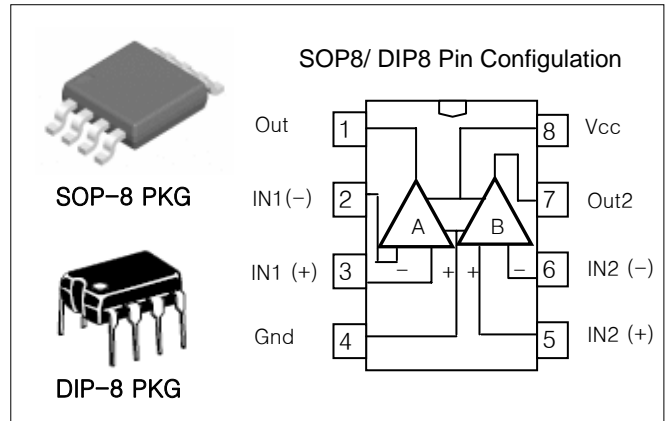


FEATURES

- No frequency Compensation Required
- No latch-up
- Large common mode and differential voltage range
- Parameter tracking over temperature range
- Gain and phase match between amplifiers
- Internally frequency compensated
- Low noise input transistors
- Moisture Sensitivity Level 3



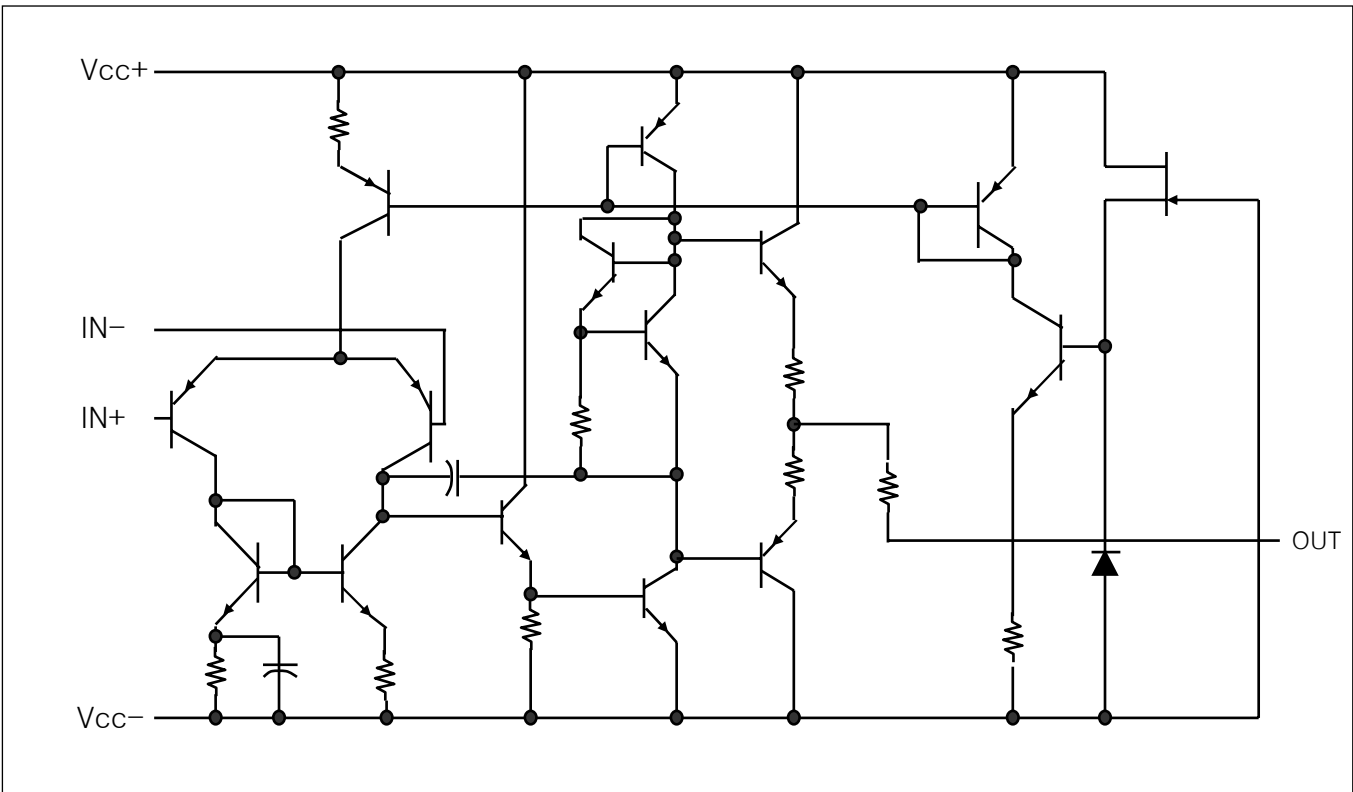
ORDERING INFORMATION

| Device | Package |
|---------|---------|
| LM4558D | 8 SOP |
| LM4558N | 8 DIP |

DESCRIPTIONS

The LM4558 devices is a monolithic integrated circuit designed for dual operational amplifier. The high common-mode input voltage range and the absence of latch-up make these amplifiers ideal for voltage-follower applications. The devices are short-circuit protected and the internal frequency compensation ensures stability without external components. The LM4558 is characterized for operation from 0°C TO 70°C.

SCHEMATIC (EACH AMPLIFIER)



Absolute maximum ratings over operating free-air temperature range.

| | | LM4558 | UNIT |
|---|---------------|------------|--------------------|
| Supply Voltage | V_{CC} | ± 22 | V |
| Differential Input Voltage | $V_{I(DIFF)}$ | ± 30 | V |
| Input Voltage | V_I | ± 15 | V |
| Duration of output short circuit to ground, one amplifier at a time | | Unlimited | |
| Short temperature range | T_{stg} | -65 to 150 | $^{\circ}\text{C}$ |

Recommended operating conditions

| | | MIN | MAX | UNIT | |
|---------------------------------------|-----------|--------|-----|------|--------------------|
| Supply voltage | V_{CC+} | 5 | 15 | V | |
| | V_{CC-} | -5 | -15 | | |
| Operating free-air temperature, T_A | | LM4558 | 0 | 70 | $^{\circ}\text{C}$ |

Electrical characteristics at specified free-air temperature, $V_{CC}= 15\text{V}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | | LM4558 | | | UNIT |
|--|--|--|-----------------------|----------|----------|------------------------|
| | | | MIN | TYP | MAX | |
| V_{IO} Input Offset Voltage | VO=0 | 25 $^{\circ}\text{C}$ | | 0.5 | 5 | mV |
| | | Full Range | | | 6 | |
| V_{01}/V_{02} Crosstalk attenuation | Open | $R_S=100\ \Omega$ $f=1\ \text{kHz}$ | 25 $^{\circ}\text{C}$ | 85 | | |
| | $A_{VD}=100$ | | | 100 | | |
| I_{IO} Input Offset Current | VO=0 | 25 $^{\circ}\text{C}$ | | 5 | 200 | nA |
| | | Full Range | | | 500 | |
| r_i | Input resistance | 25 $^{\circ}\text{C}$ | 0 | 5 | | M Ω |
| I_{IB} Input Bias Current | VO=0 | 25 $^{\circ}\text{C}$ | | 140 | 500 | nA |
| | | Full Range | | | 1500 | |
| V_{ICR} Common-Mode Input Voltage range | | 25 $^{\circ}\text{C}$ | ± 12 | ± 14 | | V |
| VOM Maximum output voltage swing | | $R_L = 10\ \text{k}\Omega$ | 25 $^{\circ}\text{C}$ | ± 12 | ± 14 | V |
| | | $R_L = 2\ \text{k}\Omega$ | 25 $^{\circ}\text{C}$ | ± 10 | ± 13 | |
| | | $R_L \geq 2\ \text{k}\Omega$ | Full Range | ± 10 | | |
| A_{VD} Large-Signal Differential Voltage Amplification | $V_O=\pm 10\text{V}$ $R_L \geq 2\ \text{k}\Omega$ | 25 $^{\circ}\text{C}$ | 50 | 350 | V/mV | |
| | | Full Range | 25 | | | |
| CMRR Common-Mode Rejection Ratio | $V_{CC}=5\text{V to MAX,}$ $V_{IC}=V_{ICR\ \text{MIN}}$ | 25 $^{\circ}\text{C}$ | 65 | 80 | | dB |
| K_{SVS} Supply Voltage Sensitivity Ratio($\Delta V_{IO}/\Delta V_{CC}$) | | 25 $^{\circ}\text{C}$ | | 30 | 150 | $\mu\text{V}/\text{V}$ |
| V_{01}/V_{02} Crosstalk Attenuation | $f=1\ \text{kHz to } 20\ \text{kHz}$ | 25 $^{\circ}\text{C}$ | | 120 | | dB |
| I_{CC} Supply Current (Both Amplifiers) | $V_O=0, \text{ No Load}$ | 25 $^{\circ}\text{C}$ | | 2.5 | 5.6 | mA |
| | | $T_A(\text{min})$ | | 3.0 | 6.6 | |
| | | $T_A(\text{max})$ | | 2.0 | 5.0 | |

* All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified. Full range is 0 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$. $T_A(\text{min}) = 0^{\circ}\text{C}$. $T_A(\text{max}) = 70^{\circ}\text{C}$.

TYPICAL PERFORMANCE CHARACTERISTICS

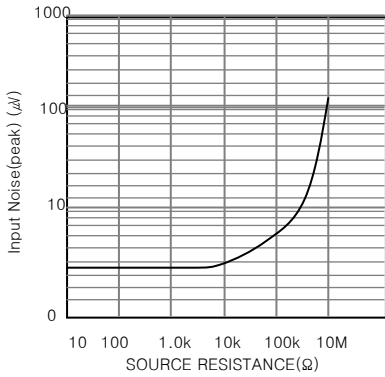


Figure 1. Burst Noise vs Source Resistance

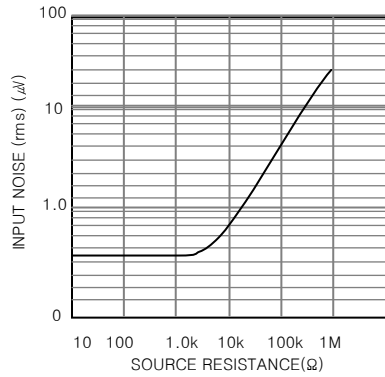


Figure 2. RMS Noise vs Source Resistance

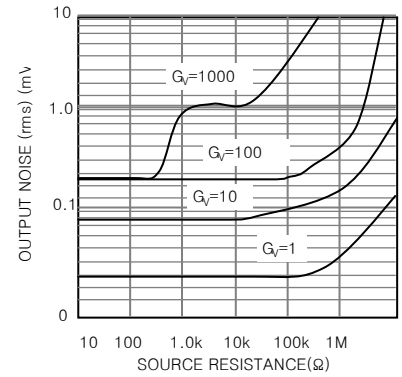


Figure 3. Output Noise vs Source Resistance

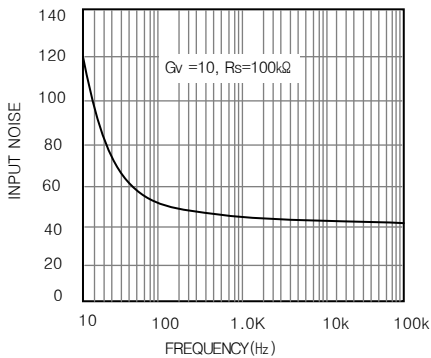


Figure 4. Spectral Noise Density

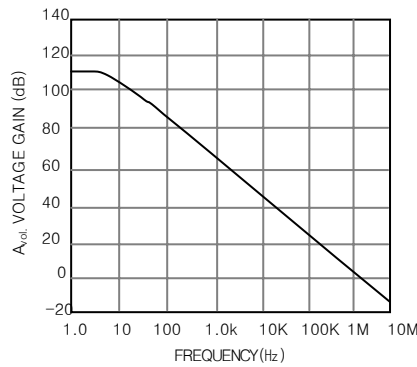


Figure 5. Open Loop Frequency Response

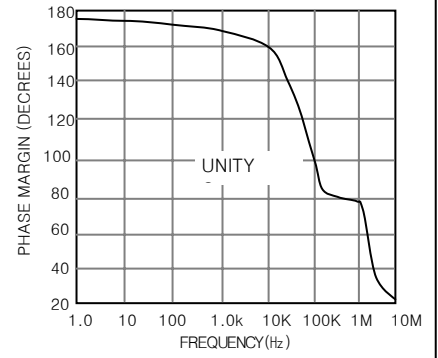


Figure 6. Phase Margin vs Frequency

OUTPUT CHARACTERISTICS
CURRENT SINKING

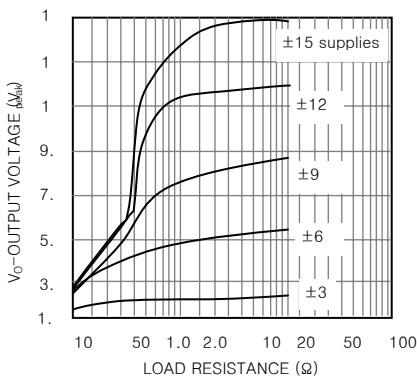


Figure 7. Positive Output Voltage Swing vs Load Resistance

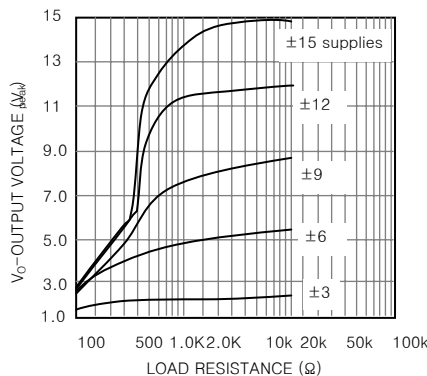


Figure 7. Negative Output Voltage Swing vs Load Resistance

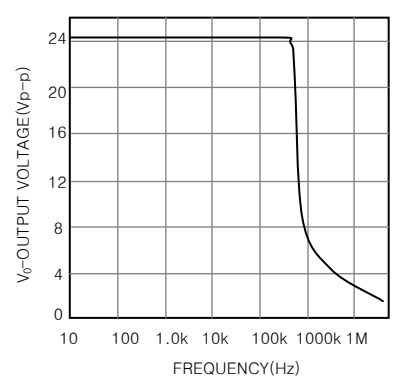


Figure 9. Power Bandwidth