# KA1458

## Dual Operational Amplifier

### Features

- Internal frequency compensation
- Short circuit protecion
- Large common mode and differential voltage range
- No latch up
- Low power consumption

### Description

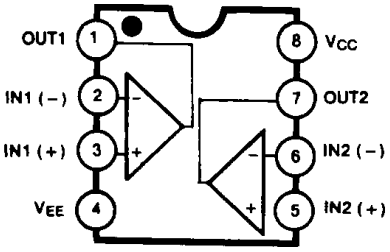
The KA1458 series are dual general purpose operational amplifiers, having short circuits protected and require no external components for frequency compensation. High common mode voltage range and absence of “latch up" make the KA1458 ideal for use as voltage followers. The high gain and wide range of operating voltage provides superior performance in integrator, summing amplifier and general feedback applications.

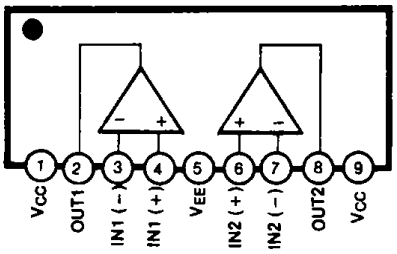
**8-DIP**


**8-SOP**


**9-SIP**

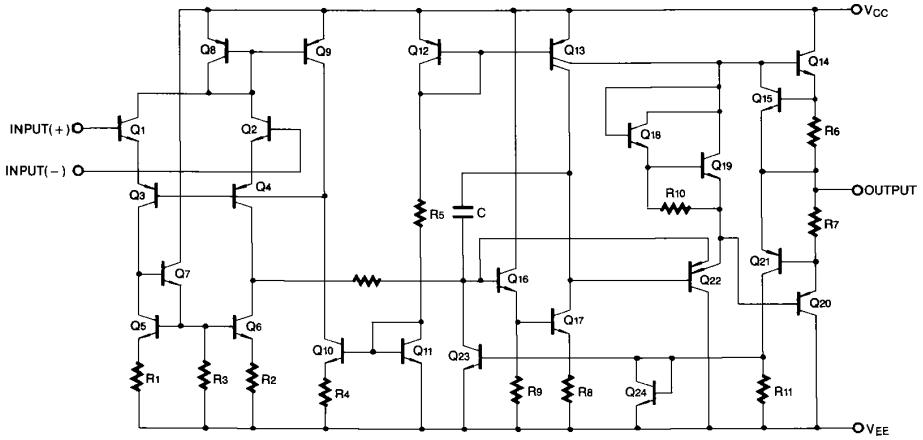

### Internal Block Diagram




Rev. 1.0.1

## Schematic Diagram




## Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Supply Voltage | $V_{CC}$ | ±18 | V |
| Input Differential Voltage | $V_{I(DIFF)}$ | 30 | V |
| Input Voltage | $V_I$ | ±15 | V |
| Operating Temperature Range<br>KA1458 | $T_{OPR}$ | 0 ~ + 70 | °C |
| Storage Temperature Range | $T_{STG}$ | - 65 ~ + 150 | °C |

## Electrical Characteristics

($V_{CC}$ = + 15V, $V_{EE}$ = - 15V, $T_A$ = 25 °C unless otherwise specified)

| Parameter | Symbol | Conditions | KA1458 | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Input Offset Voltage | $V_{IO}$ | $R_S \leq 10K\Omega$ | - | 2.0 | 10 | mV |
| Input Offset Current | $I_{IO}$ | - | - | 20 | 300 | nA |
| Input Bias Current | $I_{BIAS}$ | - | - | 80 | 700 | nA |
| Large Signal Voltage Gain | $G_V$ | $V_{O(P-P)} = \pm 10V$, $R_L \geq 2.0K\Omega$ | 20 | 200 | - | V/mV |
| Input Voltage Range | $V_{I(R)}$ | - | ± 11 | ± 13 | - | V |
| Input Resistance | $R_I$ | - | 0.3 | 1.0 | - | MΩ |
| Common Mode Rejection Ratio | CMRR | - | 60 | 90 | - | dB |
| Power Supply Rejection Ratio | PSRR | - | 77 | 90 | - | dB |
| Supply Current (Both Amplifier) | $I_{CC}$ | - | - | 2.3 | 8.0 | mA |
| Output Voltage Swing | $V_{O(PP)}$ | $R_S \leq 10K\Omega$ | ± 11 | ± 14 | - | V |
| | | $R_S \leq 2K\Omega$ | ± 9 | ± 13 | - | |
| Output Short Circuit Current | $I_{SC}$ | - | - | 20 | - | mA |
| Power Consumption | $P_C$ | $V_O$ = 0V | - | 70 | 240 | mW |
| Transient Response (Unity Gain) | | | | | | |
| Rise Time | $T_R$ | $V_I$ = 20mV, $R_L \geq 2K\Omega$, $C_L \leq 100pF$ | - | 0.3 | - | µs |
| Overshoot | OS | $V_I$ = 20mV, $R_L \geq 2K\Omega$, $C_L \leq 100pF$ | | 15 | | % |
| Slew Rate | SR | $V_I$ = 10V, $R_L \geq 2K\Omega$, $C_L \leq 100pF$ | | 0.5 | | V/µs |

## Electrical Characteristics

($V_{CC}$ = +15V, $V_{EE}$ = -15V, Note1 unless otherwise specified)

| Parameter | Symbol | Conditions | KA1458 | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Input Offset Voltage | $V_{IO}$ | $R_S \leq 10K\Omega$ | - | - | 12 | mV |
| Input Offset Current | $I_{IO}$ | - | - | - | 400 | nA |
| Input Bias Current | $I_{BIAS}$ | - | - | - | 1000 | nA |
| Large Signal Voltage Gain | $G_V$ | $V_{O(P-P)} = \pm 10V$, $R_L \leq 2.0K\Omega$ | 15 | - | - | V/mV |
| Common Mode Rejection Ratio | CMRR | $R_S \geq 10K\Omega$ | 70 | 90 | - | dB |
| Power Supply Rejection Ratio | PSRR | $R_S \geq 10K\Omega$ | 77 | 90 | - | dB |
| Output Voltage Swing | $V_{O(P.P)}$ | $R_L$ = 10KΩ | ± 11 | ± 14 | - | V |
| | | $R_L$ = 2KΩ | ± 9 | ± 13 | - | |
| Input Voltage Range | $V_{I(R)}$ | - | ± 12 | - | - | V |

**Note:**
1. KA1458 : 0°C ≤$T_A$≤70°C

# Typical Performance Characteristics

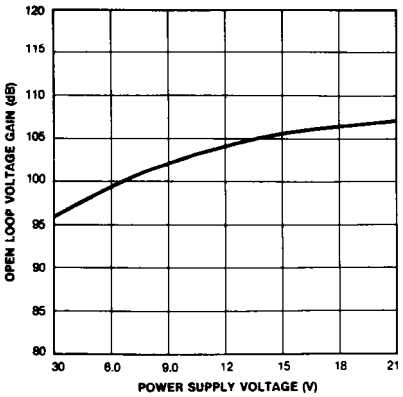



**Figure 1. Open-Loop Voltage Gain vs Power Supply Voltages**

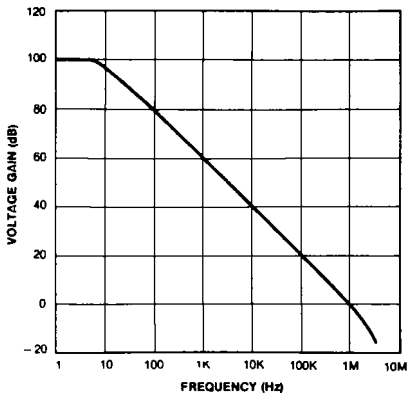



**Figure 2. Open-Loop Frequency Response**

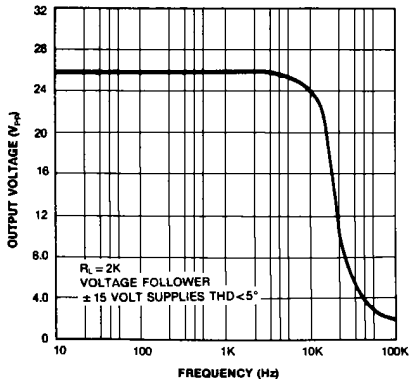



**Figure 3. Power Bandwidth (Large Signal Output Swing vs Frequency)**

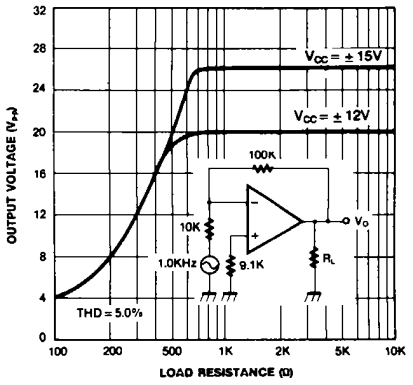
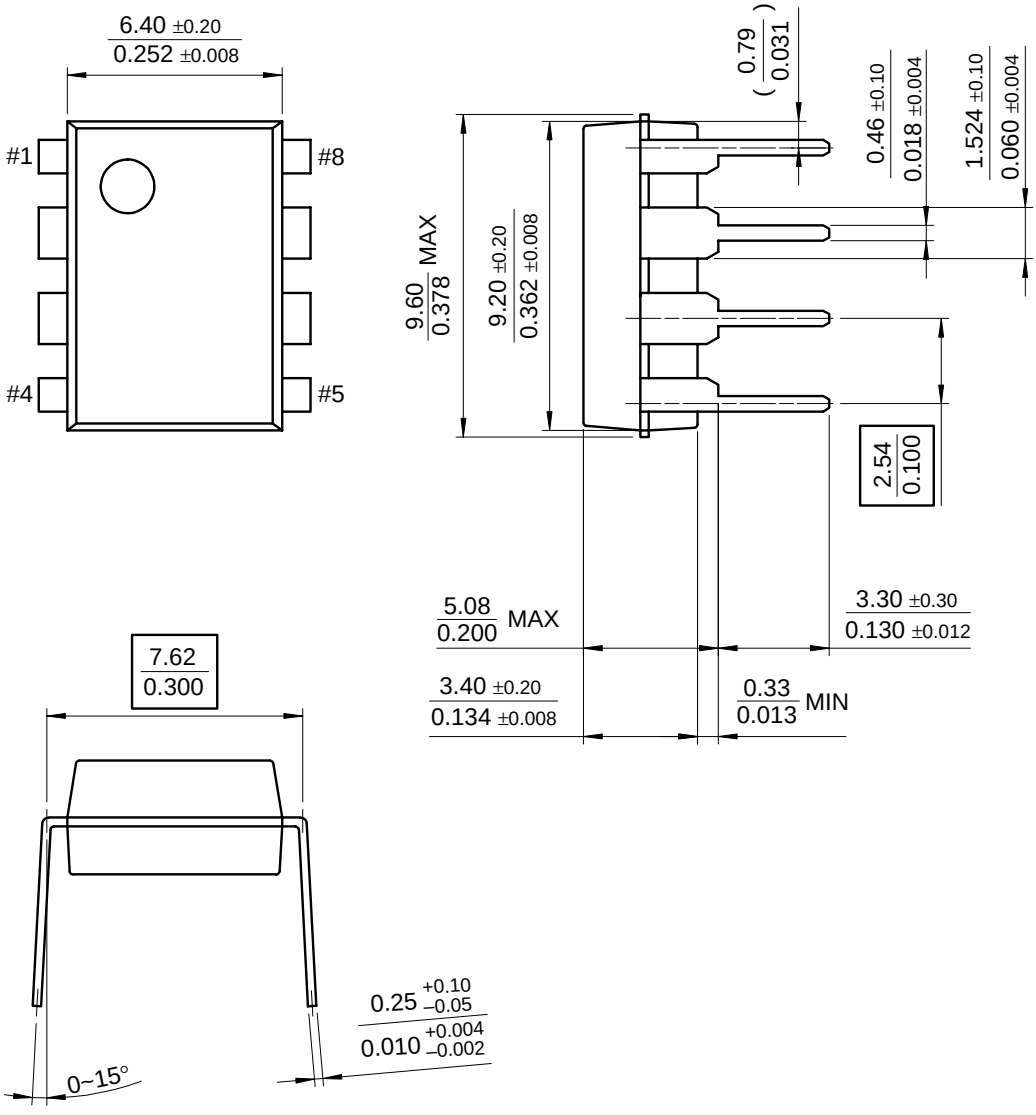



**Figure 4. Output Voltage Swing vs Load Resistance**

## Mechanical Dimensions

### Package

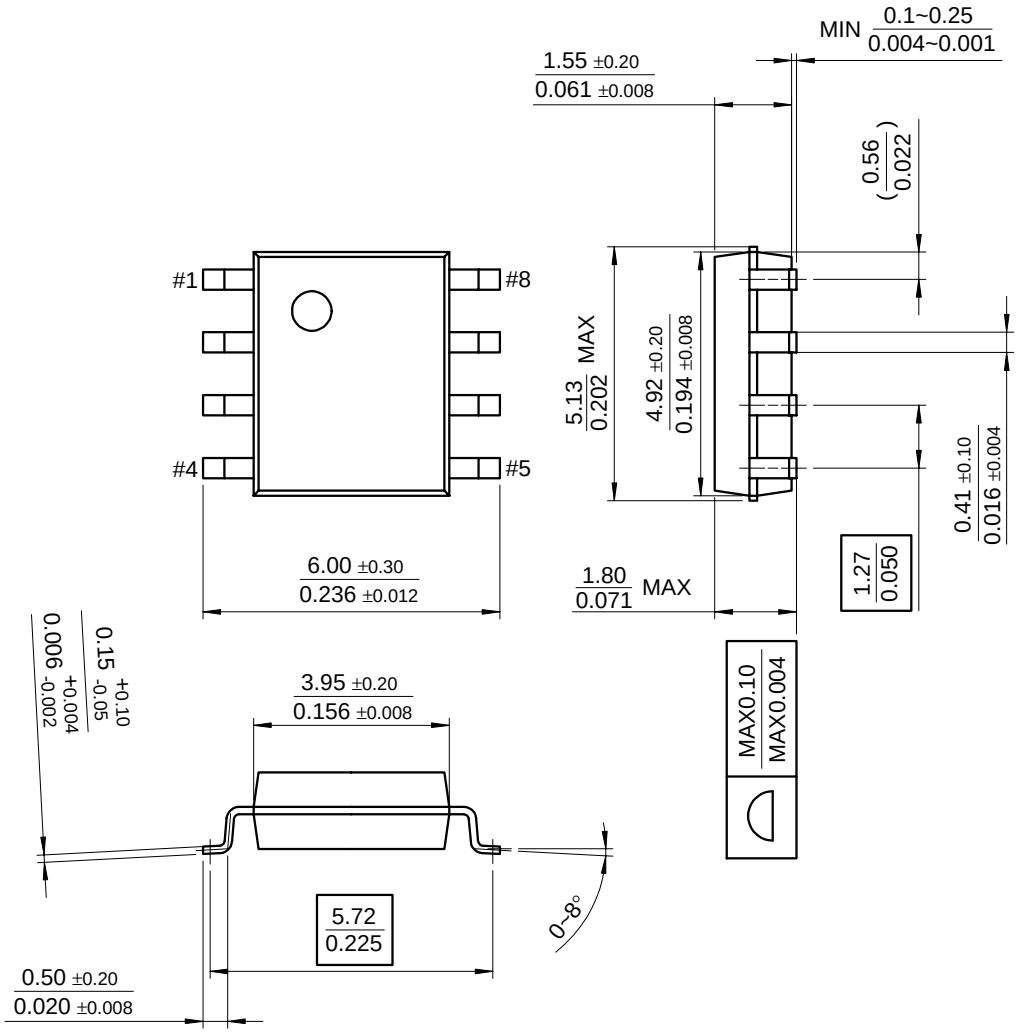
# 8-DIP



## Mechanical Dimensions (Continued)

### Package

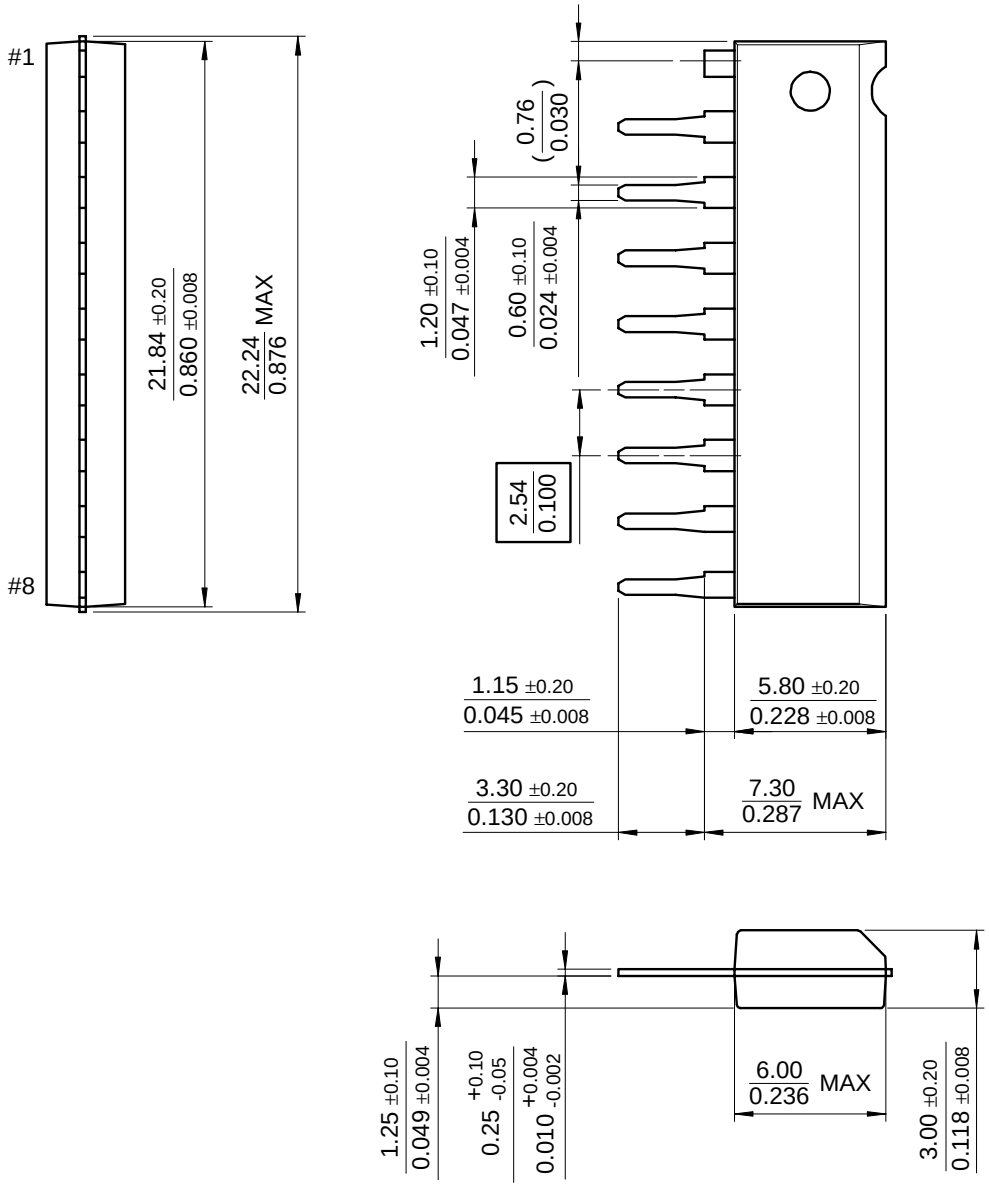
# 8-SOP



## Mechanical Dimensions (Continued)

### Package

# 9-SIP



## Ordering Information

| Product Number | Package | Operating Temperature |
|---|---|---|
| KA1458 | 8-DIP | 0 ~ + 70°C |
| KA1458D | 8-SOP | |
| KA1458S | 9-SIP | |

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