Advanced Analog Circuits

Data Sheet

DUAL OPERATIONAL AMPLIFIERS AZ4558

General Description

The AZ4558 consists of two high performance operational amplifiers. The IC features high gain, high input resistance, excellent channel separation, wide range of operating voltage and internal frequency compensation. It can work with ±18V maximum power supply voltage.

The AZ4558 is specifically suitable for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

The AZ4558 is available in DIP-8 and SOIC-8 package.

Features

- Internal Frequency Compensation
- Large Signal Voltage Gain with 100 dB Typical
- High Input Resistance with 5MΩ Typical
- Maximum Power Supply Voltages: ±18V
- Compatible with NJM 4558
- Low Input Voltage Noise with $10nV/\sqrt{Hz}$ at 1KHz

Applications

- Audio AC-3 Decoder System
- Audio Amplifier

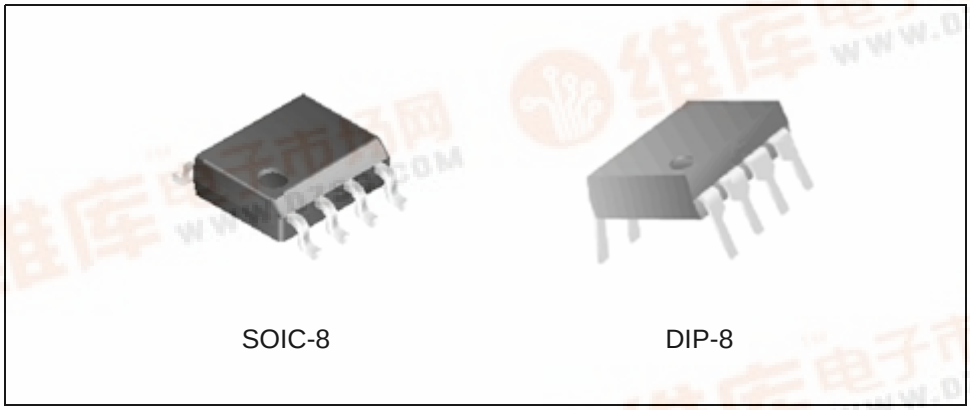
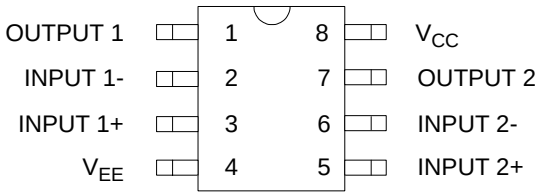


Figure 1. Package Types of AZ4558

Pin Configuration

M Package/P Package
(SOIC-8/DIP-8)



Top View

Figure 2. Pin Configuration of AZ4558

Functional Block Diagram

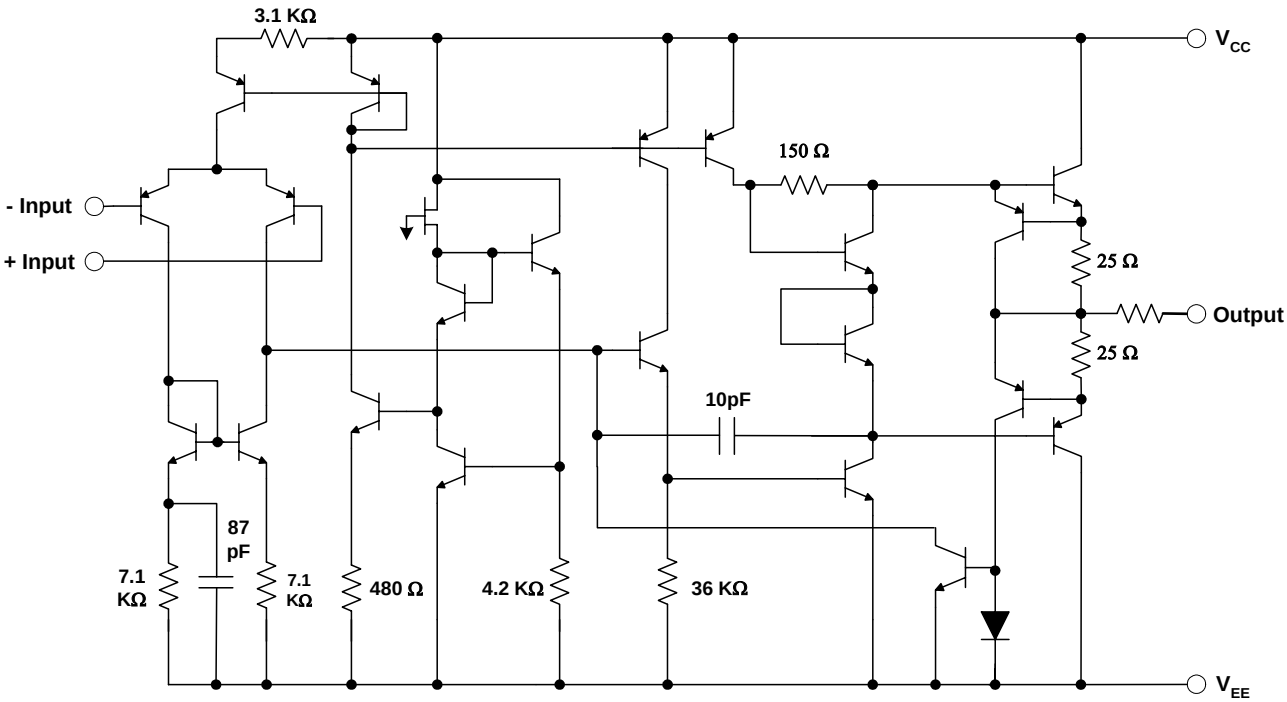
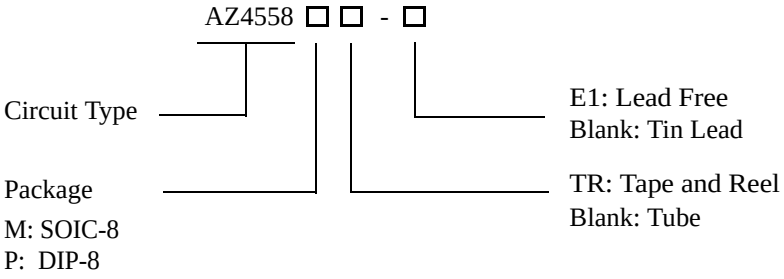


Figure 3. Representative Schematic Diagram of AZ4558 (Each Amplifier)

Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing Type
		Tin Lead	Lead Free	Tin Lead	Lead Free	
SOIC-8	-40 to 85°C	AZ4558M	AZ4558M-E1	4558M	4558M-E1	Tube
		AZ4558MTR	AZ4558MTR-E1	4558M	4558M-E1	Tape & Reel
DIP-8	-40 to 85°C	AZ4558P	AZ4558P-E1	AZ4558P	AZ4558P-E1	Tube

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant.

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value		Unit
Power Supply Voltage	V_{CC}	+20		V
	V_{EE}	-20		
Input Voltage	V_I	±15		V
Differential Input Voltage	V_{ID}	±30		V
Operating Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-65 to 150		°C
Lead Temperature (Soldering 10s)	T_L	260		°C
Power Dissipation	P_D	DIP-8	800	mW
		SOIC-8	500	

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	±4	±18	V
Operating Temperature Range	-40	85	°C

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				0.5	6	mV
Input Bias Current		V_{CM}=0V		25	250	nA
Input Offset Current		V_{CM}=0V		2.5	100	nA
Input Resistance			0.3	5		MΩ
Supply Current		R_L=∞, Over full temperature range		3.3	5.7	mA
Large Signal Voltage Gain		R_L≥2K, V_O=±10V	85	100		dB
Common Mode Rejection Ratio		R_S≤10kΩ	80	92		dB
Power Supply Rejection Ratio		R_S≤10kΩ	80	95		dB
Output Current	Source	V+=1V, V-=0V, V_O=2V		50		mA
	Sink	V+=0V, V-=1V, V_O=2V		50		mA
Output Voltage Swing		R_L≥2KΩ	±10	±13		V
		R_L≥10KΩ	±12	±14		
Slew Rate		R_L=2KΩ, C_L=100pF		1.3		V/μS
Equivalent Input Noise Voltage Density		R_S=50Ω, f=1KHz		10		$nV/\sqrt{Hz}$
Gain Bandwidth Product		R_L=2KΩ, f=10KHz		3.4		MHz

Typical Performance Characteristics

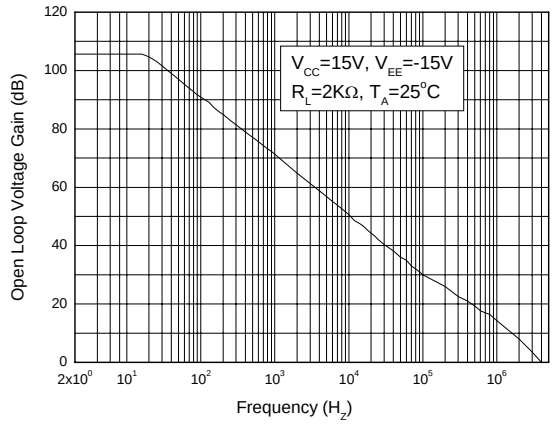


Figure 4. Open Loop Voltage Gain vs. Frequency

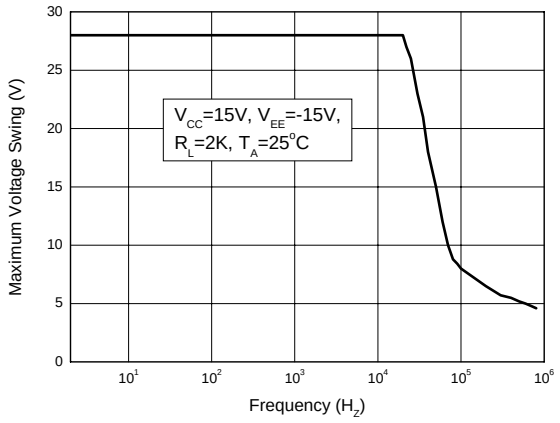


Figure 5. Maximum Output Voltage Swing vs. Frequency

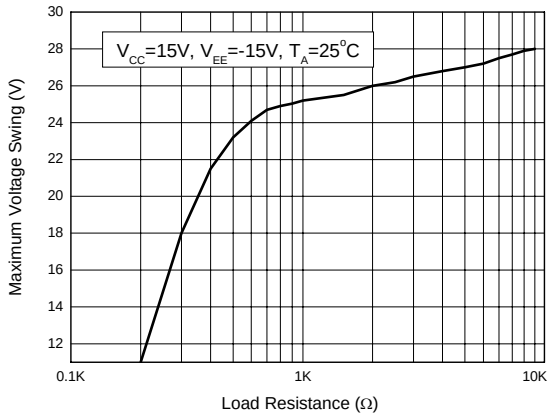


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

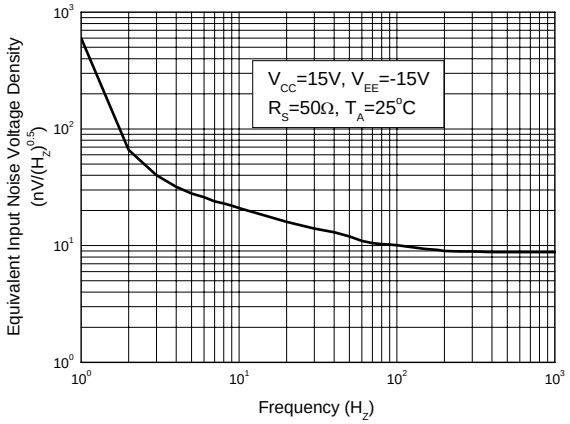


Figure 7. Equivalent Input Noise Voltage Density vs. Frequency

Typical Performance Characteristics (Continued)

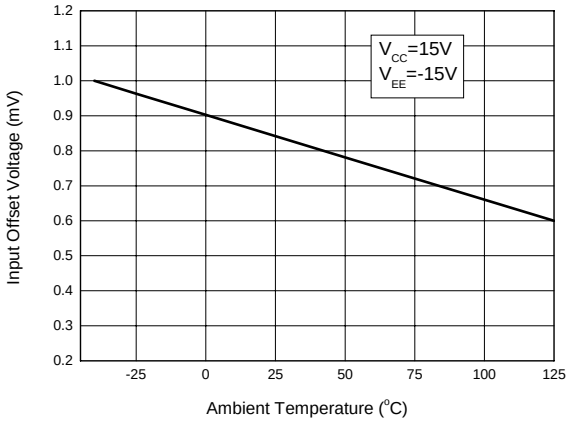


Figure 8. Input Offset Voltage vs. Temperature

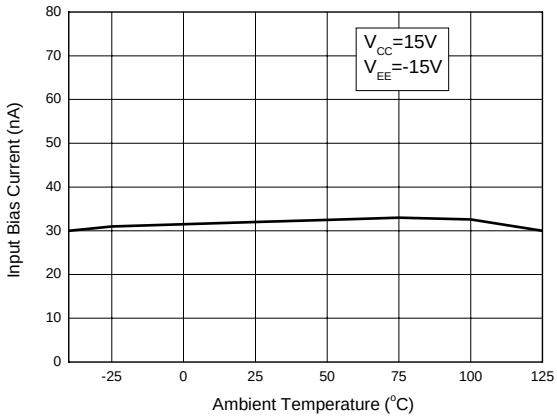


Figure 9. Input Bias Current vs. Temperature

Typical Application

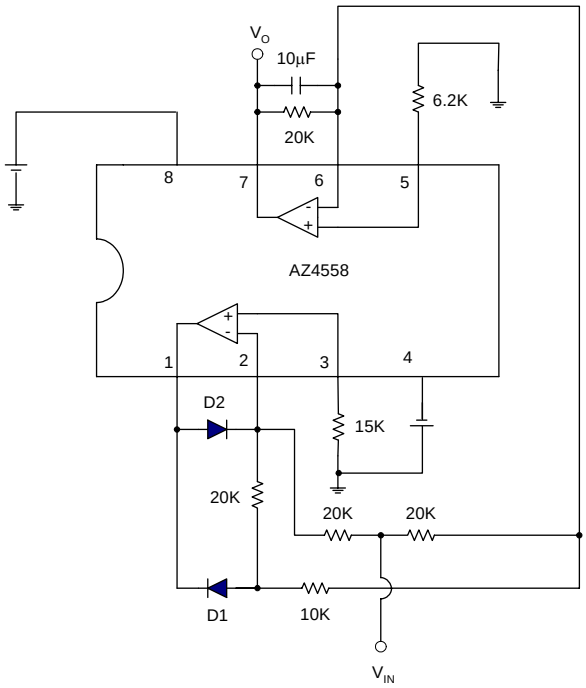
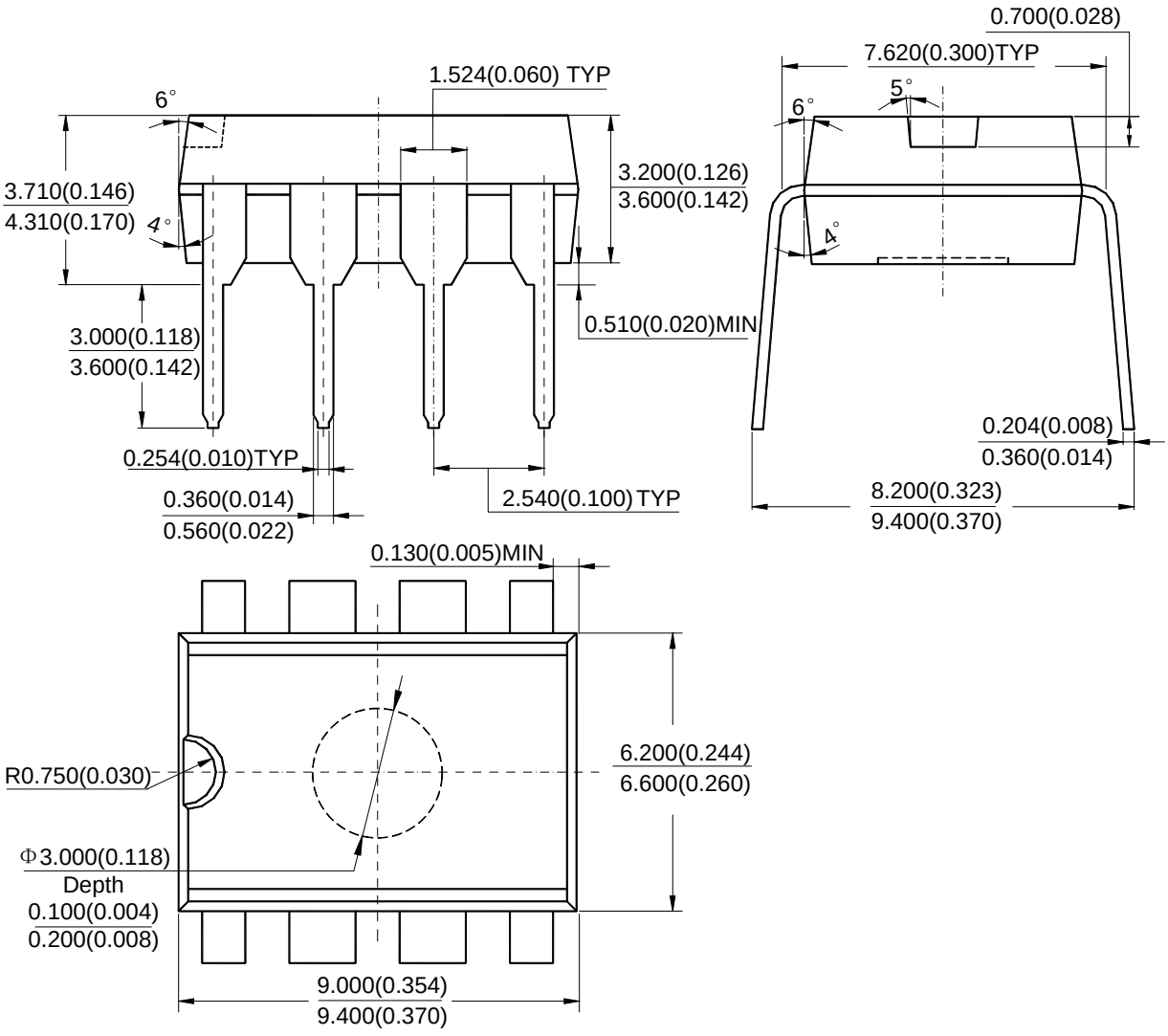


Figure 10. Application of AZ4558 in an AC/DC Converter

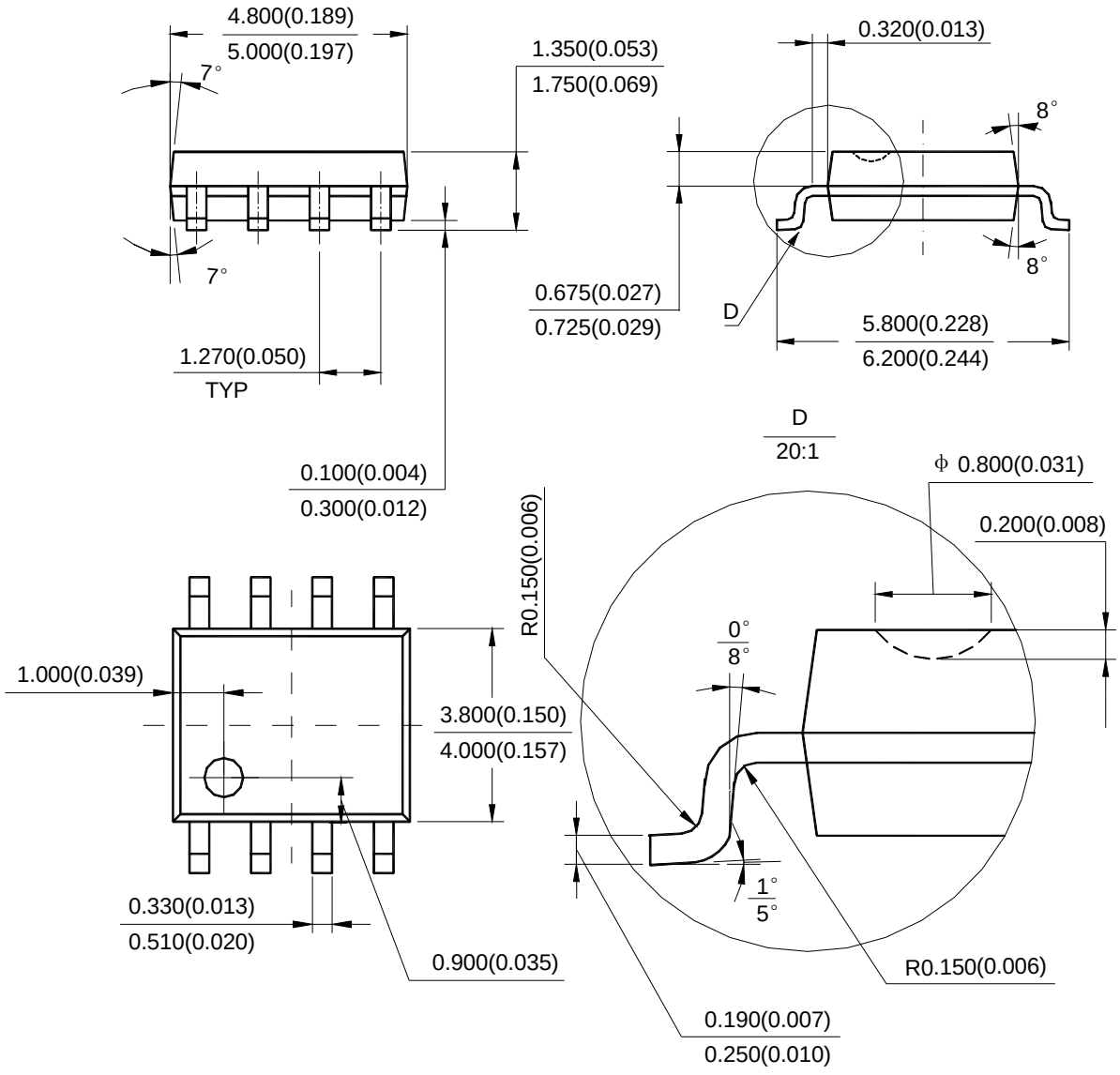
Mechanical Dimensions

DIP-8 **Unit: mm(inch)**



Mechanical Dimensions (Continued)

SOIC-8 **Unit: mm(inch)**



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