

DUAL OPERATIONAL AMPLIFIERS

HWD4558

General Description

The HWD4558 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 HWD4558 contains $\pm 18V$ maximum power supply voltage.

The HWD558 is available in DIP-8 or SOIC-8 package.

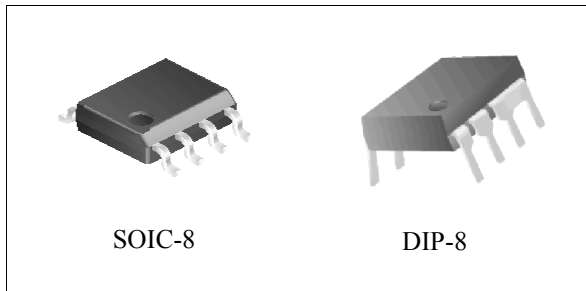
Features

- Internal frequency compensation
- Large DC voltage gain with 100 dB typical
- High input resistance with $5M\Omega$ 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



SOIC-8

DIP-8

Figure 1. Package Types of HWD4558

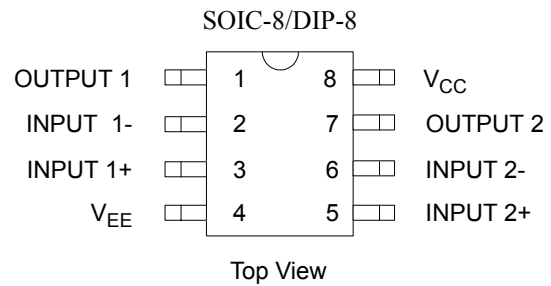


Figure 2. Pin Configuration of HWD4558

Functional Block Diagram

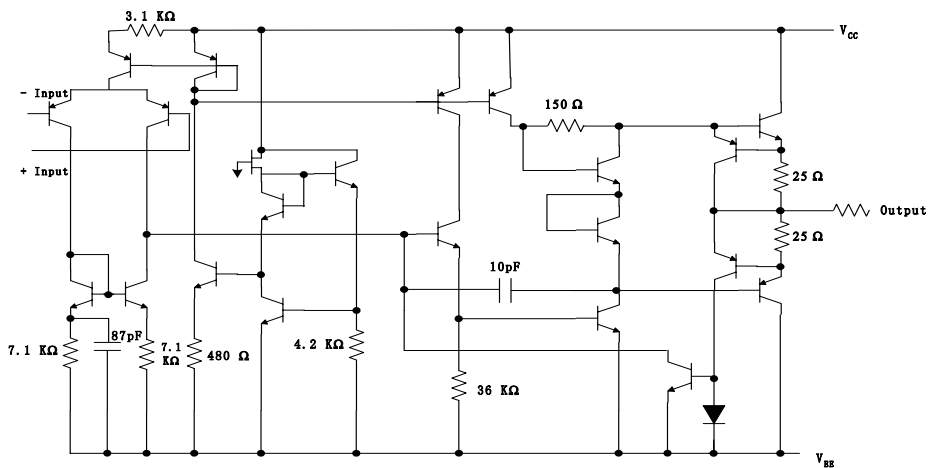


Figure 3. Representative Schematic Diagram of HWD4558 (Each amplifier)

DUAL OPERATIONAL AMPLIFIERS**HWD4558****Ordering Information**

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOIC-8	-40 to 85°C	HWD4558M	4558M	Tube, Reel
DIP-8		HWD4558P	HWD4558P	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

DUAL OPERATIONAL AMPLIFIERS**HWD4558****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 Ω	
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 Characteristics

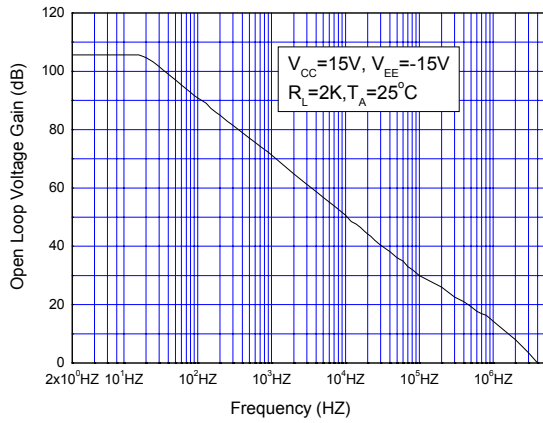


Figure 4. Open Loop Voltage Gain vs. Frequency

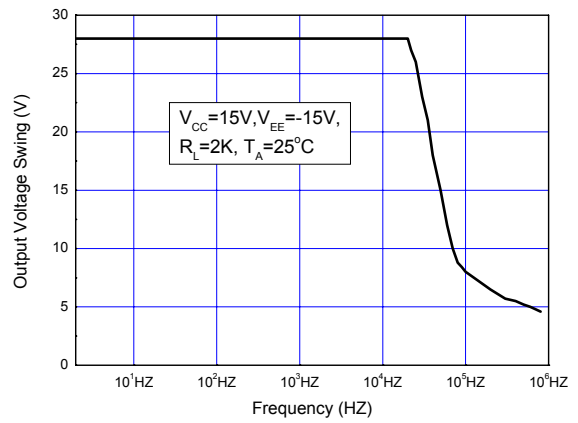


Figure 5. Maximum Output Voltage Swing vs. Frequency

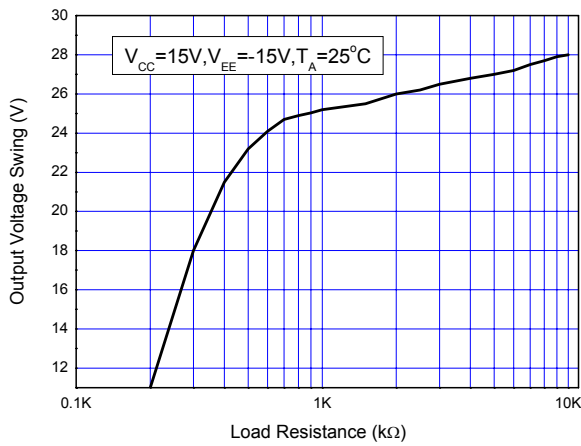


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

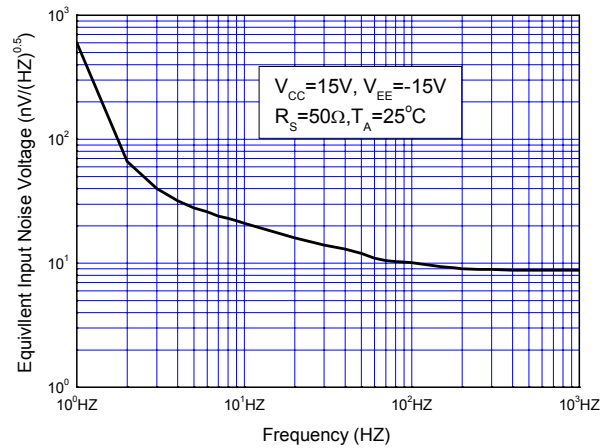


Figure 7. Equivalent Input Noise Voltage vs. Frequency

Typical Characteristics (Continued)

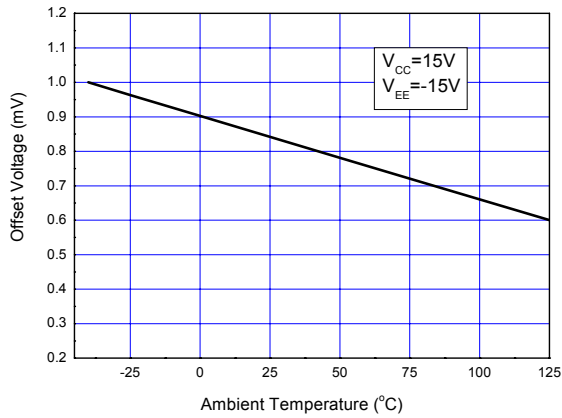


Figure 8. Input Offset Voltage vs. Temperature

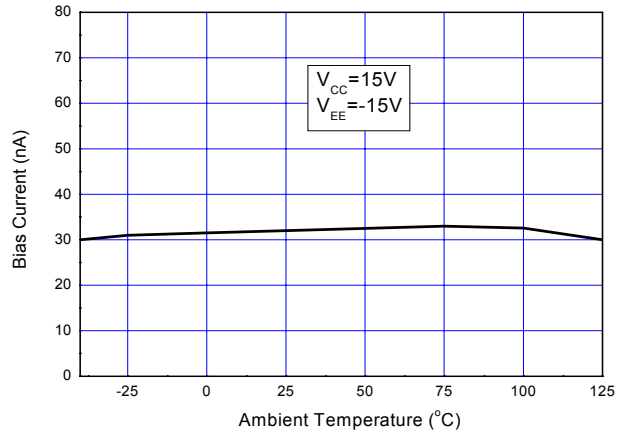


Figure 9. Input Bias Current vs. Temperature

Typical Application

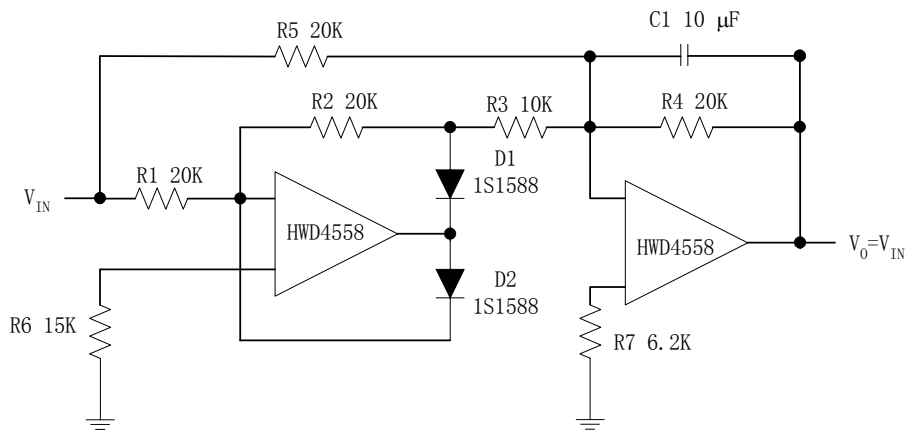
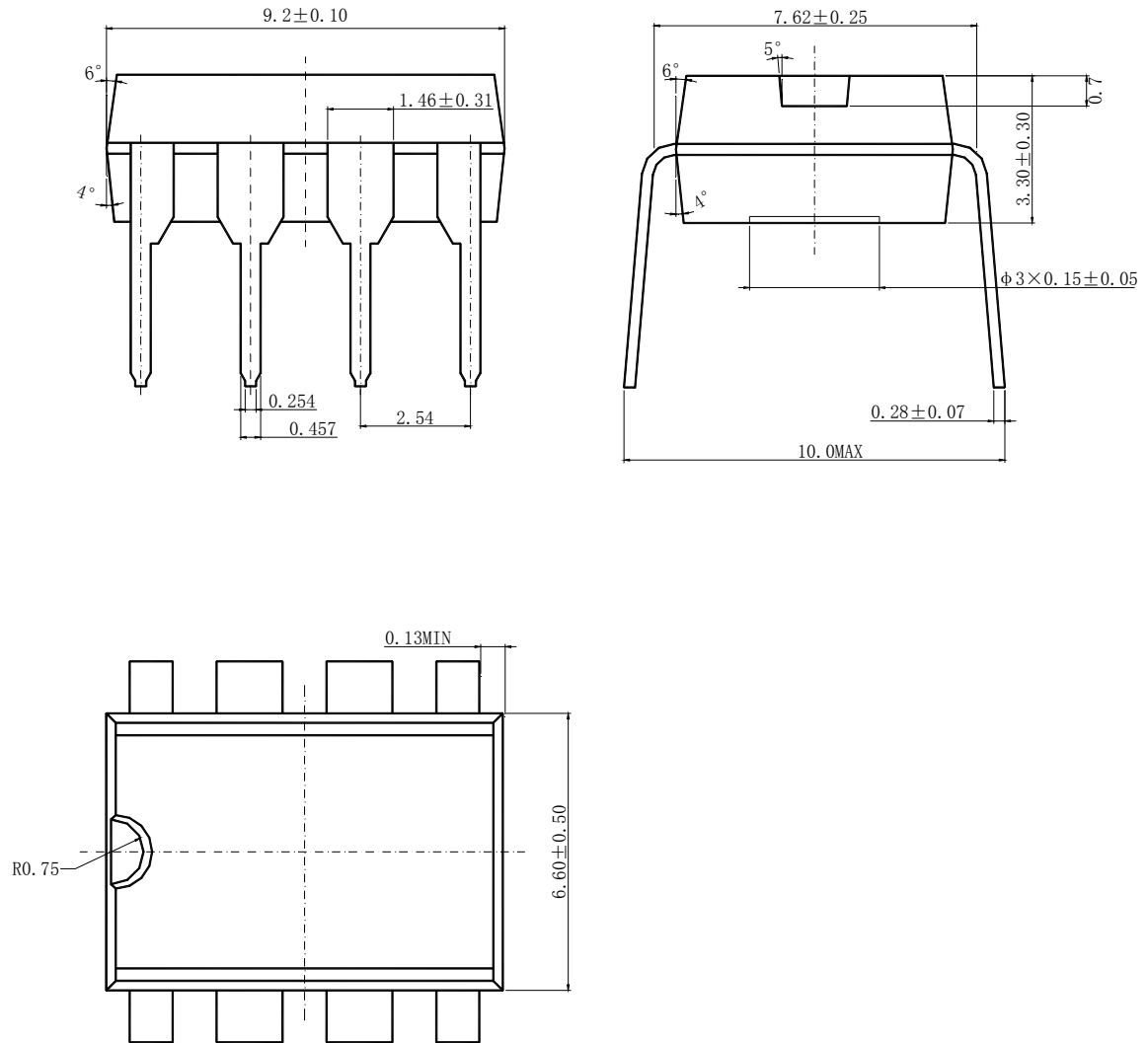


Figure 10. Typical Application of HWD4558

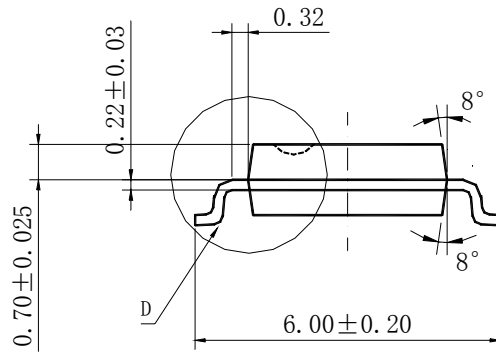
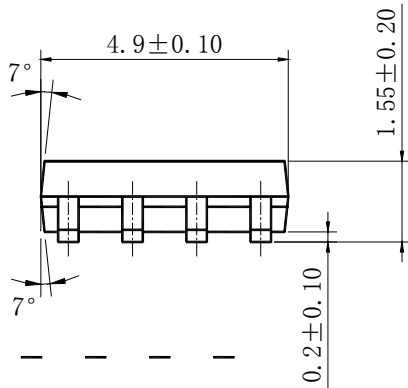
Mechanical Dimensions

DIP - 8

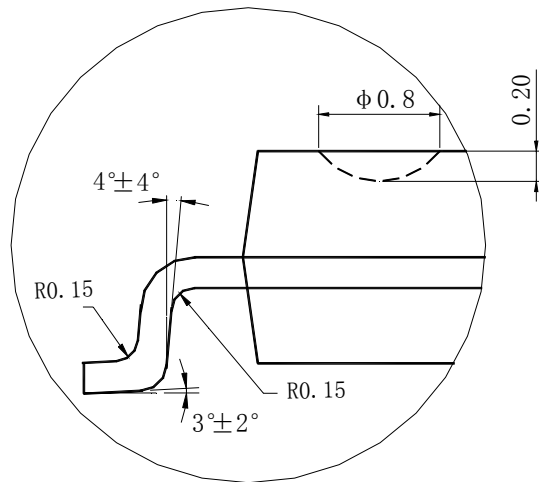
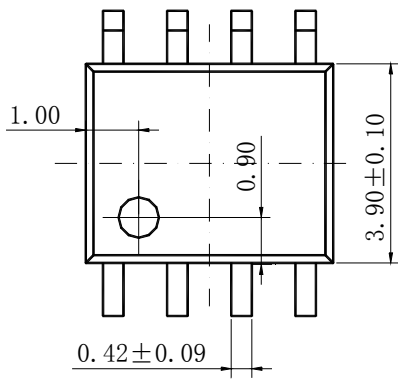


Mechanical Dimensions (Continued)

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Chengdu Sino Microelectronics System Co.,Ltd

([Http://www.csmsc.com](http://www.csmsc.com))



Headquarters of CSMSc

Address: 2nd floor, Building D,
Science & Technology
Industrial Park, 11 Gaopeng
Avenue, Chengdu High-Tech
Zone, Chengdu City, Sichuan
Province, P.R.China

PC: 610041

Tel: +86-28-8517-7737

Fax: +86-28-8517-5097

Beijing Office:

Address: Room 505, No. 6 Building,
Zijin Garden, 68 Wanquanhe
Rd., Haidian District,
Beijing, P.R.China

PC: 100000

Tel: +86-10-8265-8662

Fax: +86-10-8265-8663

Shenzhen Office:

Address: Room 1110-1112, Building
A, Zhongshen Garden,
Caitian Rd., Futian District,
Shenzhen, P.R.China

PC: 518000

Tel: +86-775-8299-5768

+86-775-8299-2622

Fax: +86-775-8299-6142

+86-775-8299-1022

Shanghai Office:

Address: Room B-906, High-Tech
King World, Beijing East
Rd., Shanghai, P.R.China

PC: 200001

Tel: +86-21-5308-2272 ext. 210

+86-21-5308-2273 ext. 210

Fax: +86-21-5308-2863