

# MC1458

## LINEAR INTEGRATED CIRCUIT

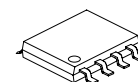
### DUAL OPERATIONAL AMPLIFIER

#### DESCRIPTION

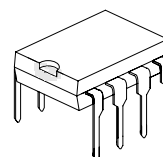
The UTC **MC1458** is a high performance dual operational amplifier. It is designed for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in summing amplifier, voltage follower, integrator, active filter, function generator and general feed back applications.

#### FEATURES

- \* Low power consumption
- \* Wide input voltage range
- \* No latch-up
- \* High gain
- \* Short-circuit protection
- \* Frequency compensation is unnecessary



SOP-8



DIP-8

\*Pb-free plating product number: MC1458L

#### ORDERING INFORMATION

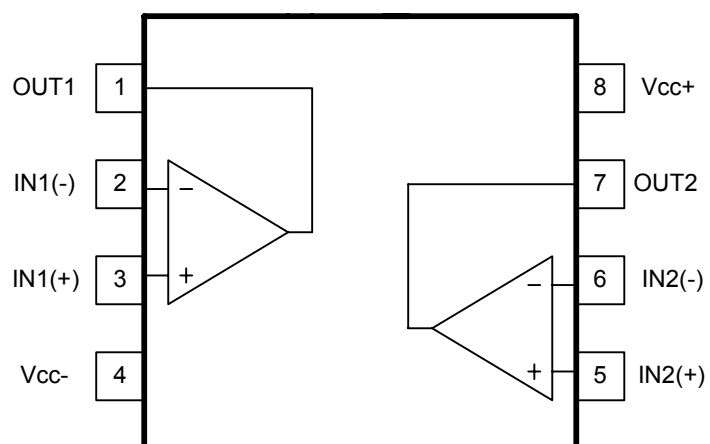
| Order Number |                   | Package | Packing   |
|--------------|-------------------|---------|-----------|
| Normal       | Lead Free Plating |         |           |
| MC1458-D08-T | MC1458L-D08-T     | DIP-8   | Tube      |
| MC1458-S08-R | MC1458L-S08-R     | SOP-8   | Tape Reel |
| MC1458-S08-T | MC1458L-S08-T     | SOP-8   | Tube      |

MC1458L-D08-T

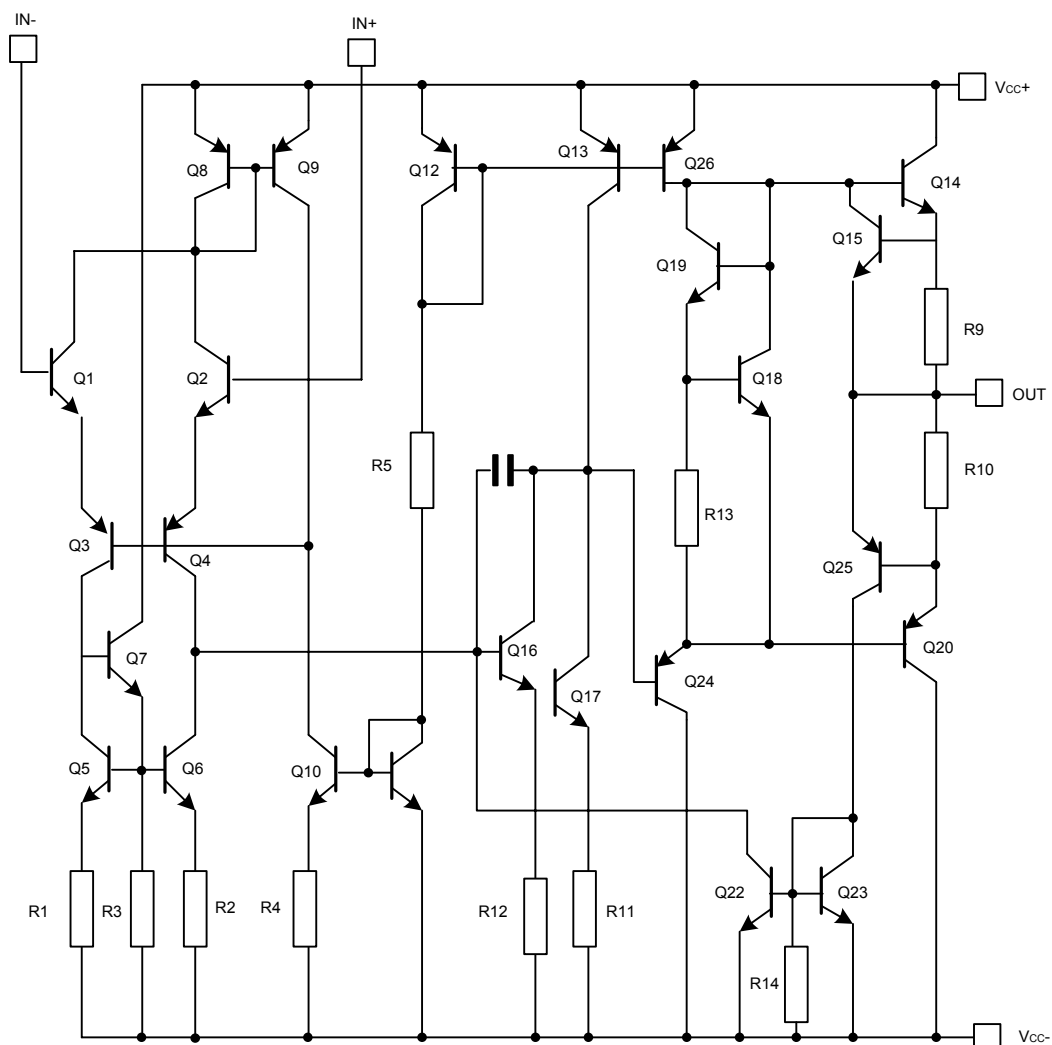
- (1)Packing Type  
(2)Package Type  
(3)Lead Plating

- (1) R: Tape Reel, T: Tube  
(2) D08: DIP-8, S08: SOP-8  
(3) L: Lead Free Plating, Blank: Pb/Sn

■ PIN CONFIGURATIONS



■ TEST CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER                           | SYMBOL               | RATINGS        | UNIT |
|-------------------------------------|----------------------|----------------|------|
| Supply Voltage                      | V <sub>CC</sub>      | -22 ~ +22      | V    |
| Differential Input Voltage          | V <sub>I(DIFF)</sub> | -30 ~ +30      | V    |
| Input Voltage                       | V <sub>IN</sub>      | -15 ~ +15      | V    |
| Power Dissipation                   | SOP-8                | P <sub>D</sub> | mW   |
|                                     | DIP-8                |                |      |
| Output Short Circuit Duration       |                      | Infinite       |      |
| Operating Ambient Temperature Range | T <sub>OPR</sub>     | 0 ~ 70         | °C   |
| Storage Temperature Range           | T <sub>STG</sub>     | -65~ +150      | °C   |

Note: 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.

■ ELECTRICAL CHARACTERISTICS (V<sub>CC</sub>=±15V, Ta=25°C, unless otherwise specified )

| PARAMETER                                                                | SYMBOL               | TEST CONDITIONS                                                                            | MIN                  | TYP | MAX | UNIT |
|--------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------|----------------------|-----|-----|------|
| Input Offset Voltage (R <sub>S</sub> ≤10kΩ)                              | V <sub>I(OFF)</sub>  | Ta=+25°C                                                                                   |                      | 1   | 5   | mV   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            |                      |     | 6   | mV   |
| Input Offset Current                                                     | I <sub>I(OFF)</sub>  | Ta=+25°C                                                                                   |                      | 2   | 200 | nA   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            |                      |     | 300 | nA   |
| Input Bias Current                                                       | I <sub>I(BIAS)</sub> | Ta=+25°C                                                                                   |                      | 30  | 500 | nA   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            |                      |     | 800 | nA   |
| Large Signal Voltage Gain<br>(V <sub>O</sub> =±10V, R <sub>L</sub> =2kΩ) | G <sub>V</sub>       | Ta=+25°C                                                                                   | 50                   | 200 |     | V/mV |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            | 25                   |     |     | V/mV |
| Supply Voltage Rejection Ratio<br>(R <sub>S</sub> ≤10kΩ)                 | SVR                  | Ta=+25°C                                                                                   | 77                   | 90  |     | dB   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            | 77                   |     |     | dB   |
| Supply Current(all Amp, no Load)                                         | I <sub>CC</sub>      | Ta=+25°C                                                                                   |                      | 2.3 | 5   | mA   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            |                      |     | 6   | mA   |
| Input Common Mode Voltage Range                                          | V <sub>IN(CM)</sub>  | Ta=+25°C                                                                                   | ±12                  |     |     | V    |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            | ±12                  |     |     | V    |
| Common-Mode Rejection Ratio<br>(R <sub>S</sub> ≤10kΩ)                    | CMR                  | Ta=+25°C                                                                                   | 70                   | 90  |     | dB   |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            | 70                   |     |     | dB   |
| Output Short-Circuit Current                                             | I <sub>OS</sub>      | Ta=+25°C                                                                                   | 10                   | 20  | 35  | mA   |
| Output Voltage Swing                                                     | ±V <sub>opp</sub>    | Ta=+25°C                                                                                   | R <sub>L</sub> =10kΩ | 12  | 14  | V    |
|                                                                          |                      |                                                                                            | R <sub>L</sub> =2kΩ  | 10  | 13  | V    |
|                                                                          |                      | 0°C ≤ Ta ≤ 70°C                                                                            | R <sub>L</sub> =10kΩ | 12  |     | V    |
|                                                                          |                      |                                                                                            | R <sub>L</sub> =2kΩ  | 10  |     | V    |
| Slew Rate                                                                | SR                   | V <sub>IN</sub> =±10V, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF,<br>Ta=+25°C, unity gain | 0.2                  | 0.8 |     | V/μs |
| Rise Time                                                                | t <sub>r</sub>       | V <sub>IN</sub> =20mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF,<br>Ta=+25°C, unity gain |                      | 0.3 |     | μs   |
| Over-Shoot                                                               | K <sub>OS</sub>      | V <sub>IN</sub> =20mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF,<br>Ta=+25°C, unity gain |                      | 5   |     | %    |
| Input Resistance                                                         | R <sub>IN</sub>      |                                                                                            | 0.3                  | 2   |     | MΩ   |
| Common-Mode Input Impedance                                              | Z <sub>IN</sub>      |                                                                                            |                      | 200 |     | MΩ   |
| Input Capacitance                                                        | C <sub>IN</sub>      |                                                                                            |                      | 1.4 |     | pF   |
| Output Resistance                                                        | R <sub>OUT</sub>     |                                                                                            |                      | 75  |     | Ω    |
| Full Power Bandwidth                                                     | FB <sub>W</sub>      | R <sub>L</sub> =2kΩ, V <sub>OUT</sub> ≥ ±10V,<br>G <sub>V</sub> =1, THD ≤ 5%               |                      | 14  |     | KHz  |
| Unity Gain Bandwidth                                                     | GB <sub>W</sub>      | V <sub>IN</sub> =10mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF,<br>Ta=+25°C             |                      | 1   |     | MHz  |
| Gain Bandwidth Product                                                   | GB <sub>P</sub>      | V <sub>IN</sub> =10mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF,<br>t=100kHz, Ta=+25°C   | 0.4                  | 1   |     | MHz  |

■ ELECTRICAL CHARACTERISTICS(Cont.)

| PARAMETER                      | SYMBOL  | TEST CONDITIONS                                                                                 | MIN | TYP  | MAX | UNIT                   |
|--------------------------------|---------|-------------------------------------------------------------------------------------------------|-----|------|-----|------------------------|
| Total Harmonic Distortion      | THD     | F=1kHz, Av=20dB, R <sub>L</sub> =2kΩ,<br>V <sub>OUT</sub> =2Vpp, C <sub>L</sub> =100pF, Ta=25°C |     | 0.02 |     | %                      |
| Equivalent Input Noise Voltage | eN      | F=kHz, R <sub>s</sub> =100Ω                                                                     |     | 45   |     | $\frac{nV}{\sqrt{Hz}}$ |
| Phase Margin                   | φm      |                                                                                                 |     | 65   |     | Deg.                   |
| Gain Margin                    | Am      |                                                                                                 |     | 11   |     | dB                     |
| Channel Separation             | Vo1/Vo2 |                                                                                                 |     | 120  |     | dB                     |

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.