

DUAL LOW NOISE OPERATIONAL AMPLIFIERS

General Description

The IT4558 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 IT4558 can operate under dual power supply voltage up to $\pm 18V$ or single power supply up to 36V.

Features

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

Applications

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

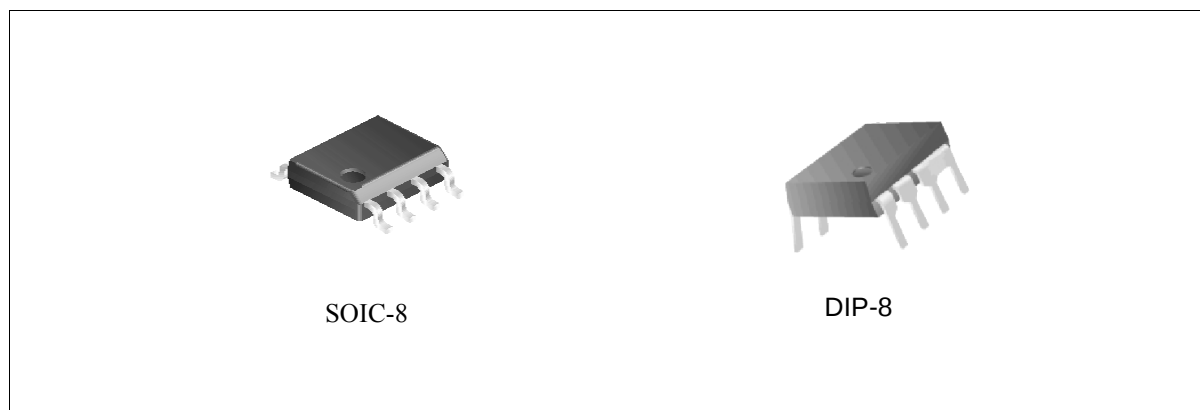


Figure 1. Package Types of IT4558

Pin Configuration

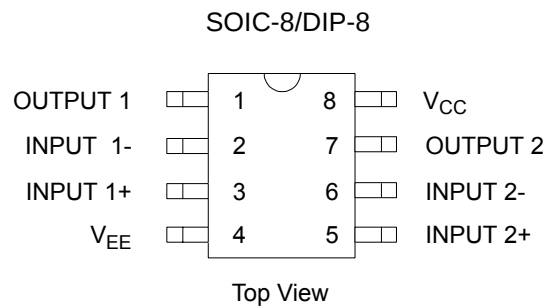


Figure 2. Pin Configuration of IT4558

Functional Block Diagram

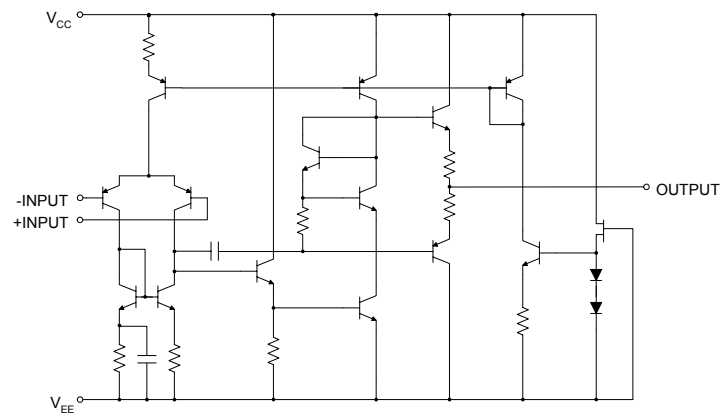


Figure 3. Representative Schematic Diagram of IT4558 (Each Amplifier)

Ordering Information

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOIC-8	-40°C to 85°C	IT4558S	IT4558S	Tube/Tape/Reel
DIP-8		IT4558P	IT4558P	Tube

IT 4558 Y

Circuit Type

Package

S: 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: $V_{CC} = +15V$, $V_{EE} = -15V$, $T_A = 25^\circ C$ 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, $R_S = 1K\Omega$, 30KHz LPF	-	1	-	μV_{RMS}
Gain Bandwidth Product	$f = 10KHz$	-	7	-	MHz

Typical Performance Characteristics

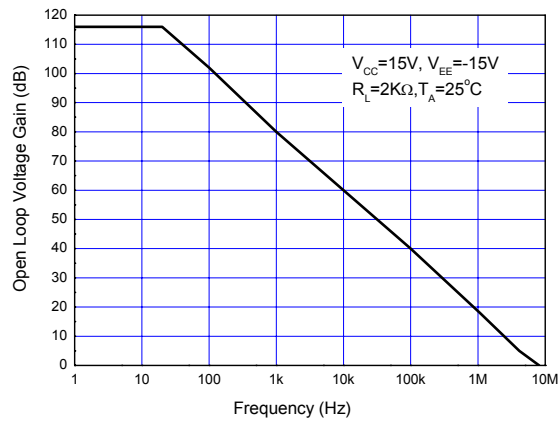


Figure 4. Open Loop Voltage Gain vs. Frequency

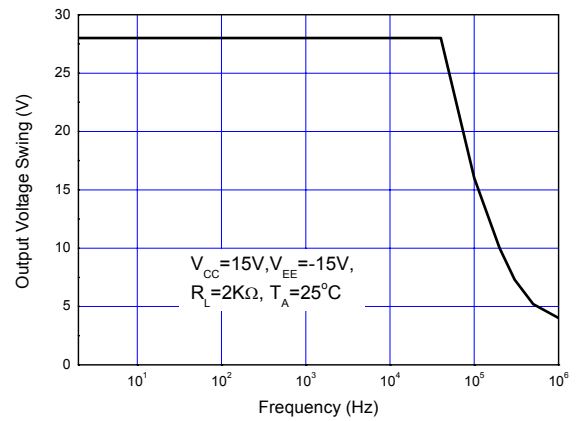


Figure 5. Maximum Output Voltage Swing vs. Frequency

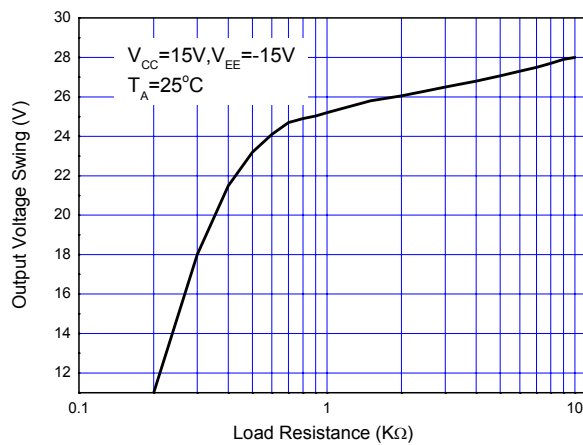


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

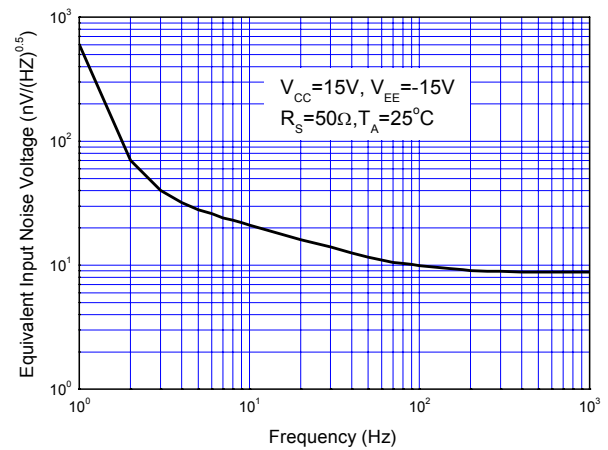


Figure 7. Equivalent Input Noise Voltage vs. Frequency

Typical Performance Characteristics (Continued)

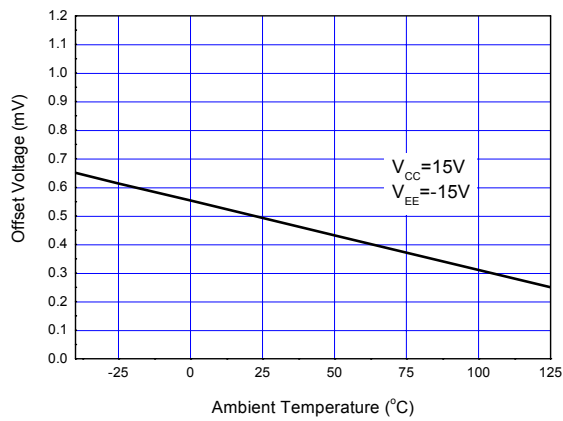


Figure 8. Input Offset Voltage vs. Temperature

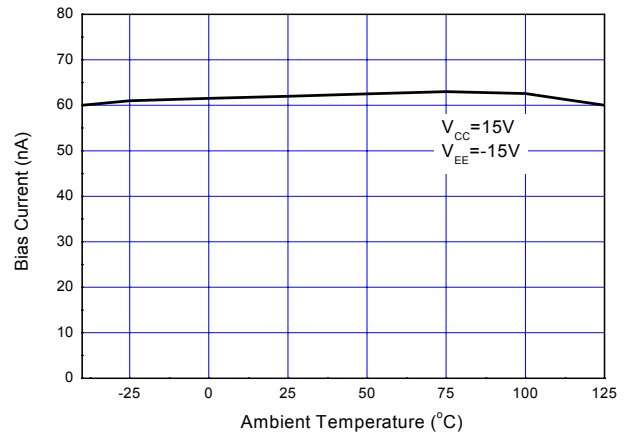


Figure 9. Input Bias Current vs. Temperature

Typical Applications

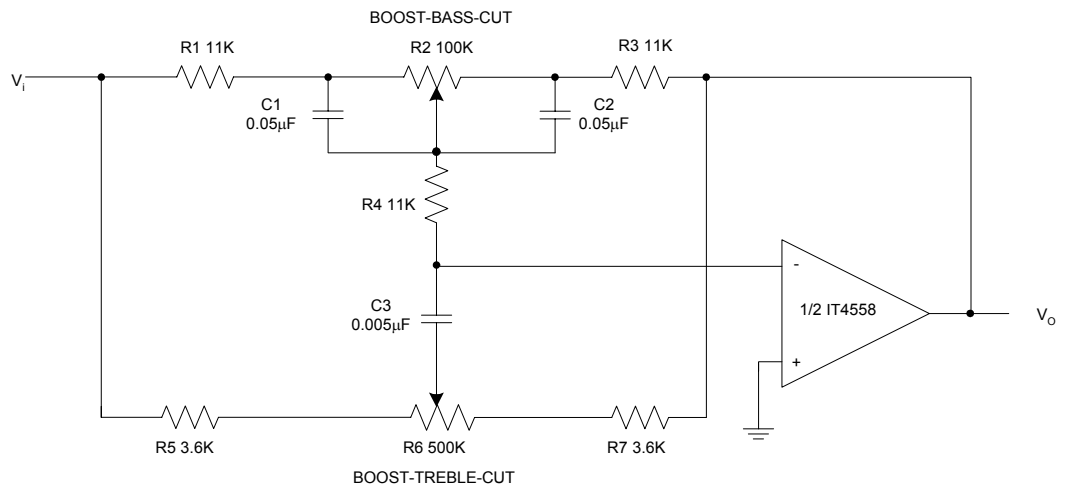


Figure 10. Tone Control

Typical Applications (Continued)

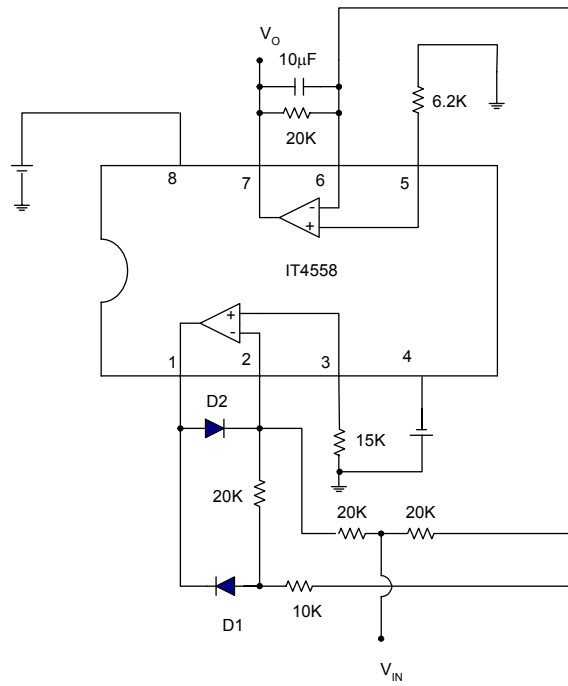
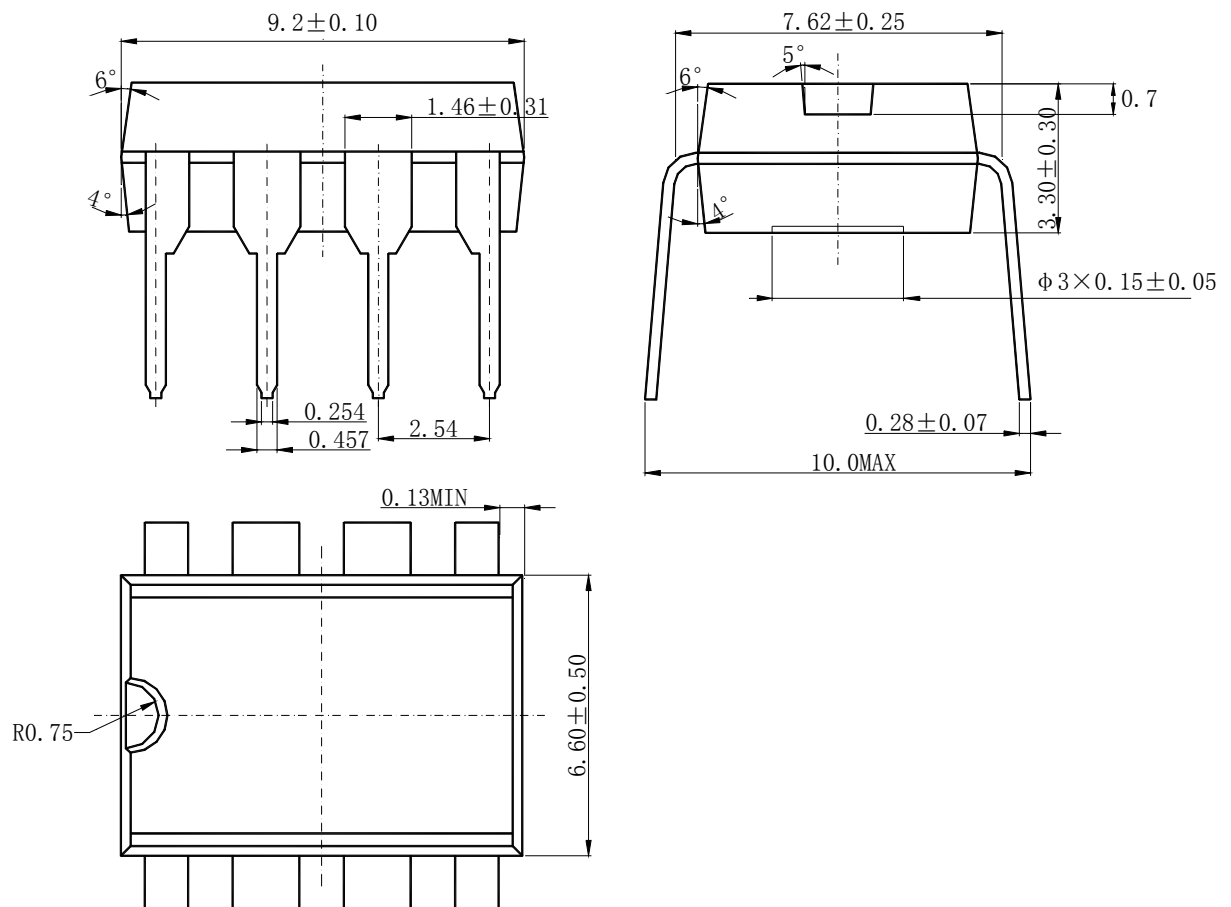


Figure 11. AC/DC Converter

Mechanical Dimensions

DIP - 8

Unit:mm



Mechanical Dimensions (Continued)

SOIC - 8

Unit:mm

