

## GENERAL DESCRIPTION

The HT4558 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 HT4558 can operate under dual power supply voltage up to  $\pm 20V$  or single power supply up to 40V.

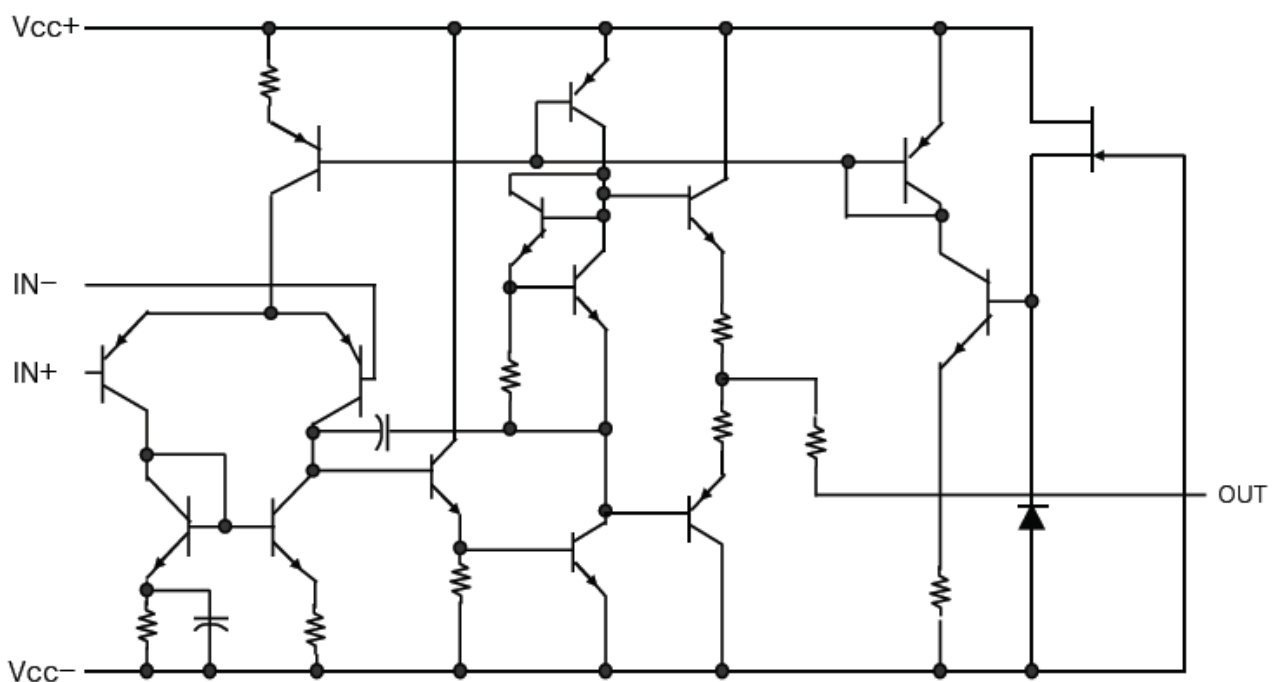
## FEATURES

- ◆ Power Supply Voltage:  $\pm 5V \sim \pm 20V$ .
- ◆ Large DC voltage gain: 100 dB.
- ◆ Large Common Mode Rejection Ratio: 85 dB.
- ◆ Power Supply Rejection Ratio: 95 dB.
- ◆ Slew rate:  $2V/\mu s$
- ◆ Package outline: DIP8, SOIC8

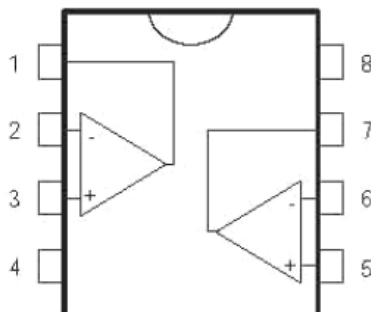
## APPLICATIONS

- Audio AC-3 decoded system.
- Audio amplifier

## Functional Diagram



## Pin Description



Symbol	Pin NO.	Description
OUT1	1	Output 1
IN1-	2	Inverting input1
IN1+	3	Non- Inverting input1
V-	4	VEE
IN2+	5	Non- Inverting input2
IN2-	6	Inverting input2
OUT2	7	Output 2
V+	8	VCC

## Absolute Maximum Ratings

Parameter	Symbol	Value		Unit
Power Supply Voltage	VCC	+20		V
	VEE	-20		
Differential Input Voltage	$V_{ID}$	$\pm 30$		V
Input Voltage	$V_{IC}$	$\pm 15$		V
Power Dissipation	$P_D$	DIP	500	mW
		SOIC	250	
Operating Temperature Range	$T_{OP}$	- 40 to 85		°C
Storage Temperature Range	$T_{STG}$	- 60 to 150		°C

# TDA4558

## Electrical Characteristics (V<sub>cc</sub>=+15V, V<sub>EE</sub> =-15V, T<sub>A</sub> =25°C unless otherwise specified)

Parameter	Conditions	Min	Typ	Max	Unit
Supply Voltage		±5		±18	V
Input Offset Voltage	R <sub>s</sub> ≤ 10KΩ	-	1	6	mV
Input bias Current		-	60	500	nA
Input Offset Current		-	5	200	nA
Supply Current		-	3.5	5.8	mA
Large Signal Voltage Gain	R <sub>L</sub> ≥ 2KΩ, V <sub>o</sub> = ±10V	85	100	-	dB
Common Mode Rejection Ratio	R <sub>s</sub> ≤ 10KΩ	70	85	-	dB
Power Supply Rejection Ratio	R <sub>s</sub> ≤ 10KΩ	70	95	-	dB
Output Voltage Swing	R <sub>L</sub> ≥ 2KΩ	±10	±13	-	V
	R <sub>L</sub> ≥ 10KΩ	±12	±14	-	
Output Sink Current	V <sub>-</sub> =1V, V <sub>+</sub> =0V, V <sub>o</sub> =2V		40		mA
Output Source Current	V <sub>-</sub> =1V, V <sub>+</sub> =0V, V <sub>o</sub> =2V		40		mA
Slew Rate		-	2	-	V/μS
Equivalent Input Noise Voltage	RIAA, R <sub>s</sub> =1KΩ, 30kHz LPF	-	1	-	μVRMS
Gain Bandwidth Product	f=10KHz	-	5	-	MHz

## Typical Performance Characteristics

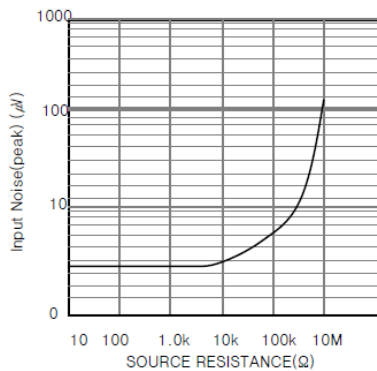


Figure 1. Burst Noise vs Source Resistance

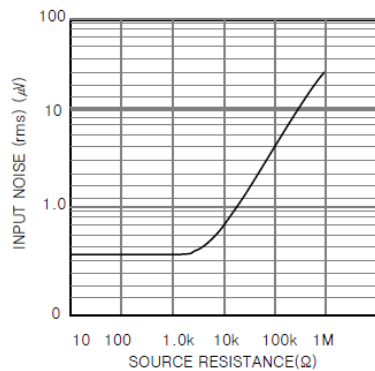


Figure 2. RMS Noise vs Source Resistance

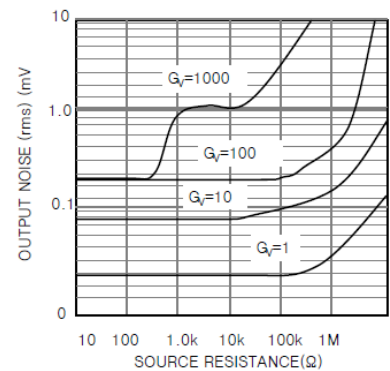


Figure 3. Output Noise vs Source Resistance

# TDA4558

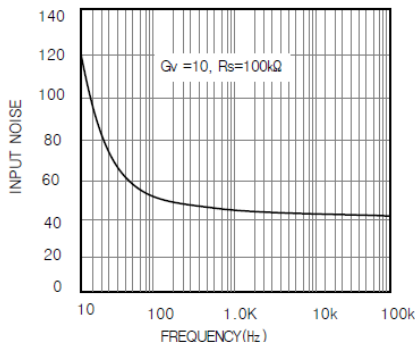


Figure 4. Spectral Noise Density

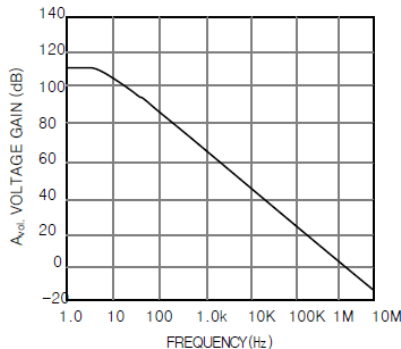


Figure 5. Open Loop Frequency Response

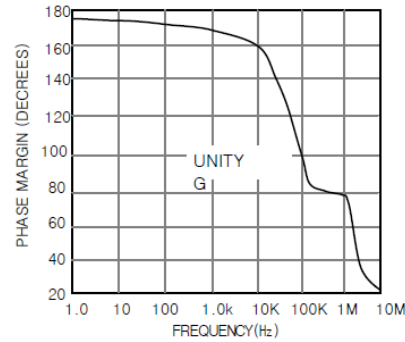


Figure 6. Phase Margin vs Frequency

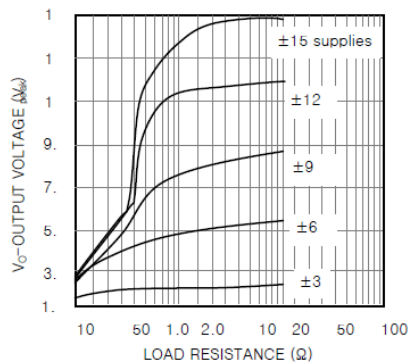


Figure 7. Positive Output Voltage Swing vs Load Resistance

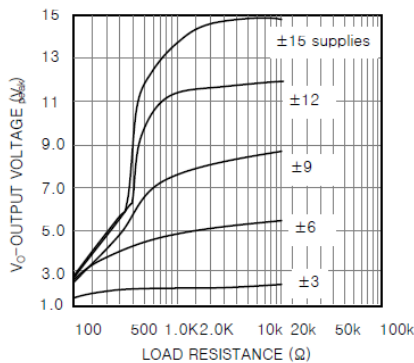


Figure 7. Negative Output Voltage Swing vs Load Resistance

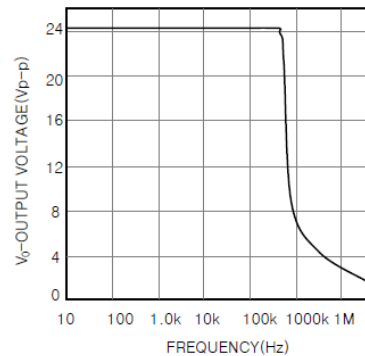
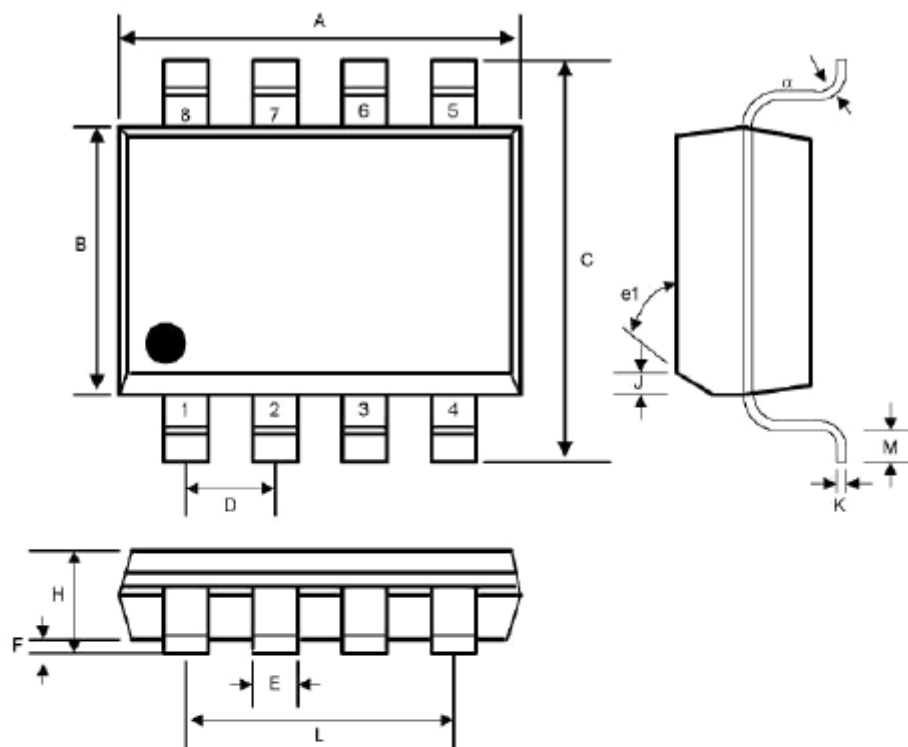


Figure 9. Power Bandwidth

## PACKAGE DESCRIPTION

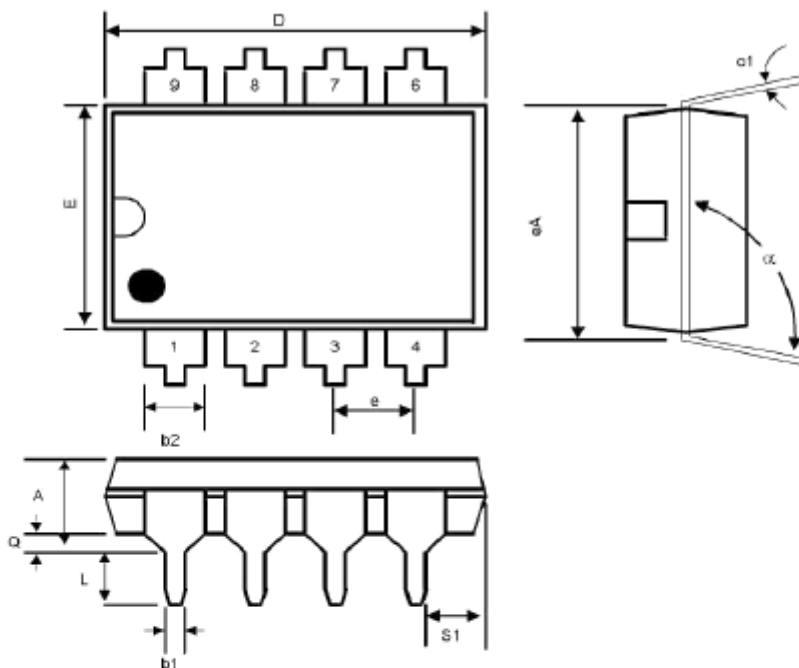
### SOP8 PACKAGE OUTLINE DIMENSIONS



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.188	0.197	4.80	5.00	-
B	0.149	0.158	3.80	4.00	-
C	0.228	0.244	5.80	6.20	-
D	0.050	BSC	1.27	BSC	-
E	0.013	0.020	0.33	0.51	-
F	0.004	0.010	0.10	0.25	-
H	0.053	0.069	1.35	1.75	-
J	0.011	0.019	0.28	0.48	-
K	0.007	0.010	0.19	0.25	-
M	0.016	0.050	0.40	1.27	-
L	0.150	REF	3.81	REF	-
e1		45°		45°	-
$\alpha$	0°	8°	0°	8°	-

# TDA4558

## DIP8 PACKAGE OUTLINE DIMENSIONS



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	-	0.200	-	5.08	-
b1	0.014	0.023	0.36	0.58	-
b2	0.045	0.065	1.14	1.65	-
c1	0.008	0.015	0.20	0.38	-
D	0.355	0.400	9.02	10.16	-
E	0.220	0.310	5.59	7.87	-
e	0.100 BSC		2.54 BSC		-
eA	0.300 BSC		7.62 BSC		-
L	0.125	0.200	3.18	5.08	-
Q	0.015	0.060	0.38	1.52	-
s1	0.005	-	0.13	-	-
α	90 <sup>0</sup>	105 <sup>0</sup>	90 <sup>0</sup>	105 <sup>0</sup>	-