



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 ($R_g = 2.2 \text{ k}\Omega$ RIAA, DIN Audio).
0.50 μV typ ($R_g = 300 \Omega$, IHF-A)
- High speed: Slew rate 4.0 V/ μs typ.
- Wide band: Gain-bandwidth product 6 MHz typ.

Specifications

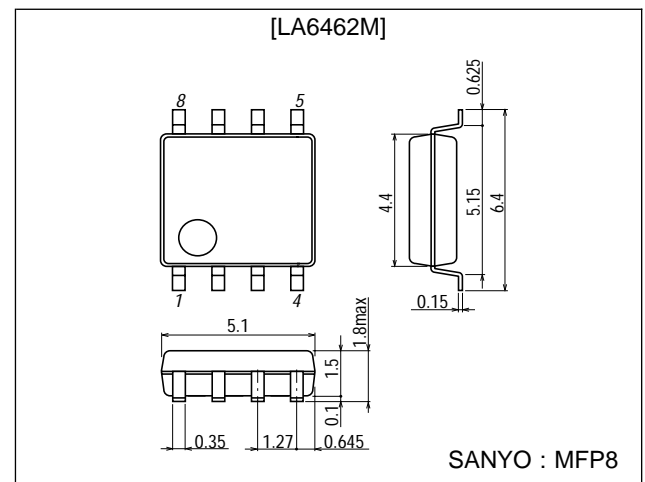
Maximum Ratings at $T_a = 25^\circ\text{C}$

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	$^\circ\text{C}$
Storage temperature	Tstg		-40 to +125	$^\circ\text{C}$

Package Dimensions

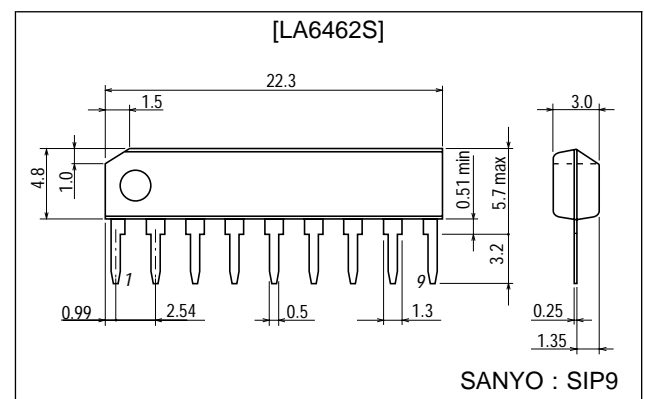
unit : mm

3032B-MFP8



unit : mm

3017C-SIP9



■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO 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 SANYO products described or contained herein.

SANYO Electric Co., Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

53096HA(II)/4050YT/8077KI/3277KI, TS No. 2064-1/5

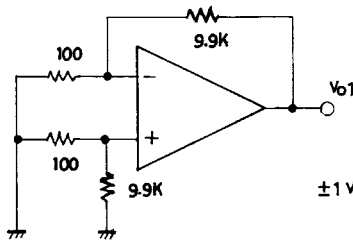
LA6462M, 6462S

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 15\text{ V}$, $V_{EE} = -15\text{ V}$

Parameter	Symbol	Conditions	min	typ	max	Unit
Input offset voltage	V_{IO}	$R_S = 10\text{ k}\Omega$		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	V_{G_O}	$R_L \geq 2\text{ k}\Omega$, $V_O = \pm 10\text{ V}$	96	110		dB
Maximum output voltage	$V_O(1)$	$R_L \geq 10\text{ k}\Omega$		± 14		V
	$V_O(2)$	$R_L \geq 2\text{ k}\Omega$		± 13		V
Slew rate	SR	$V_G = 0$, $R_L \geq 2\text{ k}\Omega$		4.0		V/ μs
Equivalent input noise voltage	$V_{NI}(1)$	$R_g = 2.2\text{ k}\Omega$, RIAA, DIN audio weight		0.70		μV
	$V_{NI}(2)$	$R_g = 300\ \Omega$, IHF-A weight		0.50		μV
Current drain	I_{CC}			6.0		mA
Power dissipation	P_d			180		mW
Gain-bandwidth product	f_T			6		MHz

Test Circuits

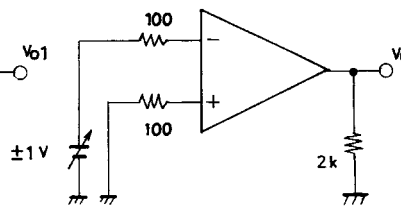
(1) V_{IO} , SVRR



$\cdot V_{IO}: V_{CC} / V_{EE} = \pm 15\text{V}$

$\cdot \text{SVRR}: \begin{cases} V_{CC} = 15\text{V}, 5\text{V} \\ V_{EE} = -5\text{V}, -15\text{V} \end{cases}$

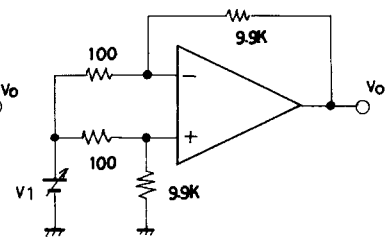
(2) V_O



$\cdot V_{IO} = V_{O1} / 100$

$\left. \begin{matrix} \text{SVR}(+) \\ \text{SVR}(-) \end{matrix} \right\} = \left| \frac{\Delta V_{O1}}{100 \times 10\text{V}} \right|$

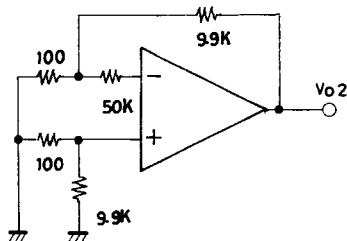
(3) CMRR, V_{ICM}



$\cdot \text{CMRR } V_1 = \pm 7.5\text{V}$

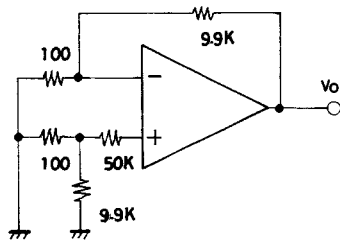
$\text{CMR} = 20 \log \frac{15 \times 100}{|\Delta V_{O'}|}$

(4) $I_B(+)$



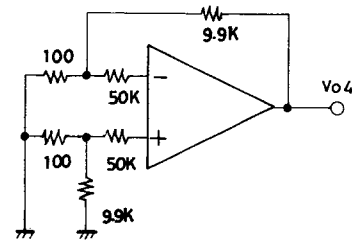
$\cdot I_B(+)= \frac{|V_{O2} - V_{O1}|}{50\text{k}\Omega \times 100}$

(5) $I_B(-)$



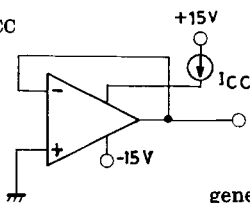
$\cdot I_B(-)= \frac{|V_{O3} - V_{O1}|}{50\text{k}\Omega \times 100}$

(6) I_{IO}

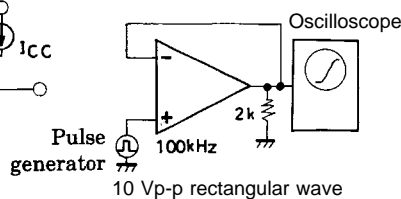


$\cdot I_{IO} = \frac{|V_{O4} - V_{O1}|}{50\text{k}\Omega \times 100}$

(7) I_{CC}

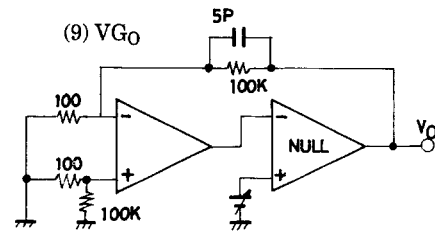


(8) SR



10 Vp-p rectangular wave

(9) V_{G_O}

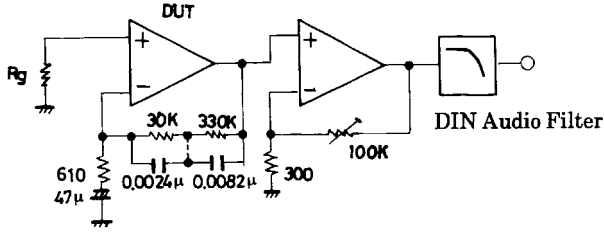


$\cdot V_{G_O} = 20 \log \frac{1000 \times 20}{\Delta V_O}$

LA6462M, 6462S

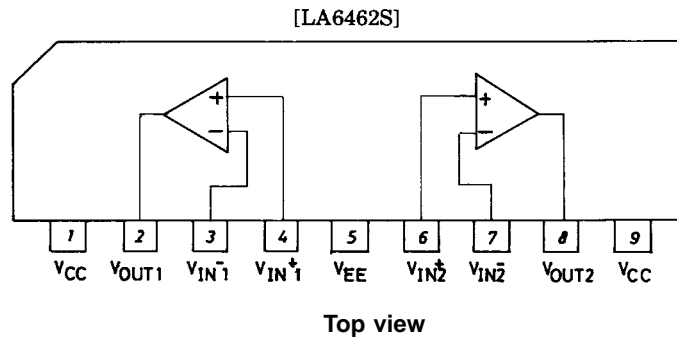
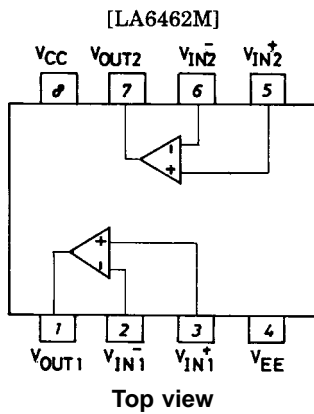
(10) V_{NI}

RIAA (36dB/1kHz)
Total Gain 80dB/1kHz

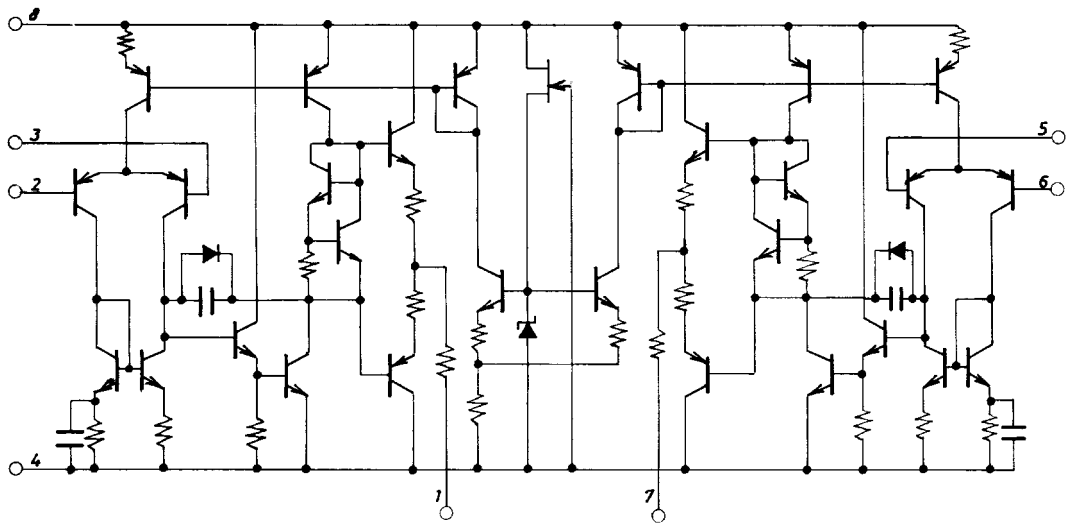


Unit (resistance: Ω , capacitance: F)

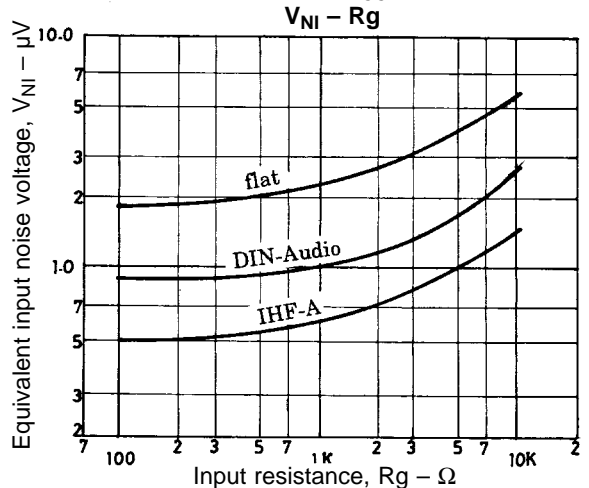
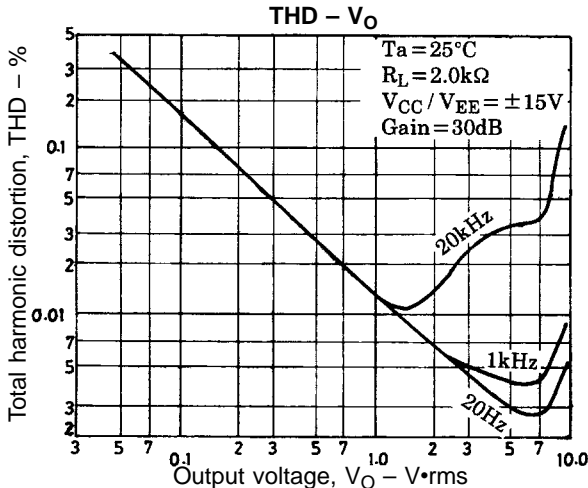
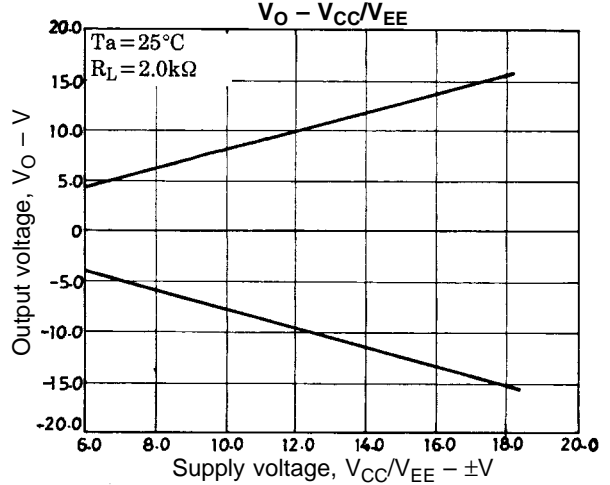
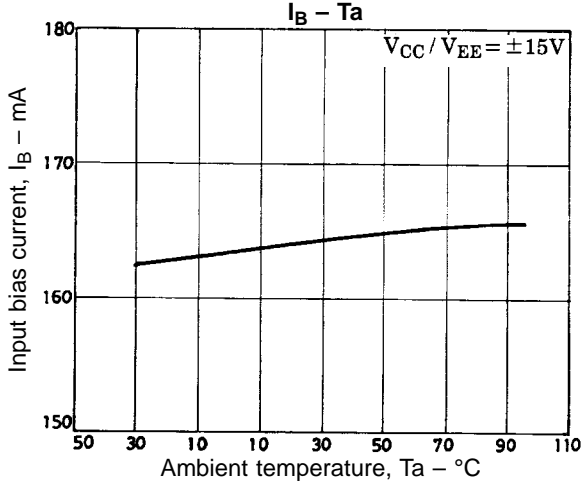
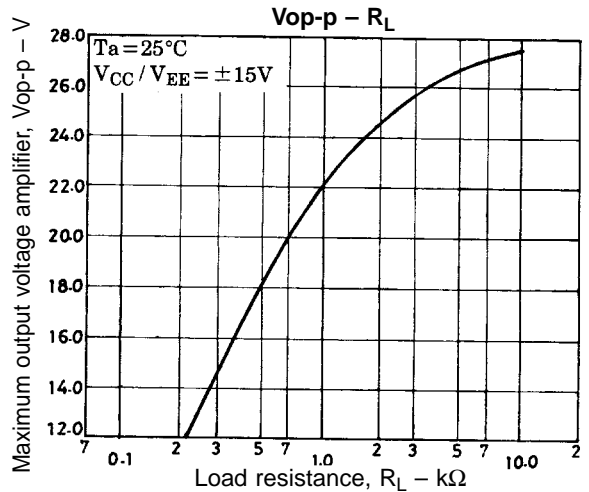
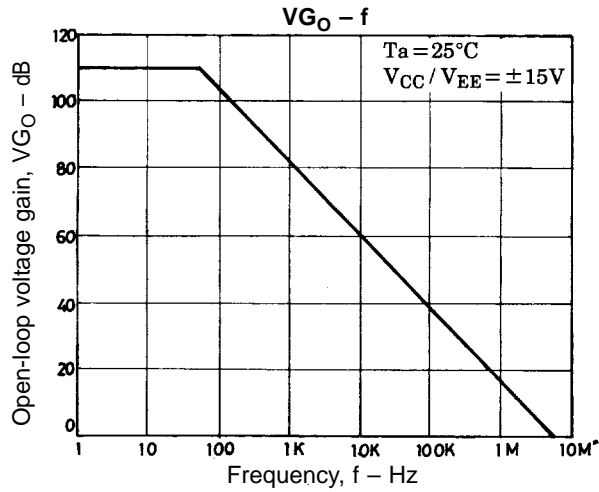
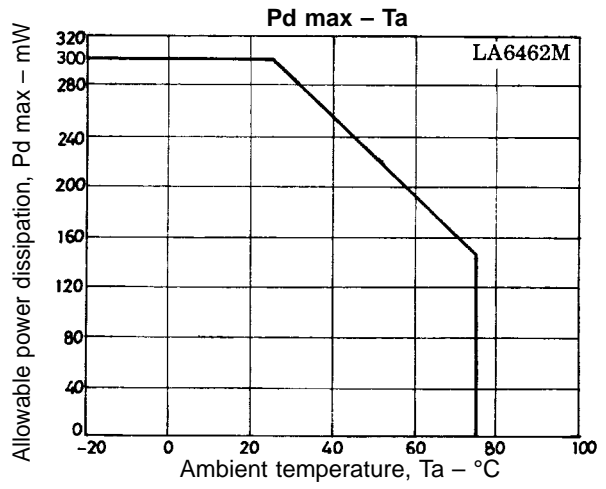
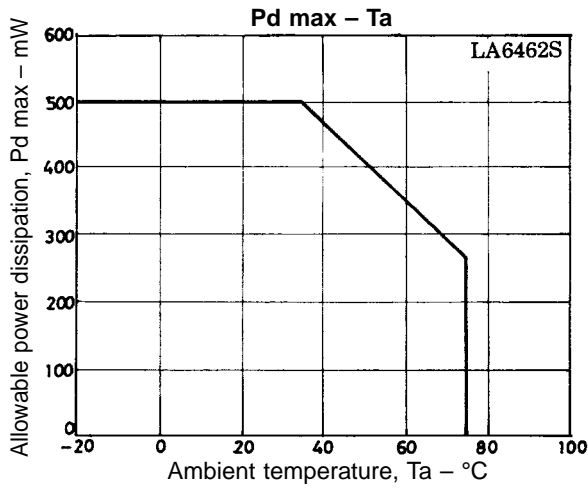
Pin Assignments



Equivalent Circuit



LA6462M, 6462S



- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of May, 1996. Specifications and information herein are subject to change without notice.