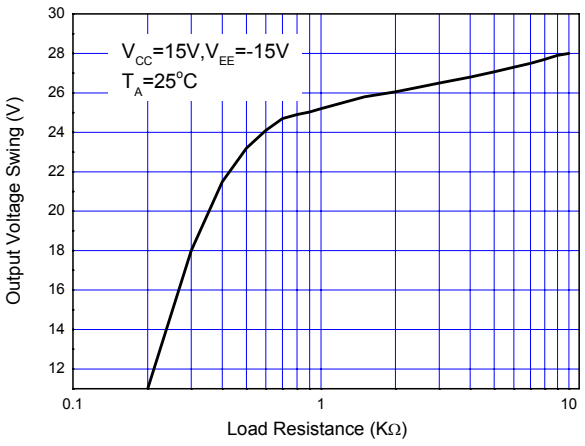


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

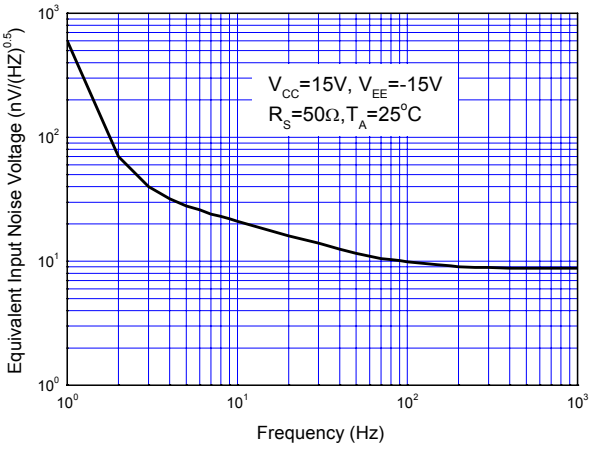


Figure 7. Equivalent Input Noise Voltage vs. Frequency

Typical Performance Characteristics (Continued)

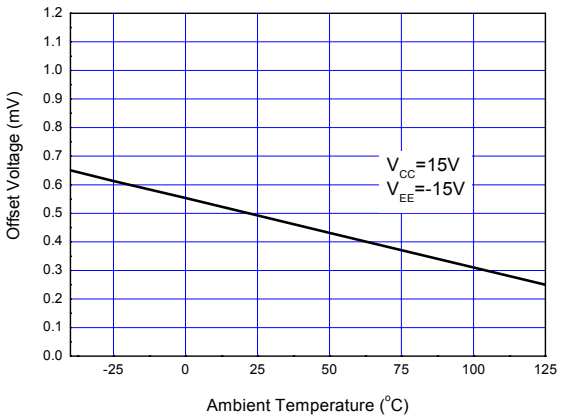


Figure 8. Input Offset Voltage vs. Temperature

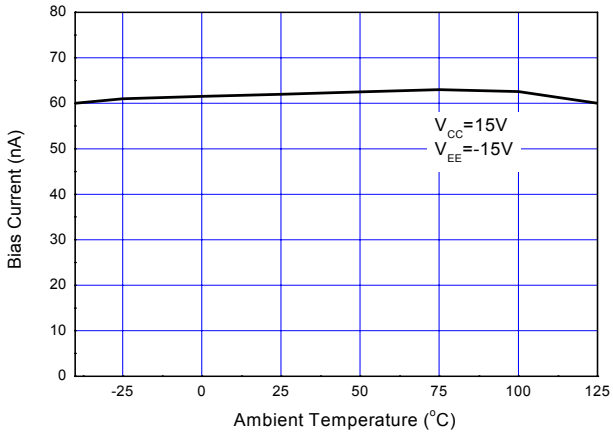


Figure 9. Input Bias Current vs. Temperature

Typical Applications

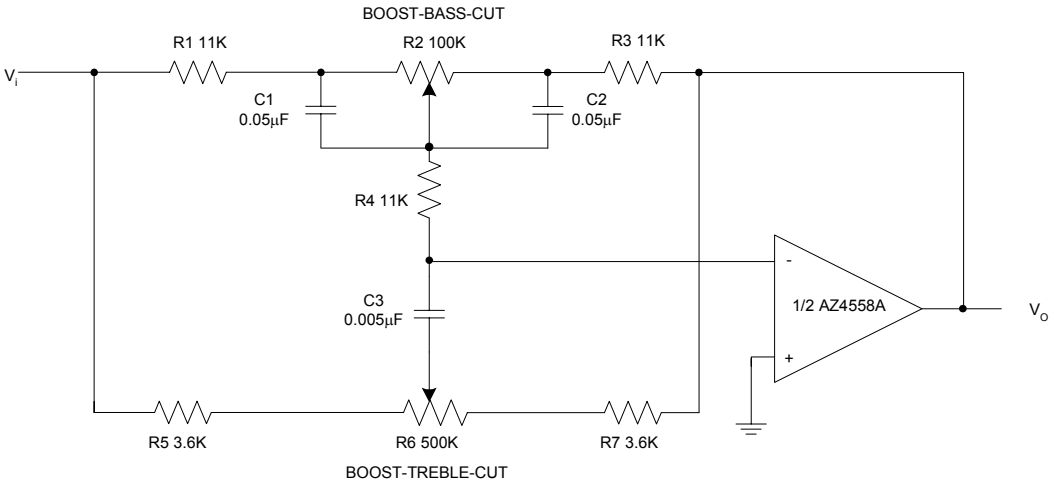


Figure 10. Tone Control

Typical Applications (Continued)

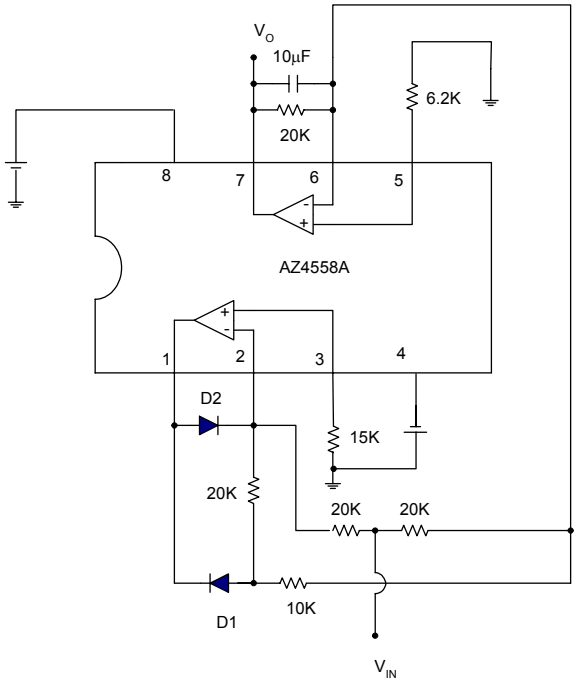
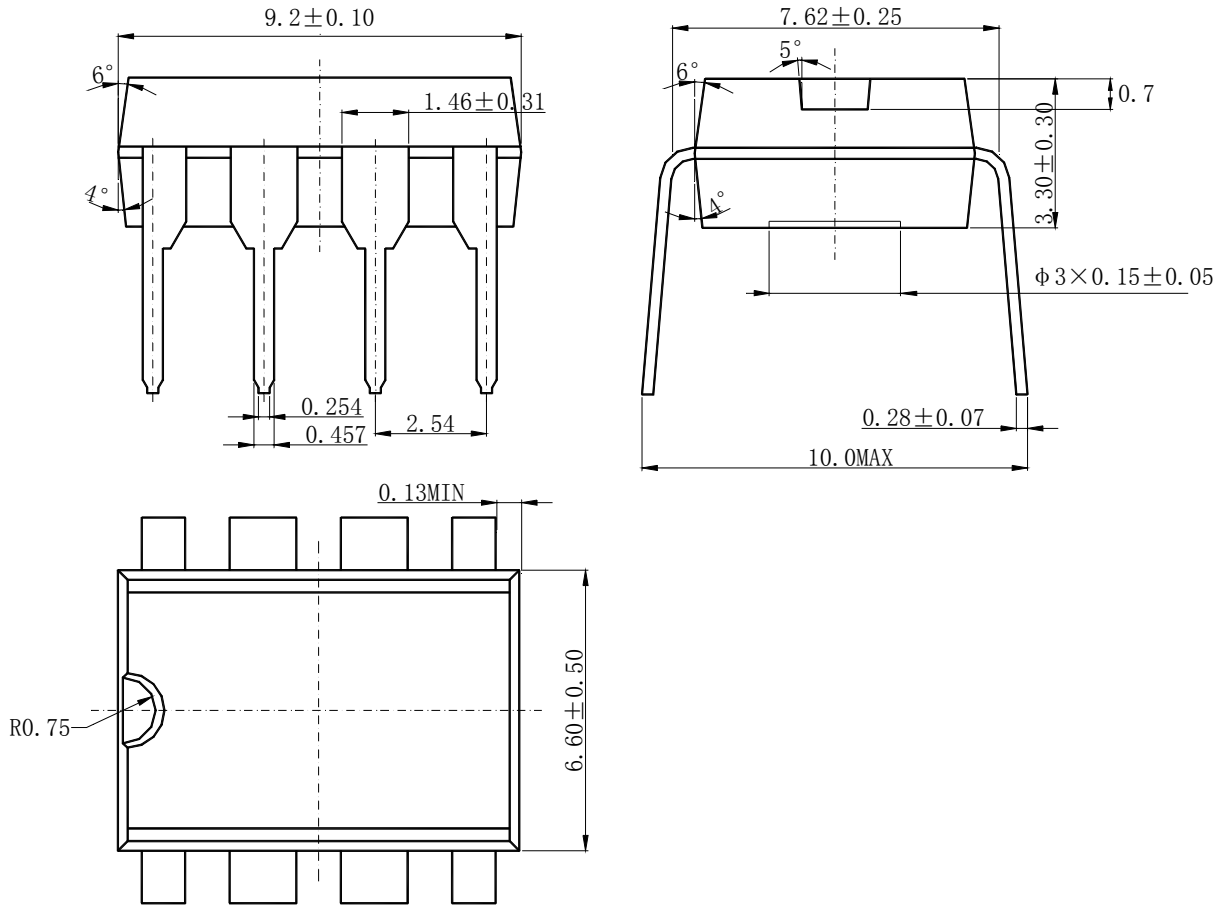


Figure 11. AC/DC Converter

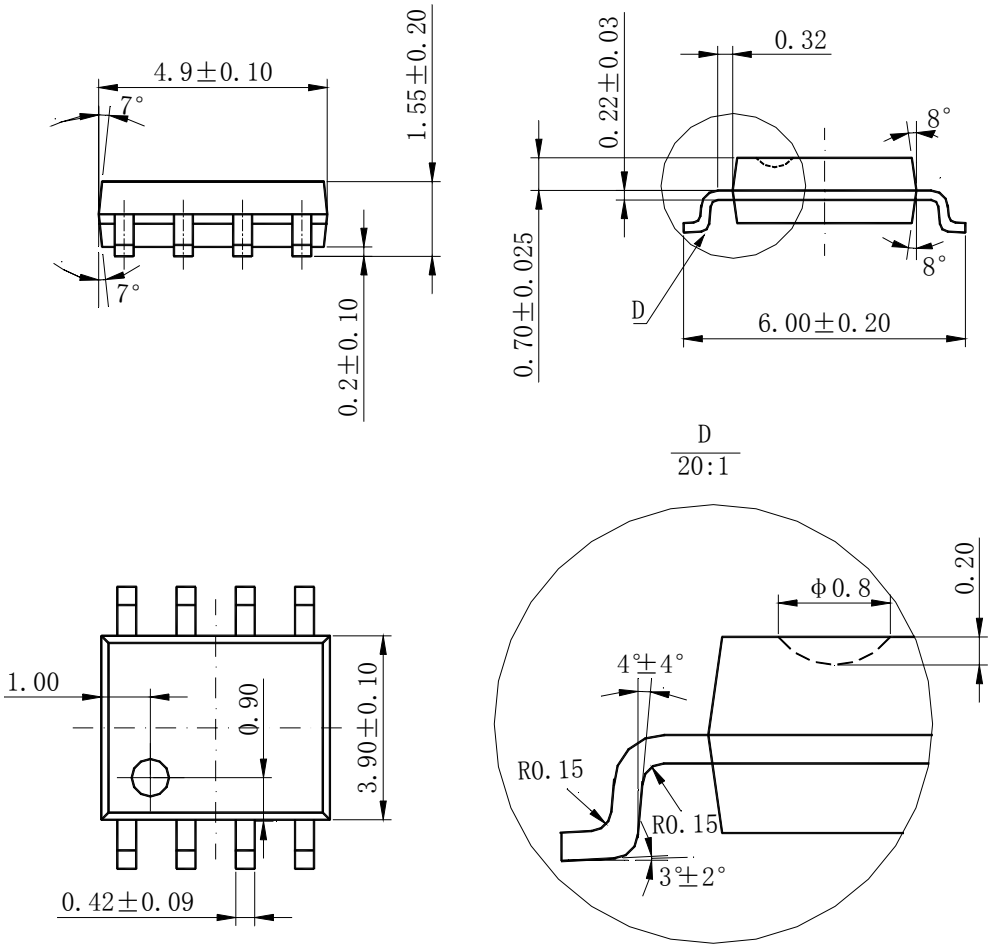
Mechanical Dimensions

DIP - 8 **Unit:mm**



Mechanical Dimensions (Continued)

SOIC - 8 **Unit:mm**



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