

RIGHTWELL Technology LTD

Dual Channel Operational Amplifiers

EC4558

General Description

The EC4558 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 EC4558 contains 18V maximum power supply voltage.

The EC4558 is available in DIP-8 or SOIC-8 package.

Features

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

Applications

- Audio AC-3 decoded system
- Audio amplifier

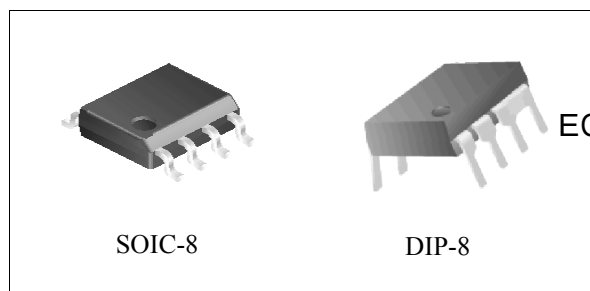


Figure 1. Package Types of EC4558

Pin Configuration

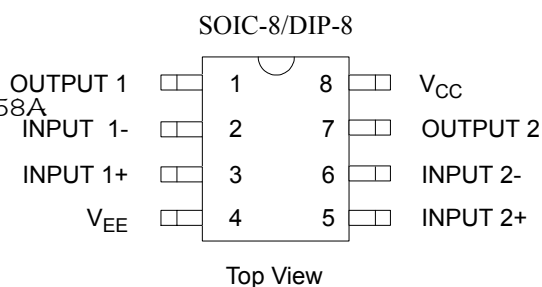


Figure 2. Pin Configuration of EC4558

Functional Block Diagram

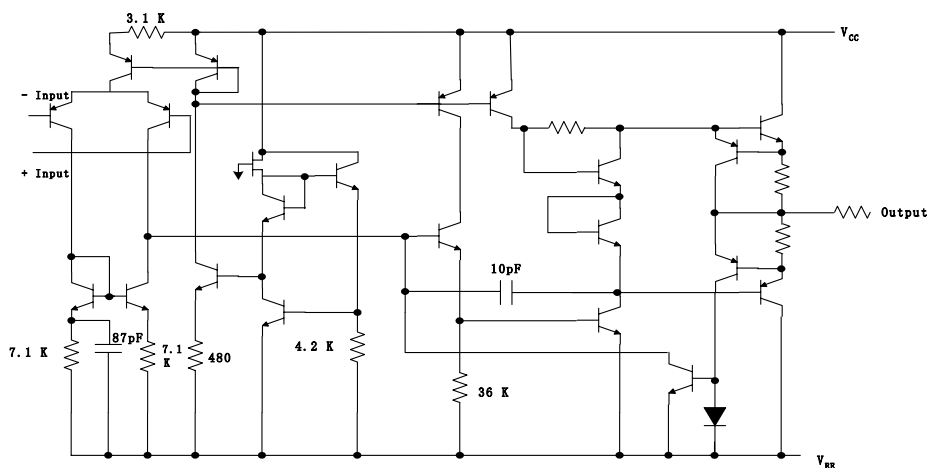


Figure 3. Representative Schematic Diagram of EC4558 (Each amplifier)

**Ordering Information**

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOIC-8	-40 to 85°C	EC4558M	4558M	Tube/Tape/Reel
DIP-8		EC4558P	EC4558P	Tube

EC 4558 Y

Circuit Type

Package

M: SOIC-8

P: DIP-8

Absolute Maximum Ratings (Note 1)

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 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

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	-	$M\Omega$
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		$R_L \geq 2K\Omega$	± 10	± 13	-	V
		$R_L \geq 10K\Omega$	± 12	± 14	-	
Slew Rate			-	1.3	-	V / μS
Equivalent Input Noise Voltage		$R_s = 50\Omega$, $f = 1KHz$	-	10	-	$nV/(Hz)^{0.5}$
Gain Bandwidth Product			-	3.4	-	MHz

Typical Performance Characteristics

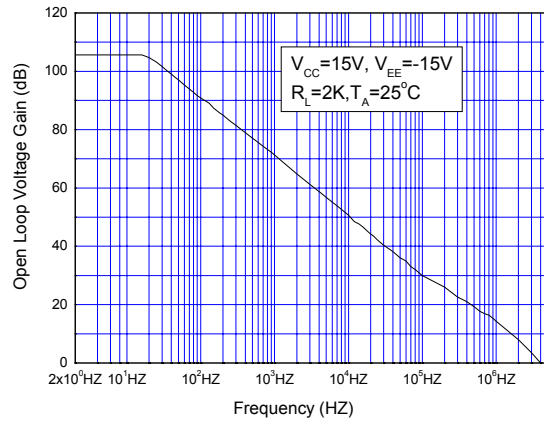


Figure 4. Open Loop Voltage Gain vs. Frequency

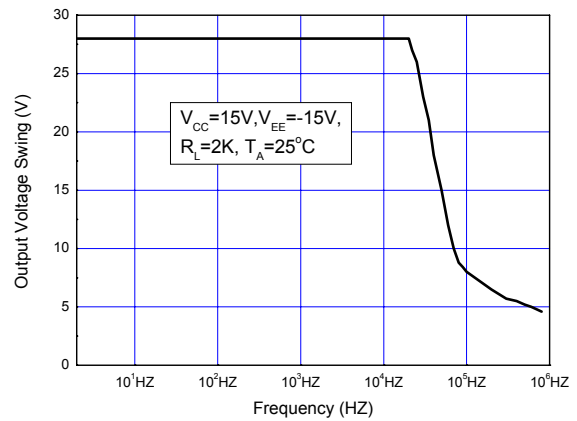


Figure 5. Maximum Output Voltage Swing vs. Frequency

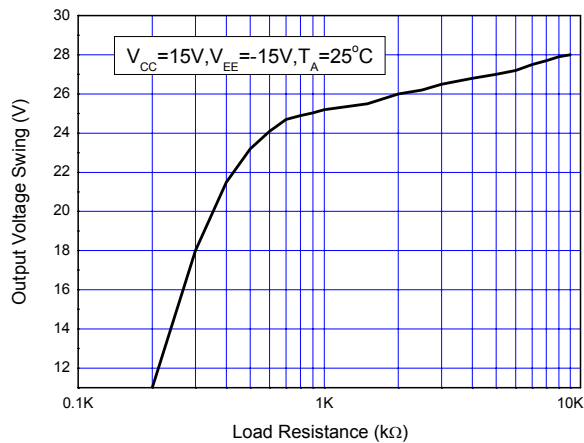


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

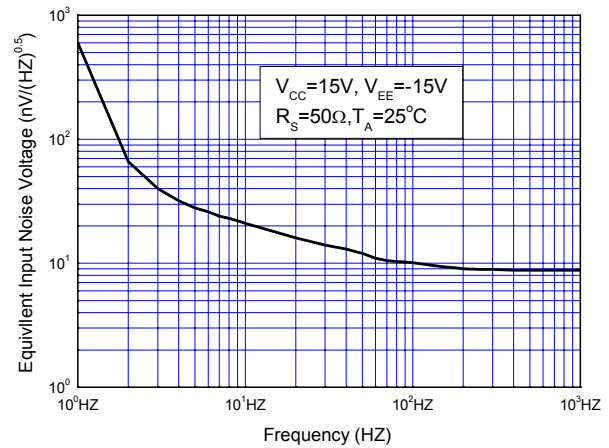


Figure 7. Equivalent Input Noise Voltage vs. Frequency



Typical Performance Characteristics (Continued)

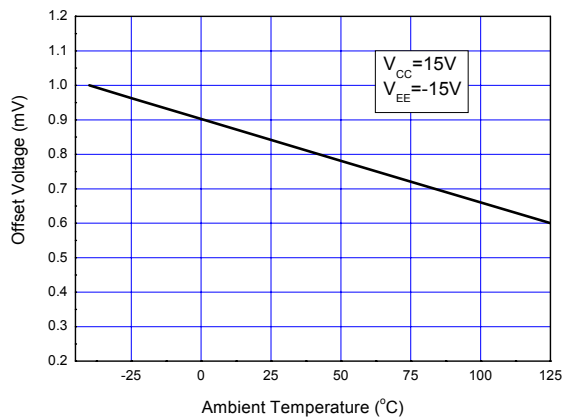


Figure 8. Input Offset Voltage vs. Temperature

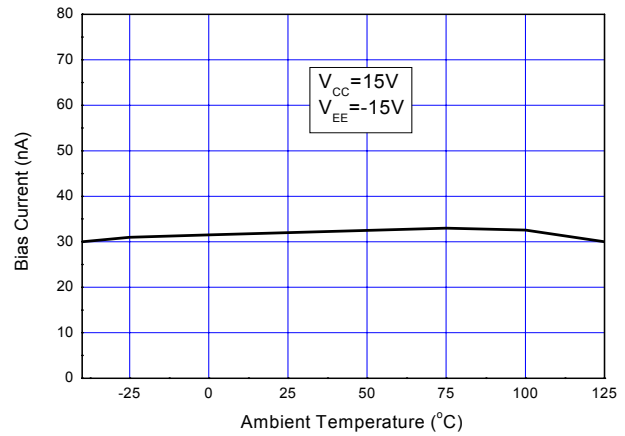


Figure 9. Input Bias Current vs. Temperature

Typical Application

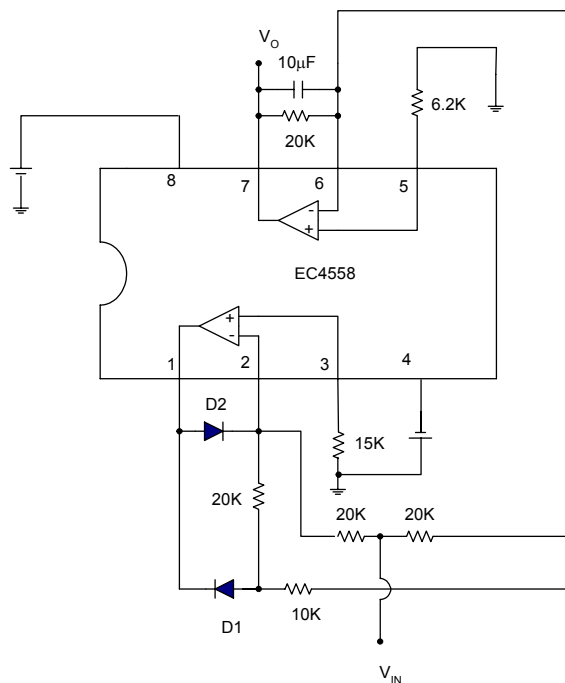
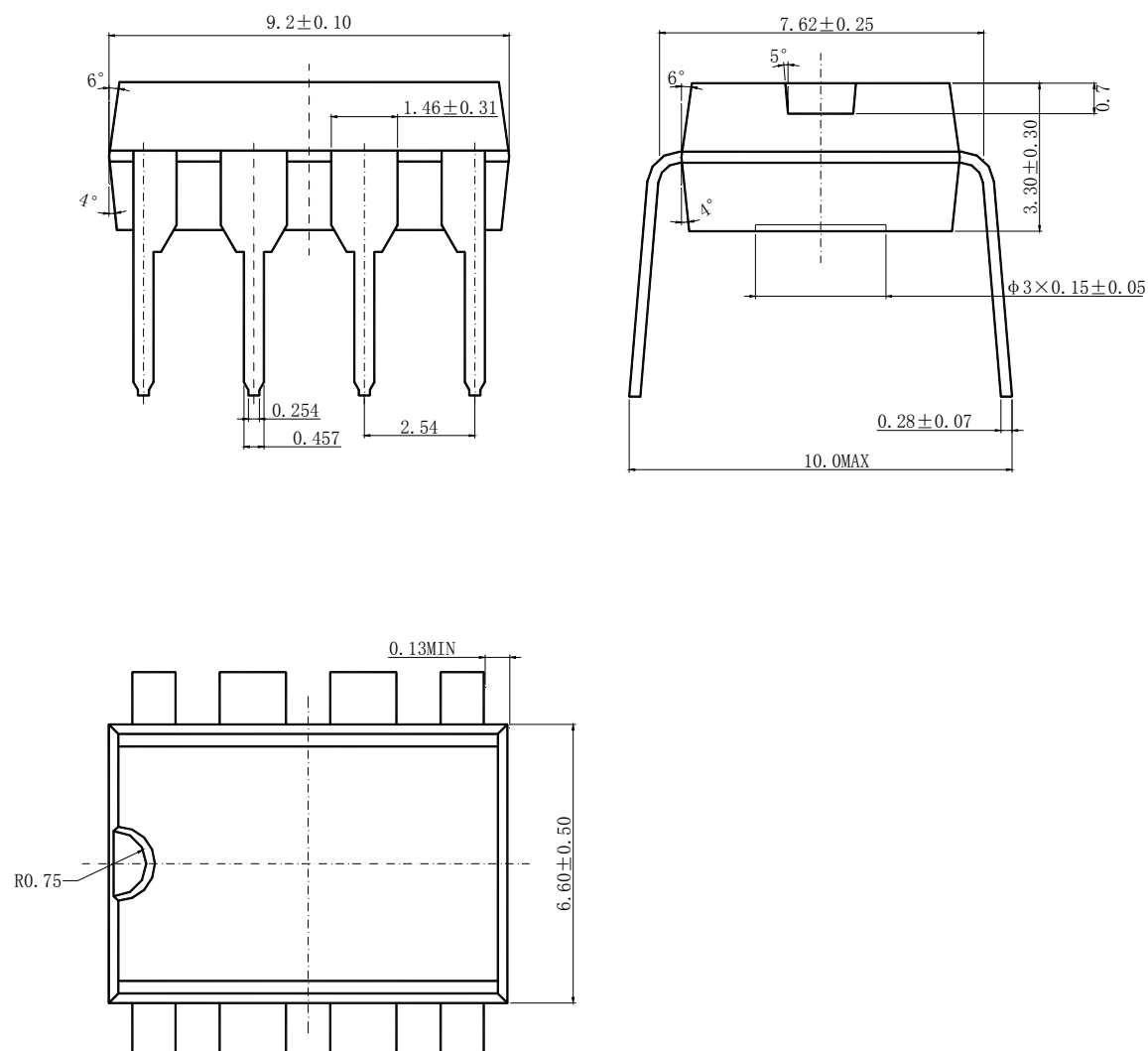


Figure 10. Typical Application of EC4558

Mechanical Dimensions

DIP - 8

Unit: mm

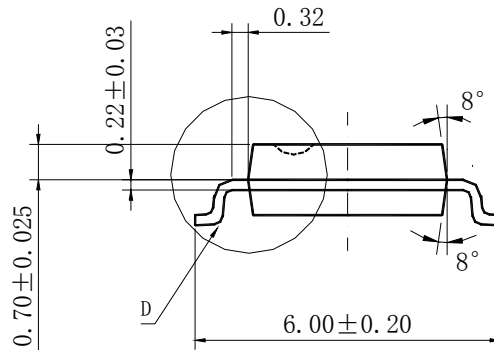
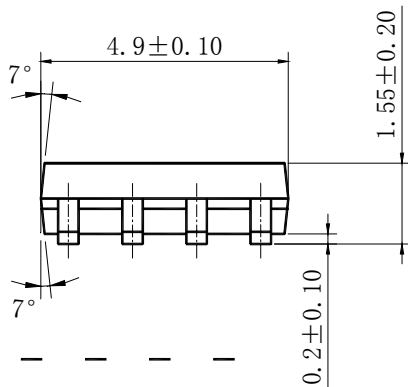




Mechanical Dimensions (Continued)

SOIC - 8

Unit: mm



D
20:1

