Ordering number: EN2064C

Monolithic Linear IC

# LA6462M, 6462S

## High-Performance Dual Operational Amplifiers

## Overview

The LA6462 consists of two independent, internally phase compensated operational amplifiers. They feature low noise, high speed, wide band. Application areas include audio preamplifiers, active filters, and various electronic circuits.

## Features

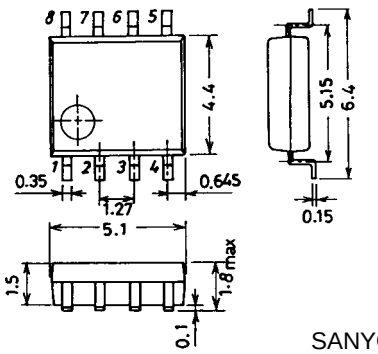
- Built-in phase compensation circuit
  (Gain ≧ 10 dB recommended)
- Low noise: Equivalent input noise voltage
  0.70 μV typ (Rg = 2.2 kΩ RIAA, DIN Audio).
  0.50 μV typ (Rg = 300 Ω, IHF-A)
- High speed: Slew rate 4.0 V/μs typ.
- Wide band: Gain-bandwidth product 6 MHz typ.

## Package Dimensions

unit : mm

### 3032-MFP8

[LA6462M]

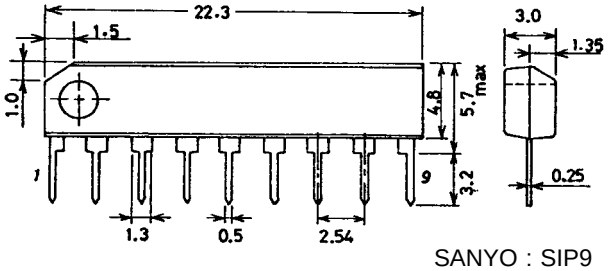



SANYO : MFP8

unit : mm

### 3017C-SIP9

[LA6462S]




SANYO : SIP9

## Specifications

### Maximum Ratings at Ta = 25°C

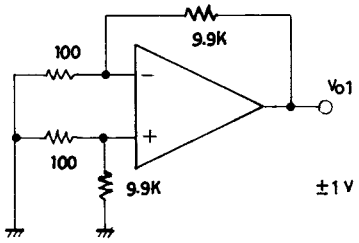
| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Maximum supply voltage | $V_{CC}/V_{EE}$ | | ±18 | V |
| Differential input voltage | $V_{ID}$ | | ±30 | V |
| Common-mode input voltage | $V_{IN}$ | | ±15 | V |
| Allowable power dissipation | Pd max | LA6462M | 300 | mW |
| | | LA6462S | 500 | mW |
| Operating temperature | Topr | | −20 to +75 | °C |
| Storage temperature | Tstg | | −40 to +125 | °C |

## Operating Characteristics at Ta = 25°C, $V_{CC}$ = 15 V, $V_{EE}$ = −15 V

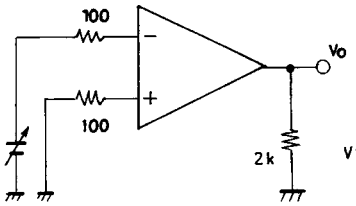
| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Input offset voltage | $V_{IO}$ | $R_S$ = 10 kΩ | | 0.3 | 6.0 | mV |
| Input offset current | $I_{IO}$ | | | 5 | 200 | nA |
| Input bias current | $I_B$ | | | 200 | 500 | nA |
| Common-mode input voltage | $V_{ICM}$ | | ±12 | ±14 | | V |
| Common-mode rejection ratio | CMRR | | 70 | 90 | | dB |
| Voltage gain | $VG_O$ | $R_L$ ≧ 2 kΩ, $V_O$ = ±10 V | 96 | 110 | | dB |
| Maximum output voltage | $V_O$ (1) | $R_L$ ≧ 10 kΩ | | ±14 | | V |
| | $V_O$ (2) | $R_L$ ≧ 2 kΩ | | ±13 | | V |
| Slew rate | SR | VG = 0, $R_L$ ≧ 2 kΩ | | 4.0 | | V/μs |
| Equivalent input noise voltage | $V_{NI}$ (1) | Rg = 2.2 kΩ, RIAA, DIN audio weight | | 0.70 | | μV |
| | $V_{NI}$ (2) | Rg = 300 Ω, IHF-A weight | | 0.50 | | μV |
| Current drain | $I_{CC}$ | | | 6.0 | | mA |
| Power dissipation | Pd | | | 180 | | mW |
| Gain-bandwidth product | $f_T$ | | | 6 | | MHz |

## Test Circuits

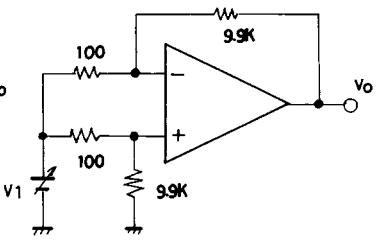
(1) $V_{IO}$, SVRR




(2) $V_O$




(3) CMRR, $V_{ICM}$




· $V_{IO}$: $V_{CC}$ / $V_{EE}$ = ±15V

· SVRR: $V_{CC}$ = 15V, 5V; $V_{EE}$ = −5V, −15V

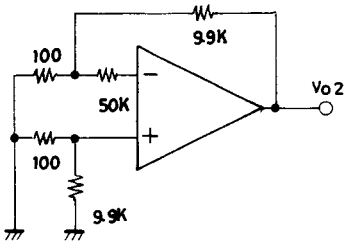
· $V_{IO} = V_O1 / 100$

$$SVR(+) \\ SVR(-) \Big\} = \left| \frac{\Delta V_O1}{100 \times 10V} \right|$$

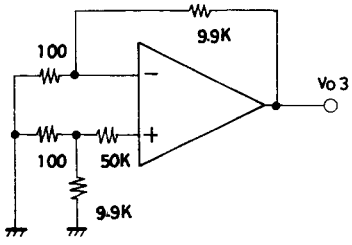
· CMRR V1 = ±7.5V

$$CMR = 20\log \frac{15 \times 100}{|\Delta V_O'|}$$

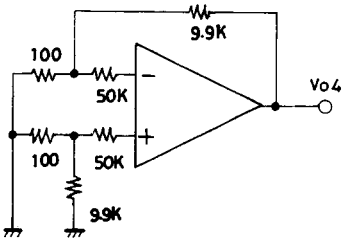
(4) $I_B$ (+)




(5) $I_B$ (−)




(6) $I_{IO}$

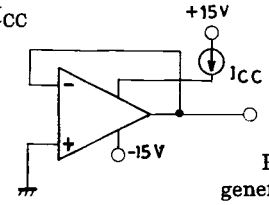



· $I_B(+) = \dfrac{|V_O2 - V_O1|}{50k\Omega \times 100}$

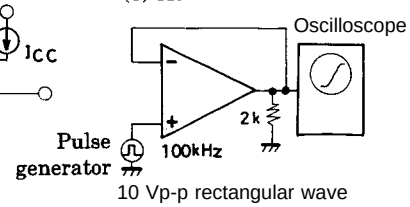
· $I_B(-) = \dfrac{|V_O3 - V_O1|}{50k\Omega \times 100}$

· $I_{IO} = \dfrac{|V_O4 - V_O1|}{50k\Omega \times 100}$

(7) $I_{CC}$

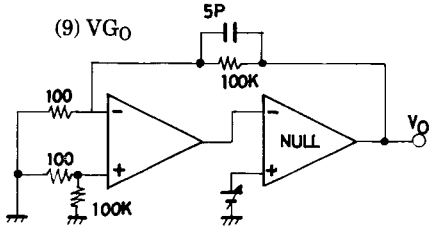



(8) SR



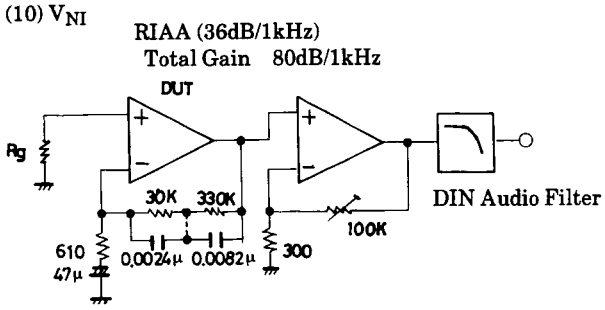

10 Vp-p rectangular wave

(9) $VG_O$




· $VG_O = 20\log \dfrac{1000 \times 20}{\Delta V_O}$

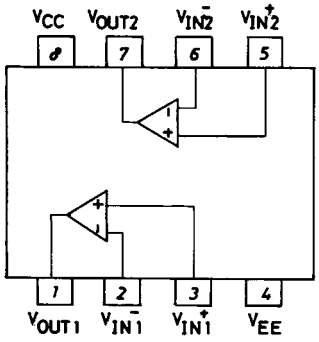
(10) $V_{NI}$




Unit (resistance: Ω, capacitance: F)

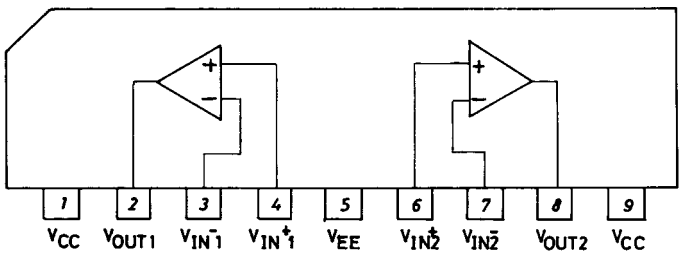
## Pin Assignments

[LA6462M]



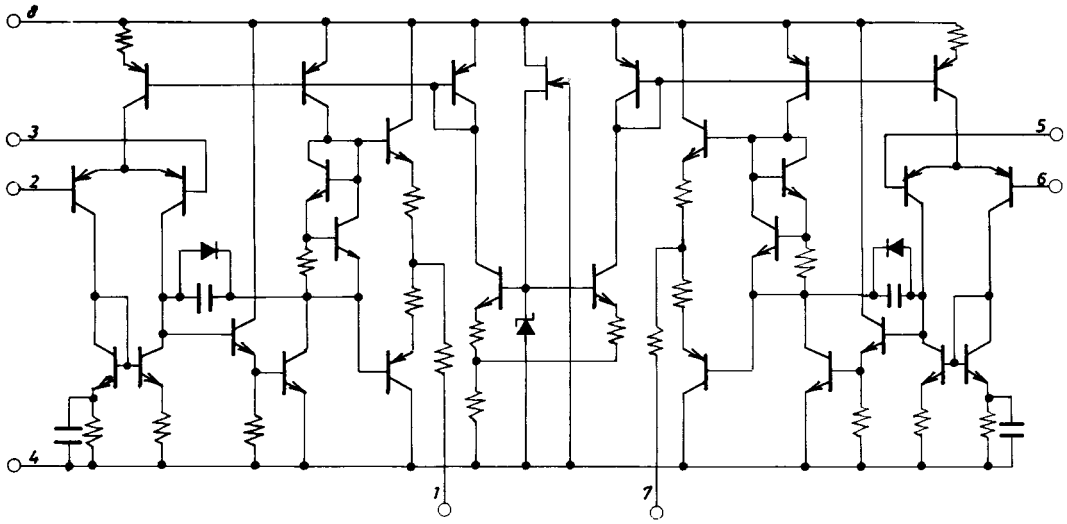

Top view

[LA6462S]

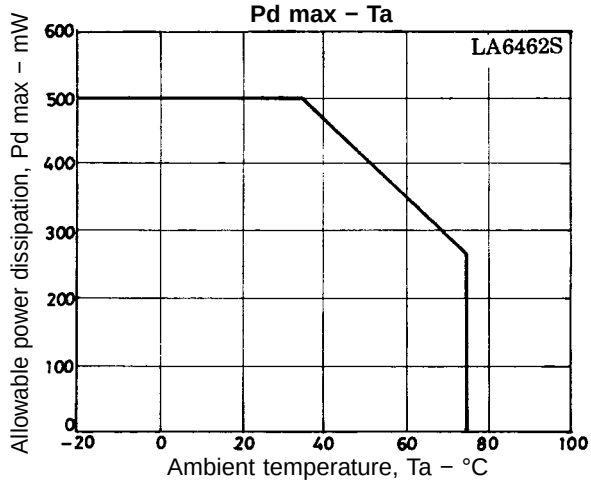



Top view

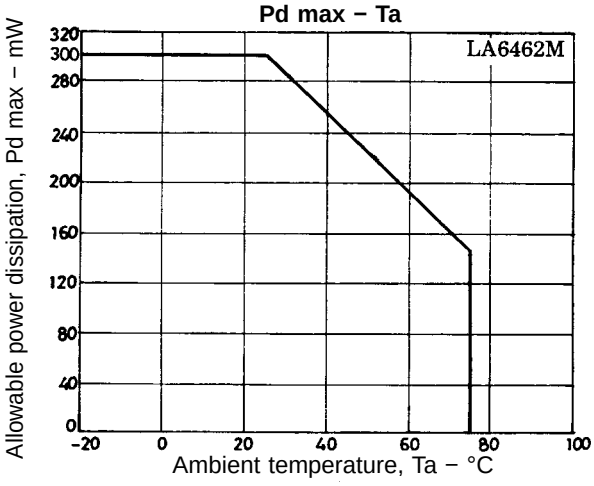
## Equivalent Circuit



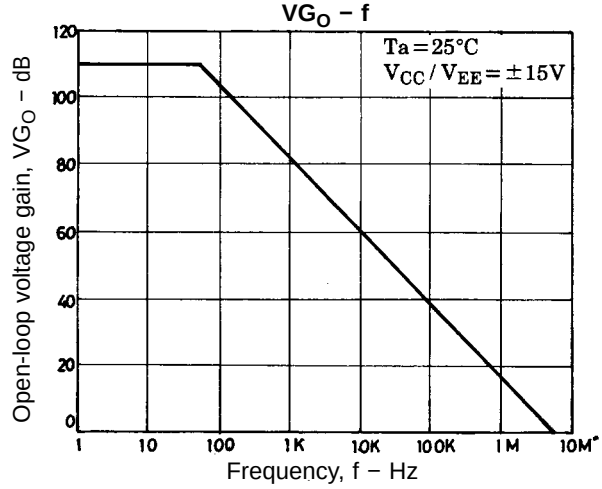
**Pd max – Ta**



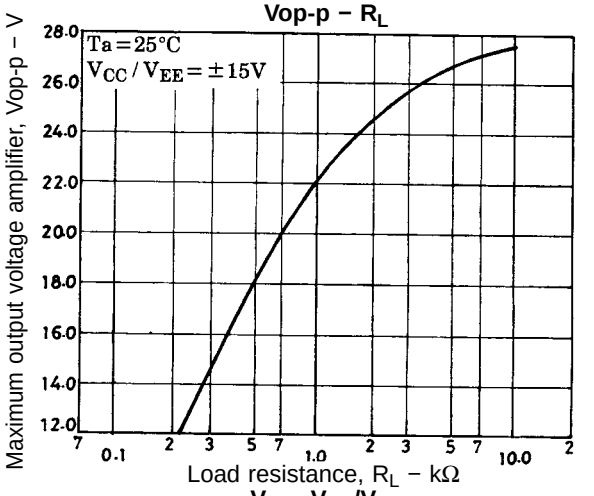

**Pd max – Ta**



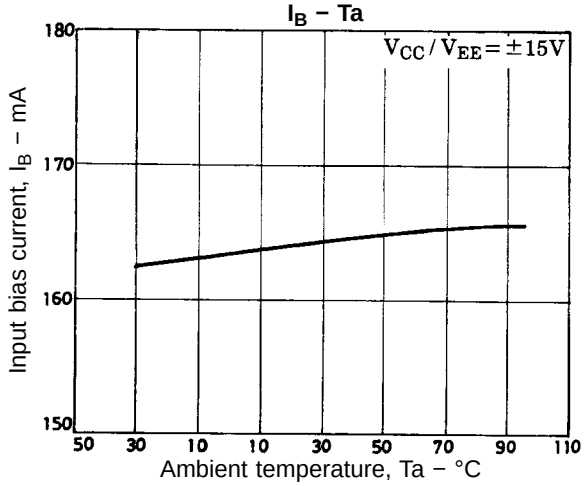

**$VG_O$ – f**



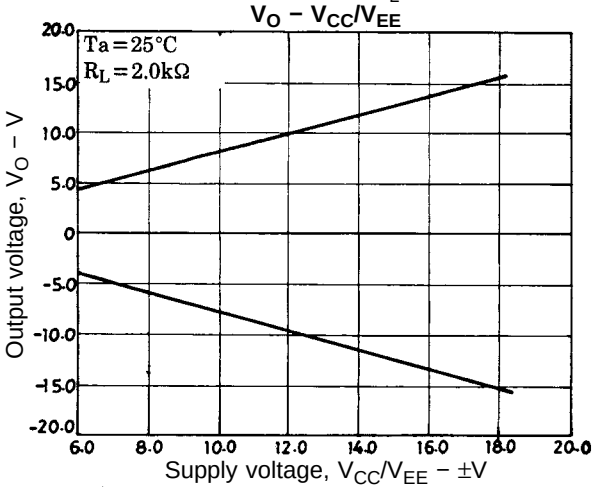

**Vop-p – $R_L$**



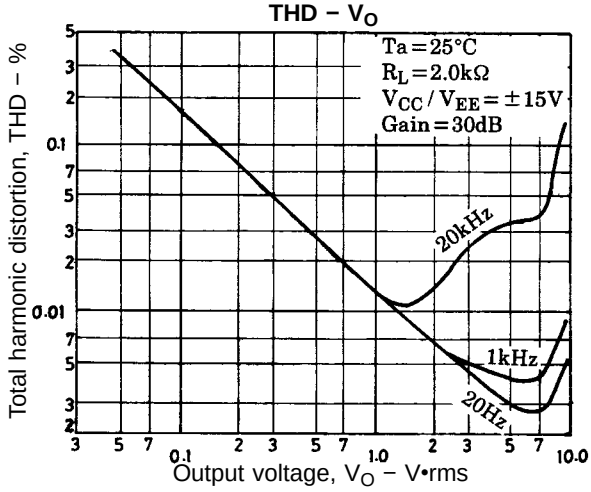

**$I_B$ – Ta**




**$V_O$ – $V_{CC}$/$V_{EE}$**




**THD – $V_O$**




**$V_{NI}$ – Rg**