



MC4558

LINEAR INTEGRATED CIRCUIT

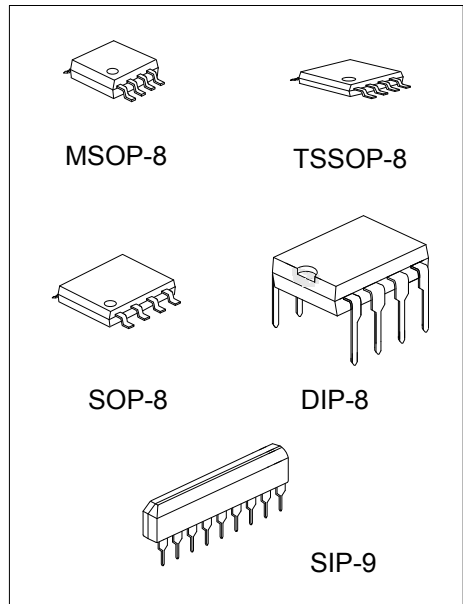
DUAL OPERATIONAL AMPLIFIER

■ DESCRIPTION

The UTC **MC4558** is a monolithic integrated circuit designed for dual operational amplifier.

■ 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



■ ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|-----------------|---------------|---------|-----------|
| Lead Free | Halogen Free | | |
| MC4558L-D08-T | MC4558G-D08-T | DIP-8 | Tube |
| - | MC4558G-G09-T | SIP-9 | Tube |
| - | MC4558G-P08-R | TSSOP-8 | Tape Reel |
| - | MC4558G-S08-R | SOP-8 | Tape Reel |
| - | MC4558G-SM1-R | MSOP-8 | Tape Reel |

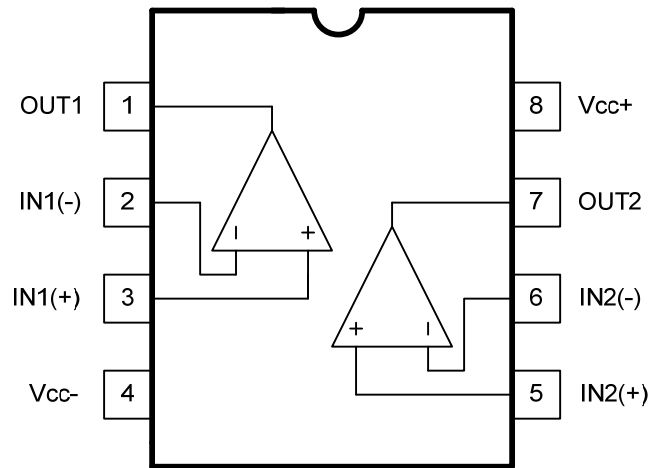
| | |
|---|---|
| <p>MC4558L-D08-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p> | <p>(1) T: Tube, R: Tape Reel (2) D08: DIP-8, G09: SIP-9, P08: TSSOP-8 S08: SOP-8, SM1: MSOP-8 (3) L: Lead Free, G: Halogen Free and Lead Free</p> |
|---|---|

■ MARKING

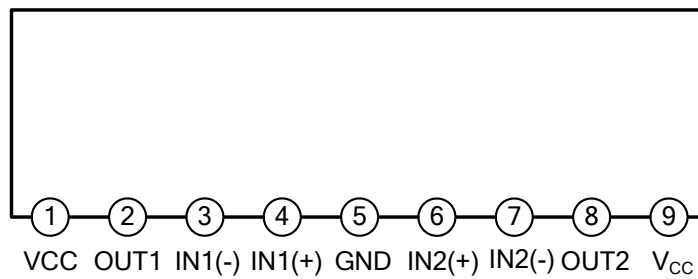
| | |
|---|---|
| <p>DIP-8</p> <p>8 7 6 5 → Date Code UTC □□□□ MC4558 □ □ □ □ □ → Lot Code 1 2 3 4</p> | <p>SOP-8/MSOP-8</p> <p>8 7 6 5 → Date Code UTC □□□□ MC4558G □ ● □ □ □ → Lot Code 1 2 3 4</p> |
| <p>TSSOP-8</p> <p>8 → Date Code UTC □□□□ MC4558G 1 2 3 4 → Lot Code 5</p> | <p>SIP-9</p> <p>UTC □□□□ → Data Code MC4558G □ □ □ □ → Lot Code 1 2 3 4 5 6 7 8 9</p> |

■ PIN CONFIGURATIONS

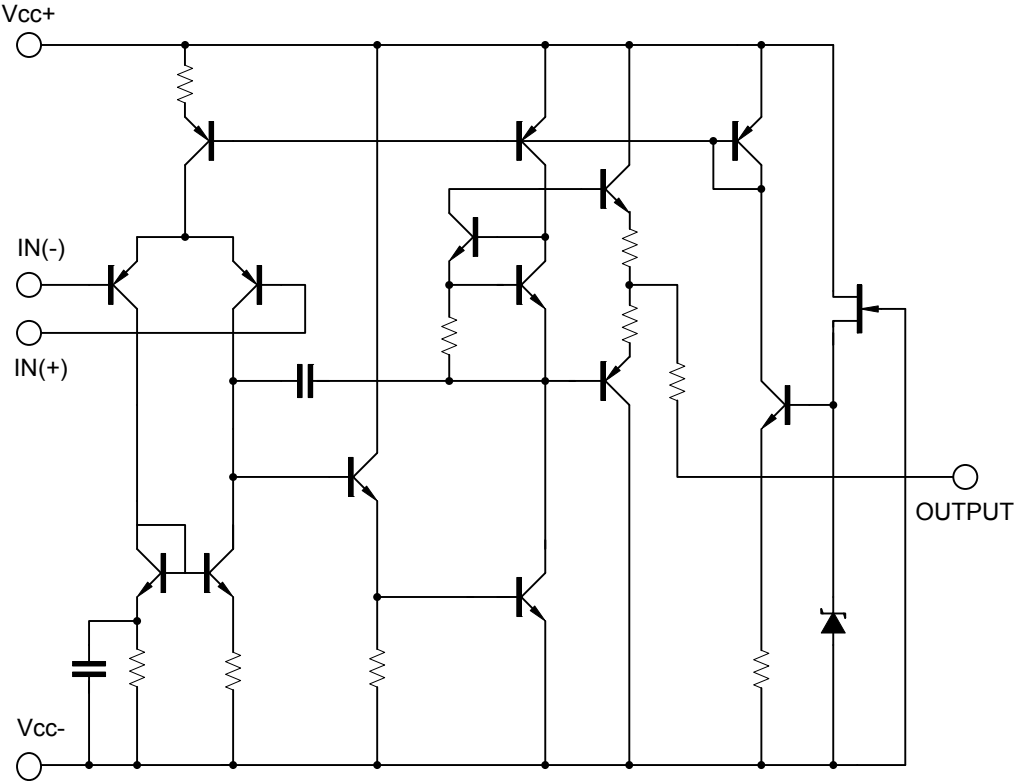
SOP-8/DIP-8/MSOP-8/TSSOP-8



SIP-9



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | SYMBOL | RATING | UNIT |
|----------------------------|---------|---------------|------------|-------------|
| Supply Voltage | | V_{CC} | ± 22 | V |
| Differential input voltage | | $V_{I(DIFF)}$ | ± 18 | V |
| Power Dissipation | DIP-8 | P_D | 600 | mW |
| | SOP-8 | | 400 | mW |
| | TSSOP-8 | | 300 | mW |
| | SIP-9 | | 750 | mW |
| | MSOP-8 | | 250 | mW |
| Input Voltage | | V_{IN} | ± 15 | V |
| Junction Temperature | | T_J | +125 | $^{\circ}C$ |
| Operating Temperature | | T_{OPR} | -20 ~ +85 | $^{\circ}C$ |
| Storage Temperature | | T_{STG} | -40 ~ +150 | $^{\circ}C$ |

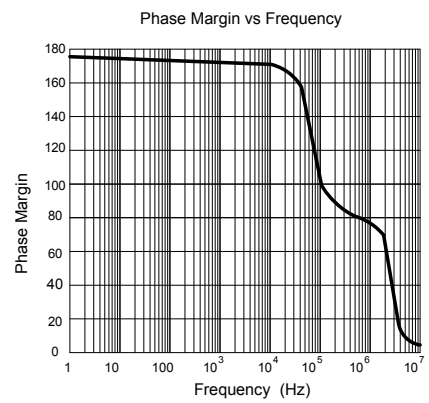
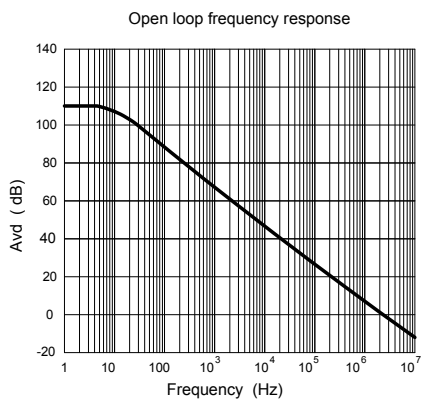
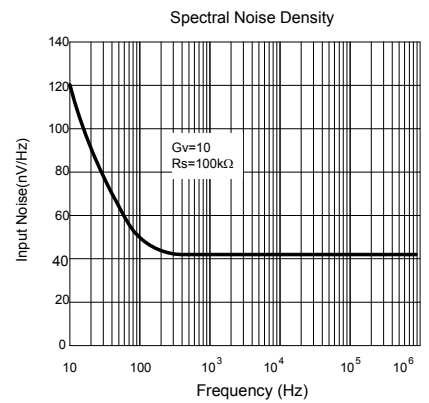
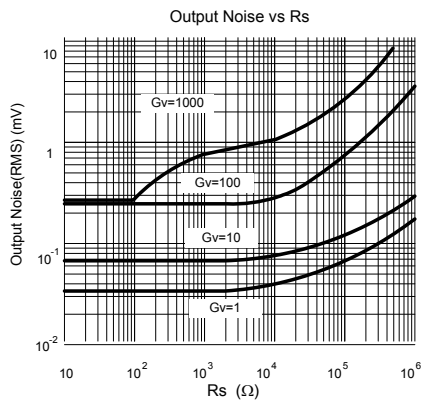
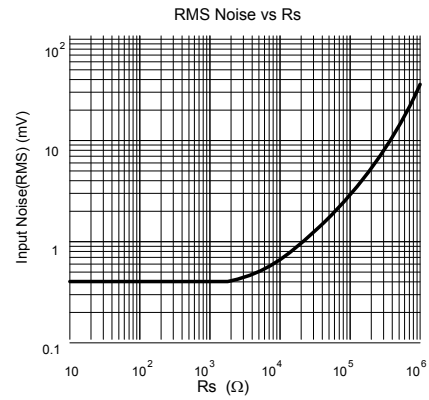
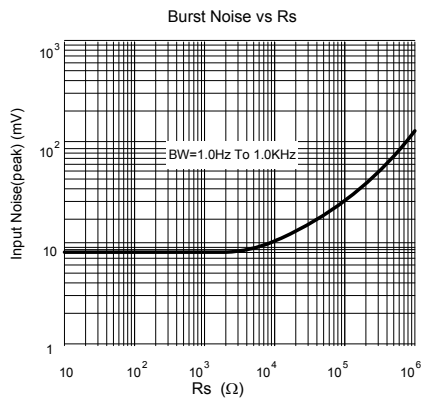
Note 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. The device is guaranteed to meet performance specification within $0^{\circ}C \sim +70^{\circ}C$ operating temperature range and assured by design from $-20^{\circ}C \sim +85^{\circ}C$.

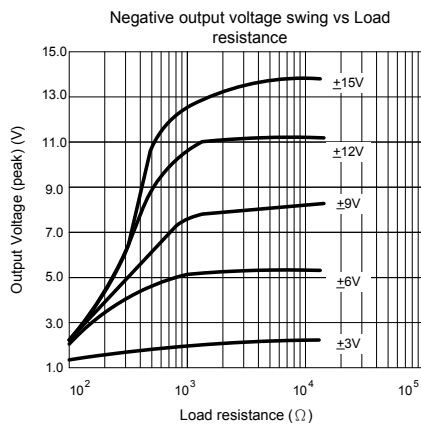
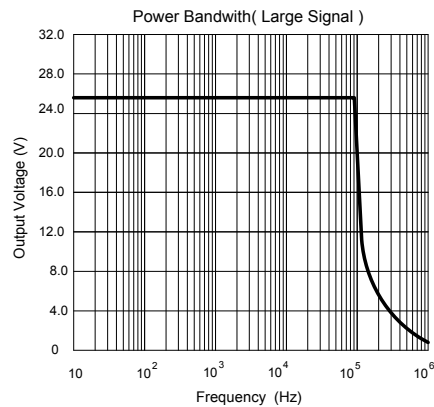
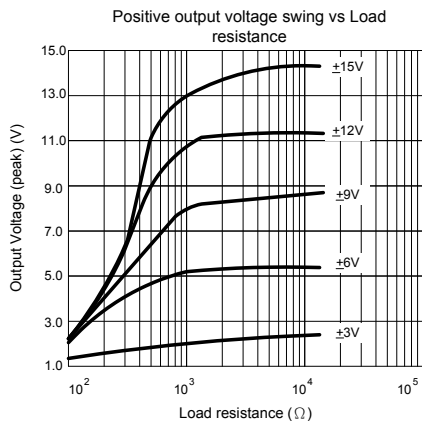
■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}C$, $V_{CC}=15V$, $V_{EE}=-15V$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------------------|-----------------|--|----------|----------|-----|------------|
| Supply Current, all Amp, no load | I_{CC} | | | 2.3 | 4.5 | mA |
| Input offset voltage | $V_{I(OFF)}$ | $R_S < 10k\Omega$ | | 2 | 6 | mV |
| Input offset current | $I_{I(OFF)}$ | | | 5 | 200 | nA |
| Input bias current | $I_{I(BIAS)}$ | | | 30 | 500 | nA |
| Large signal voltage gain | G_V | $V_o(p-p) = \pm 10V$, $R_L \leq 2k\Omega$ | 20 | 200 | | V/mV |
| Common Mode Input Voltage Range | $V_{I(COM)}$ | | ± 12 | ± 13 | | V |
| Common Mode Rejection Ratio | $RR_{(COM)}$ | $R_S \leq 10k\Omega$ | 70 | 90 | | dB |
| Supply Voltage Rejection Ratio | $RR_{(VCC)}$ | $R_S \leq 10k\Omega$ | 76 | 90 | | dB |
| Output Voltage swing | $V_{O(p-p)}$ | $R_L \geq 10k\Omega$ | ± 12 | ± 14 | | V |
| Power Consumption | P_C | | | 70 | 170 | mW |
| Slew Rate | SR | $V_{IN} = \pm 10V$, $R_L \geq 2k\Omega$, $C_L \leq 100pF$ | 1.2 | 2.2 | | V/ μs |
| Rise Time | T_{RIS} | $V_{IN} = \pm 20mV$, $R_L \geq 2k\Omega$, $C_L \leq 100pF$ | | 0.3 | | μs |
| Overshoot | OS | $V_{IN} = \pm 20mV$, $R_L \geq 2k\Omega$, $C_L \leq 100pF$ | | 15 | | % |
| Input Resistance | R_{IN} | | 0.3 | 2 | | M Ω |
| Output Resistance | R_{OUT} | | | 75 | | Ω |
| Total Harmonic Distortion | THD | $f=1kHz$, $A_v=20dB$, $R_L=2k\Omega$, $V_{OUT}=2V_{pp}$, $C_L=100pF$ | | 0.008 | | % |
| Channel Separation | V_{O1}/V_{O2} | | | 120 | | dB |
| FREQUENCY CHARACTERISTIC | | | | | | |
| Unity Gain Bandwidth | BW | | 2.0 | 2.8 | | MHz |

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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