



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 is specifically suitable for applications in differential-in, differential-out as well as in potential-metric amplifiers and where gain and phase matched channels are mandatory. The AZ4558 contains  $\pm 18V$  maximum power supply voltage.

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

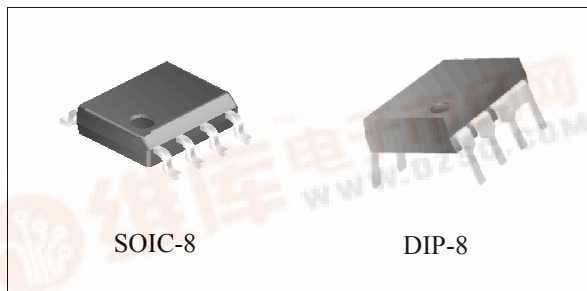


Figure 1. Package Types of AZ4558

Features

- Internal frequency compensation
- Large DC voltage gain with 100 dB typical
- High input resistance with  $5M\Omega$  typical
- Low input noise voltage with  $10nV/\sqrt{Hz}$
- Maximum power supply voltages:  $\pm 18V$
- Compatible with NJM 4558

Applications

- Audio AC-3 decoded system
- Audio amplifier

Pin Configuration

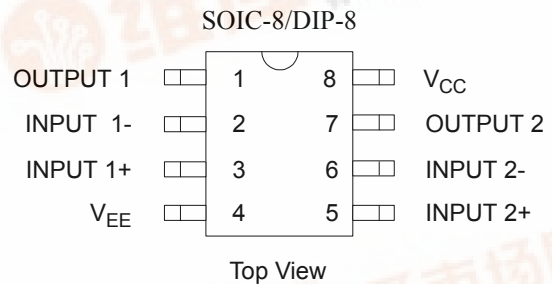


Figure 2. Pin Configuration of AZ4558

Functional Block Diagram

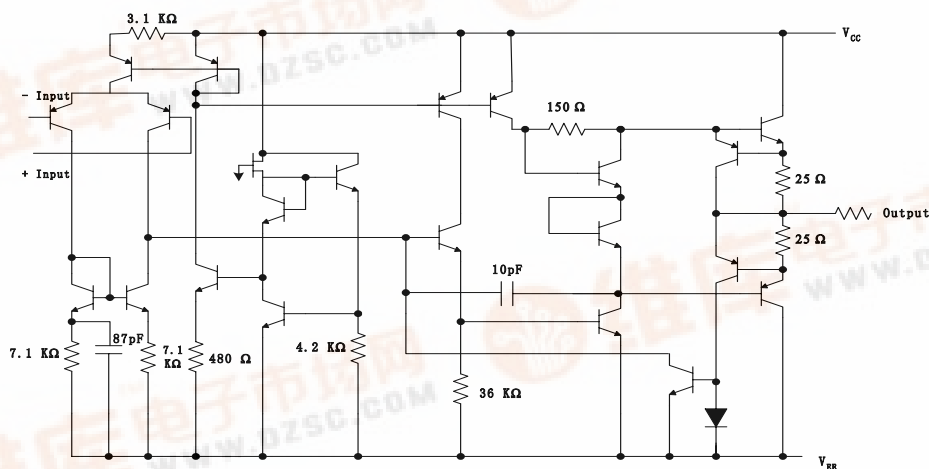


Figure 3. Representative Schematic Diagram of AZ4558 (Each amplifier)



**DUAL OPERATIONAL AMPLIFIERS****AZ4558****Ordering Information**

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOIC-8	-40 to 85°C	AZ4558M	4558M	Tube, Reel
DIP-8		AZ4558P	AZ4558P	Tube

**Absolute Maximum Ratings**

Parameter	Symbol	Value		Unit
Power Supply Voltage	$V_{CC}$	+ 18		V
	$V_{EE}$	- 18		
Differential Input Voltage	$V_{ID}$	± 30		V
Input Voltage	$V_{IC}$	± 15		V
Power Dissipation	$P_D$	DIP	500	mW
		SOIC	800	
Operating Temperature Range	$T_{OP}$	-40 to 85		°C
Storage Temperature Range	$T_{STG}$	-40 to 125		°C

Note: 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 Ratings**

Parameter	Min.	Max.	Unit
Supply Voltage	± 4	± 18	V



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**Electrical Characteristics**

Operating Conditions:  $V_{CC} = +15V$ ,  $V_{EE} = -15V$ ,  $T_A = 25^\circ C$  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	$R_L = \infty$ , Over full temperature range	-	3.3	5.7	mA	
Large Signal Voltage Gain	$R_L \geq 2K$ , $V_O = 1V$ to $11V$	85	100	-	dB	
Common Mode Rejection Ratio	$V_{CM} = 0V$ to $V_{CC} - 15V$	80	92	-	dB	
Power Supply Rejection Ratio	$V_{CC} = 5V$ to $18V$ $V_{EE} = -5V$ to $-18V$	80	95	-	dB	
Output Current	Source	$V_+ = 1V$ , $V_- = 0V$	-	50	-	mA
	Sink	$V_+ = 0V$ , $V_- = 1V$	-	50	-	mA
Output Voltage Swing	$R_L \geq 2K\Omega$	$\pm 10$	$\pm 13$	-	V	
	$R_L \geq 10K\Omega$	$\pm 12$	$\pm 14$	-		
Slew Rate		-	1.3	-	V / $\mu S$	
Equivalent Input Noise Voltage	$R_s = 50\Omega$ , $f = 1KHz$	-	10	-	nV/(HZ) <sup>0.5</sup>	
Gain Bandwidth Product		-	3.4	-	MHz	



Typical Characteristics

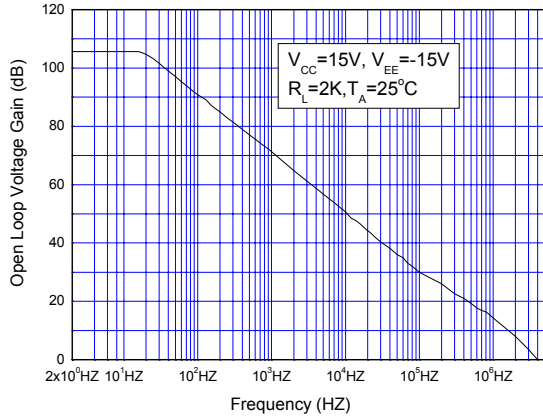


Figure 4. Open Loop Voltage Gain vs. Frequency

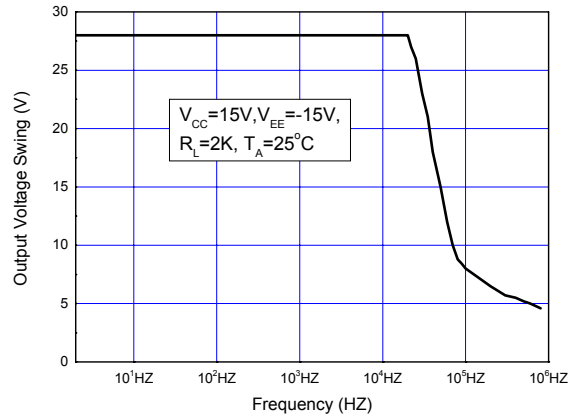


Figure 5. Maximum Output Voltage Swing vs. Frequency

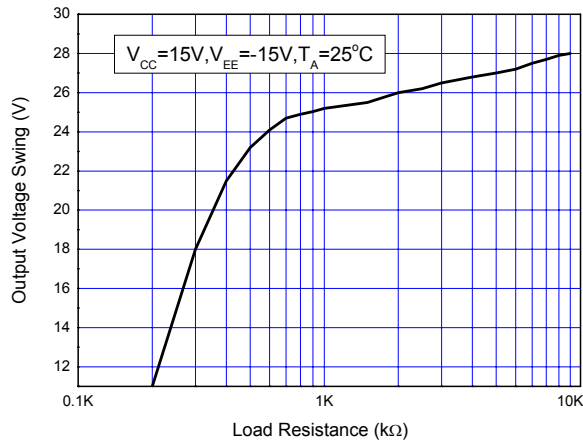


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

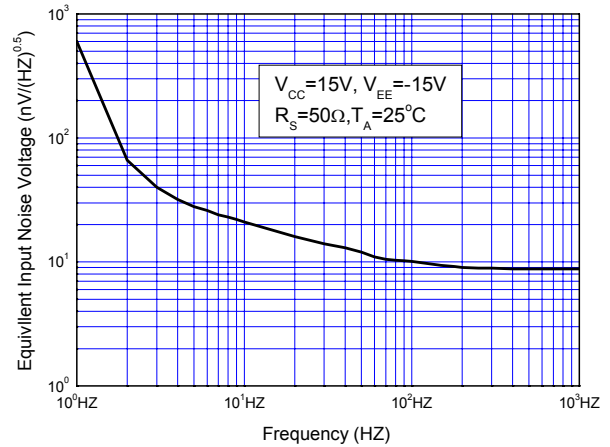


Figure 7. Equivalent Input Noise Voltage vs. Frequency



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Typical Characteristics (Continued)

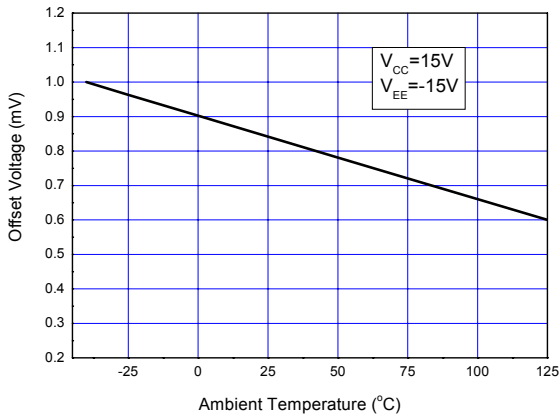


Figure 8. Input Offset Voltage vs. Temperature

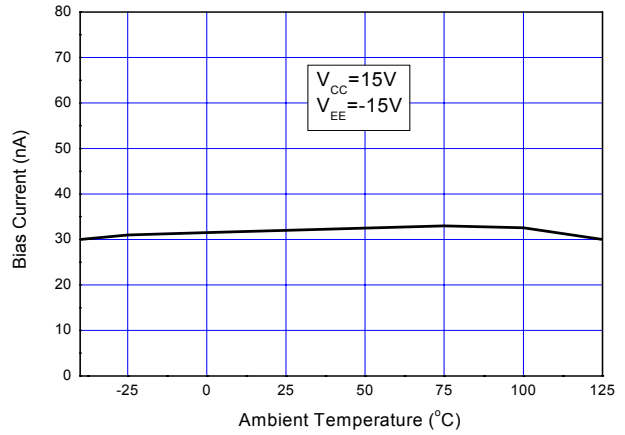


Figure 9. Input Bias Current vs. Temperature

Typical Application

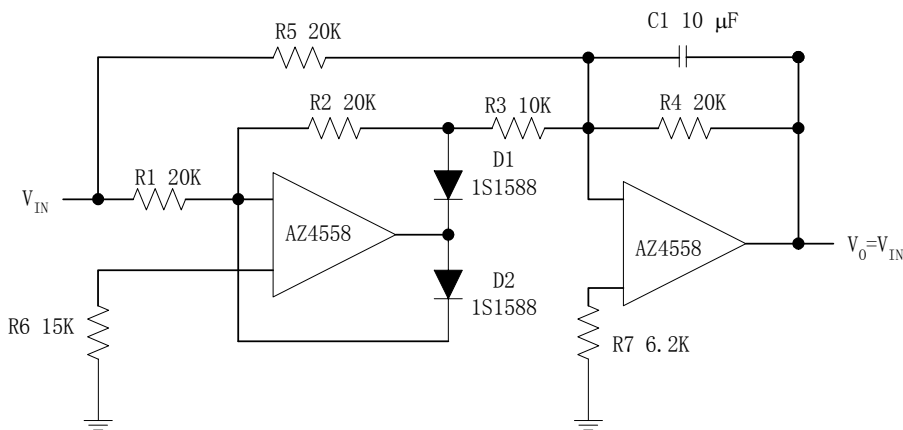


Figure 10. Typical Application of AZ4558

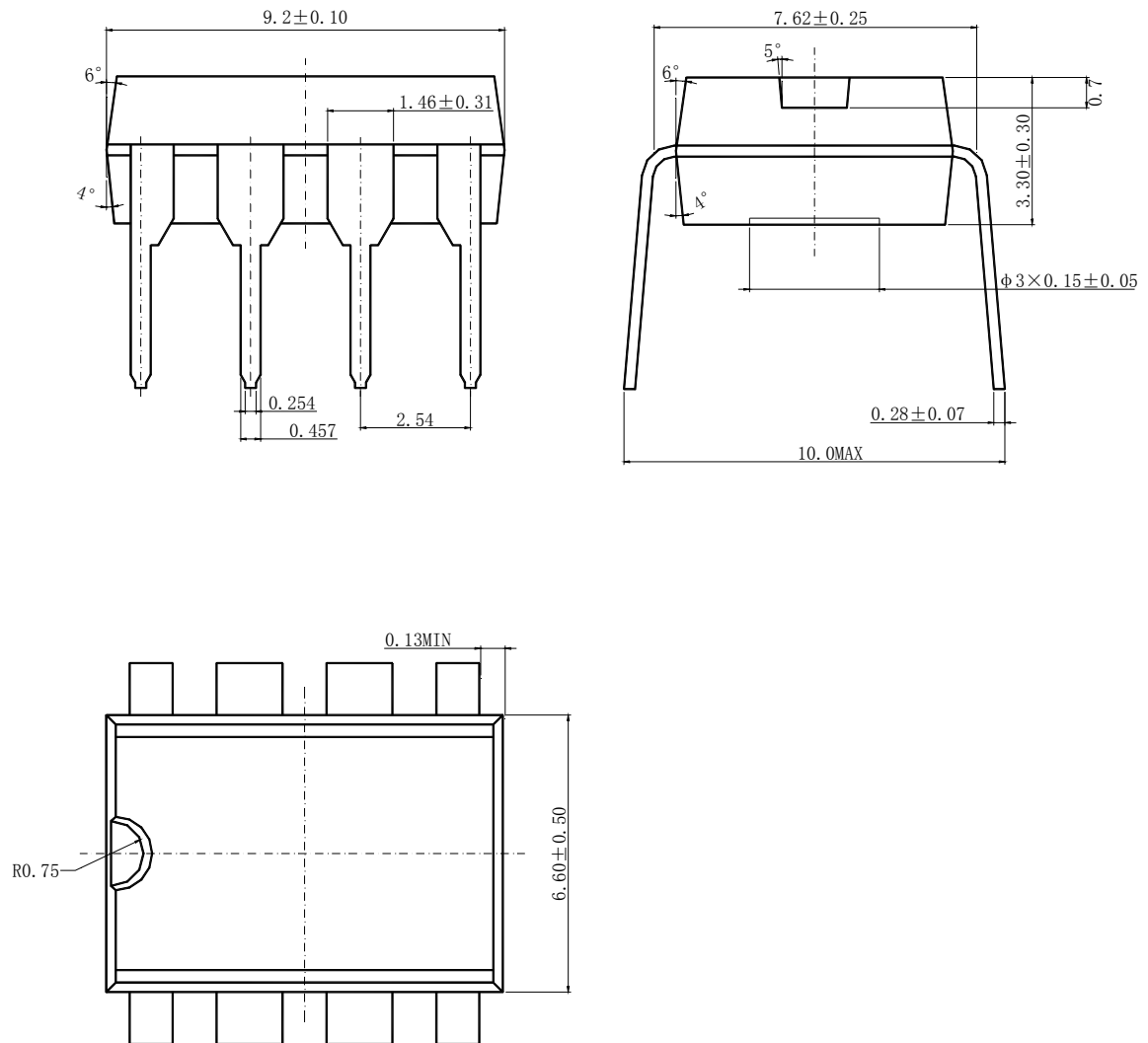


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Mechanical Dimensions

DIP - 8



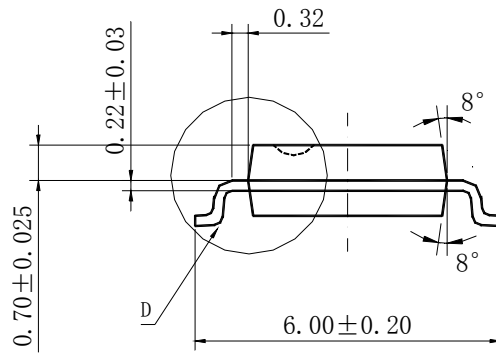
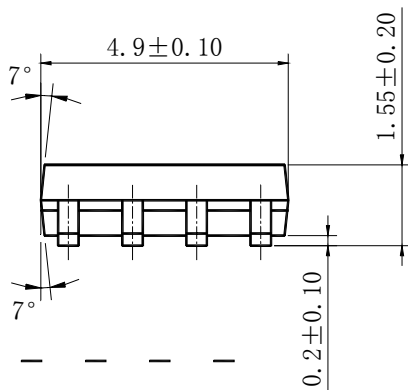


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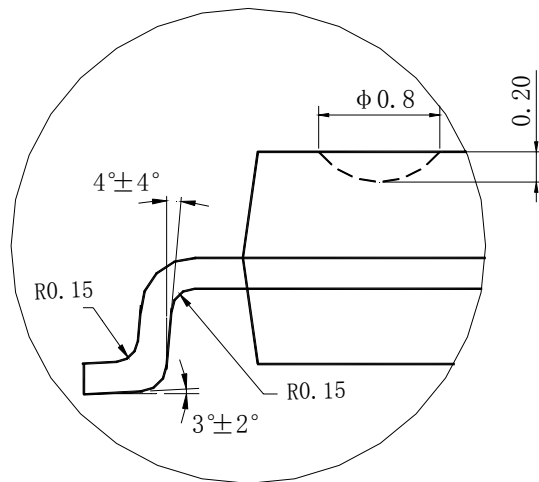
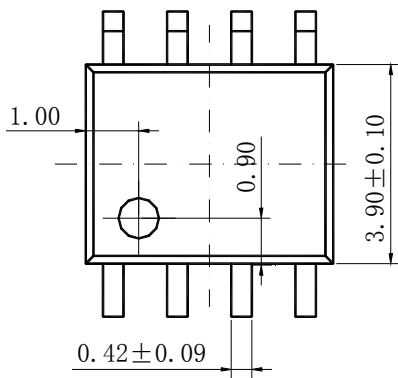
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Mechanical Dimensions (Continued)

SOIC - 8



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