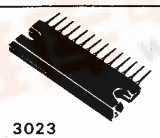
SANYO

No.754A



3023

LA4460,4461

Monolithic Linear Integrated Circuit
12W AF POWER AMPLIFIER
FOR CAR RADIO OR CAR STEREO

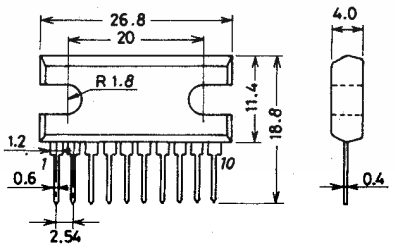
Features

- High gain of 51dB typ. and high power output of 12W typ.
- Possible to delete output and bootstrap capacitors, this encourages cost and space reductions due to external parts reduction.
- Reduced external components (8 pieces recommended, 6 pieces minimum).
- Almost no shock noises heard during power on or off operation.
- Soft tonal quality in saturated power output.
- Low distortion over low to high ranges of the audio frequencies.
- Low residual noises (R_g=0).
- Good operation conditions because of SEP (single ended pins) package having been employed to LA4460.
- All pin terminal layouts of the LA4461 are reversed for easy stereo PC board pattern arrangement.
- Two ground terminals for pre-amplifier and power amplifier are provided for easy PC board pattern arrangement and for stabilizing distortion characteristics depending on signal source impedance.
- Voltage gain is fixed at 51dB, however, lowering the gain is possible by adding a resistor.
- IC is not damaged, if it is connected reversely.
- Audio muting functions (AC mute & DC mute) are equipped.
- Several protection circuits are installed, including.
  a. Thermal runaway protection circuit.
  b. Over voltage & surge voltage protection circuit.
  c. Load short-circuit current limiting protection circuit.
  d. Output pins DC short-circuit protection circuit.
  (grounding protection between OUT & GND, and speaker protection provided.)

Maximum Ratings at T_a=25°C

				unit
Maximum Supply Voltage	V_{CC}max 1	quiescent(30sec)	25	V
	V_{CC}max 2	with signal	18	V
Supply Current	I_{10peak}	Instantaneous value duty≦5%,pulse width≦1ms flow-in only	4.5	A
Output Current	I_{7},I_{9peak}	Instantaneous value duty≦5%,pulse width≦1ms	4.5	A
Surge Supply Voltage	V_{surge}	t≦0.2sec	50	V
Allowable Power Dissipation	$P_d$max	T_C=75°C,See $P_d$max.-T_a graph.	25	W
Package Thermal Resistance	θ_{j-c}		3	°C/W

Case Outline 3024
(unit:mm)



These specifications are subject to change without notice.

Operating Temperature	T_{opg}	-20 to +75	°C
Storage Temperature	T_{stg}	-40 to +150	°C

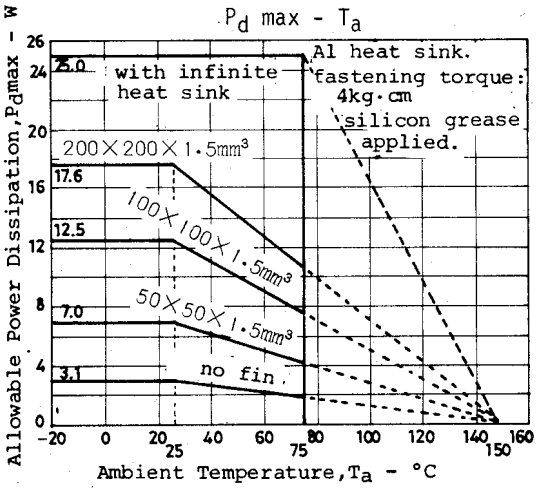
Recommended Operation Condition at T_a=25°C

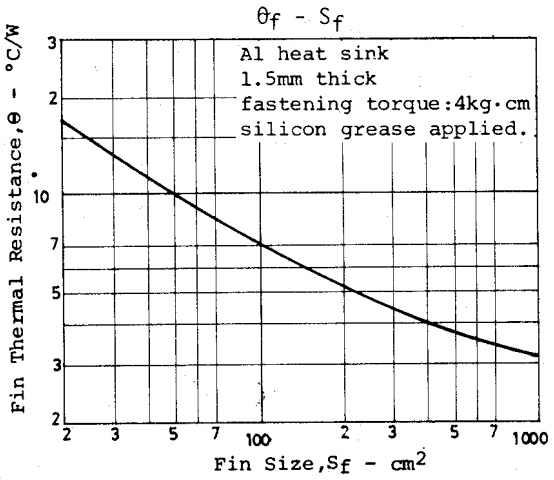
Recommended Supply Voltage	V_{CC}	13.2	V
Load Resistance	R_L	4 to 8	ohm

Operation Characteristics at T_a=25°C, V_{CC}=13.2V, R_L=4ohm, f=1kHz, Rg=600ohm, with 100 x100x1.5mm^3 Al heat sink at specified test circuit.

			min	typ	max	unit
Quiescent Current	I_{CCO}			65	120	mA
Voltage Gain	VG	closed loop, at specified recommended circuit.	49	51	53	dB
Output Power	P_O	THD=10%	10	12		W
Total Hormonic Distortion	THD	P_O=1W		0.1	1.0	%
Input Resistance	r_i		21	30		kohm
Output Noise Voltage	V_{NO} 1	R_g=0, f=20Hz to 20kHz Band Pass Filter		0.4	1.0	mV
	V_{NO} 2	R_g=10kohm, f=20Hz to 20kHz, Band Pass Filter		0.6	2.0	mV
Output Offset Voltage	V_{off}		-300		+300	mV
Muting Suppression (AC)	A_{TT}	v_o=0dBm, V_M=9V		38		dB

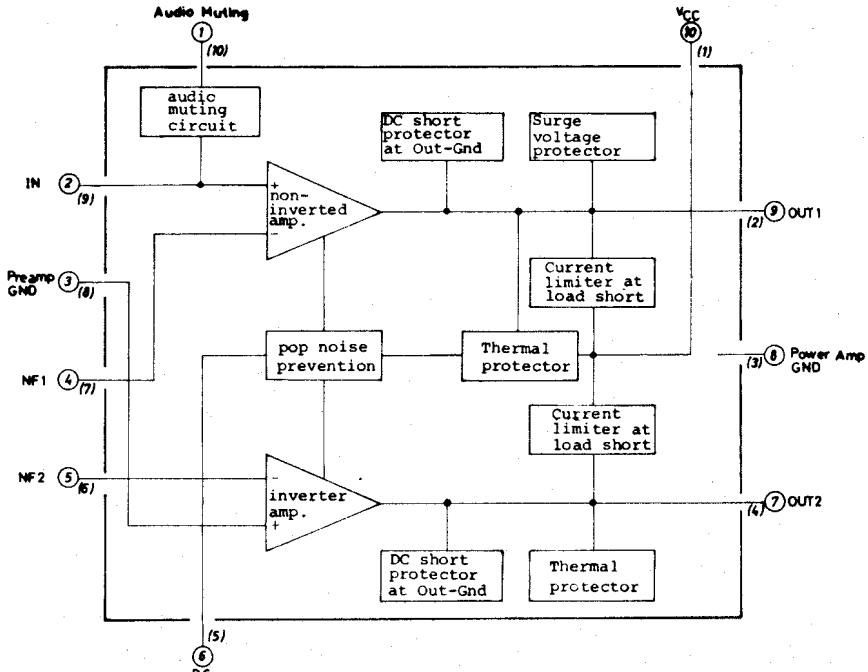
(Note) : For DC muting, A_{TT}=∞



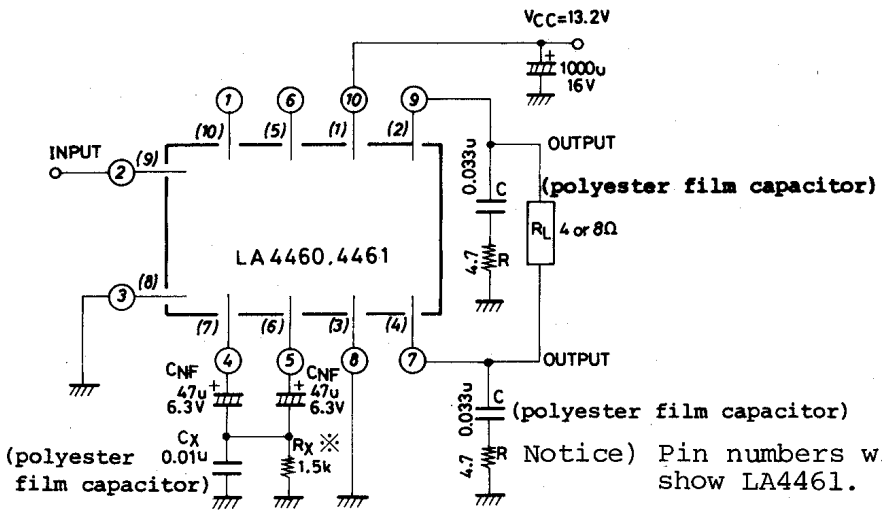


Equivalent Circuit and Block Diagram

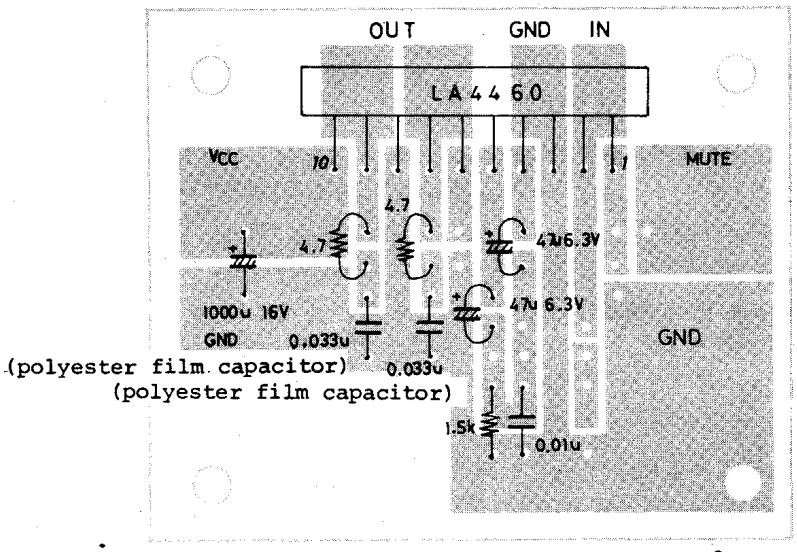
Pin numbers with ( ) show LA4461.



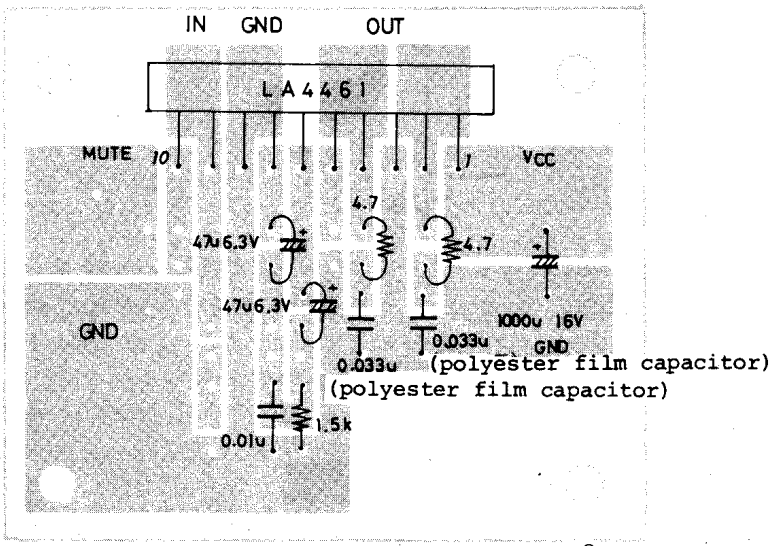
Application 1 : Recommended Circuit



R_X ※ is for starting time adjustment.



LA4460 An Example of Printed Pattern, (40x50mm^2,bottom view)



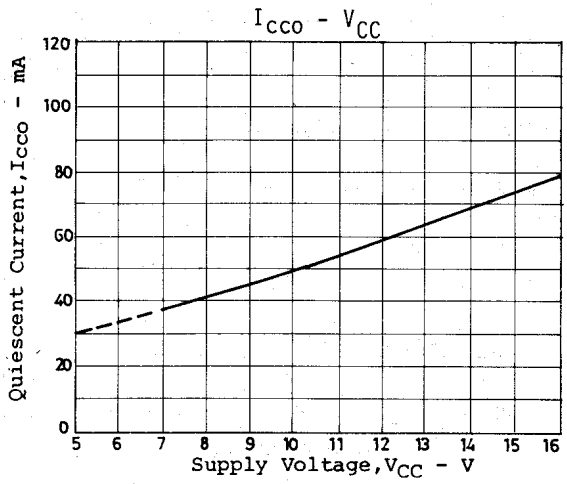
LA4461 An Example of Printed Pattern, (40x50mm^2,bottom view)

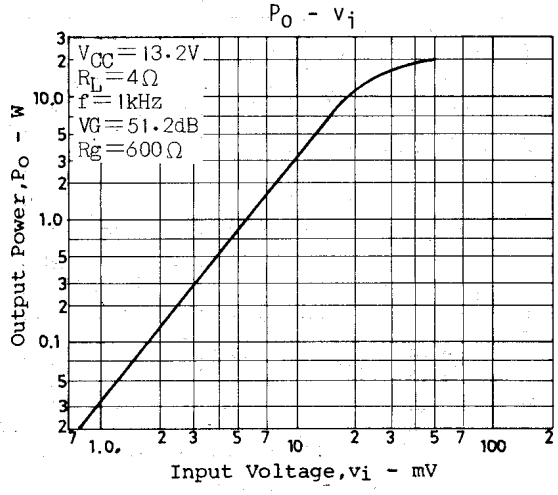
3. Pin Voltage (unit:V)

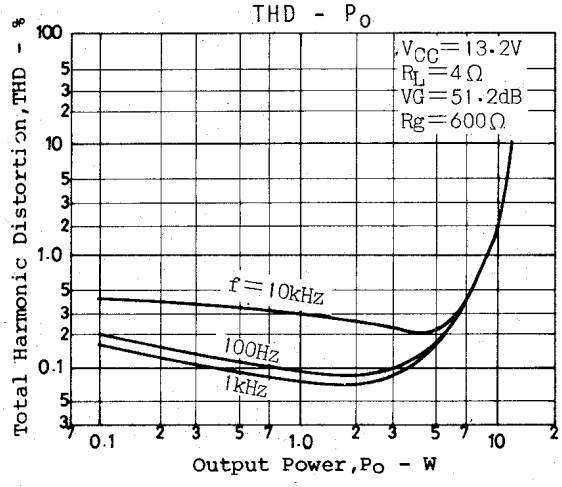
LA4460	1	2	3	4	5	6	7	8	9	10
LA4461	10	9	8	7	6	5	4	3	2	1
Function	AC Audio Muting	IN PUT	Pre GND	NON INV NF	INV NF	DC Audio Muting	INV OUT	Power GND	NON INV OUT	V_{CC}
Quiescent Pin Voltage	0	0.06	0	2.8	2.8	5.6	6.6	0	6.6	13.2

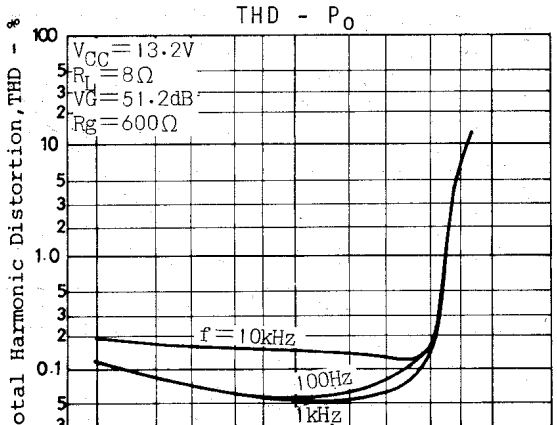
Much data on general characteristics are given for the application example #1, but these data can be applied to the application example #2 because of no characteristic changed. However, the data on "Shock noises at power turned on", "Starting time t_s" and "DC muting" are shown for only the application example #1. For the same characteristics to be applied to the application example #2, refer to 1-C on page 4.

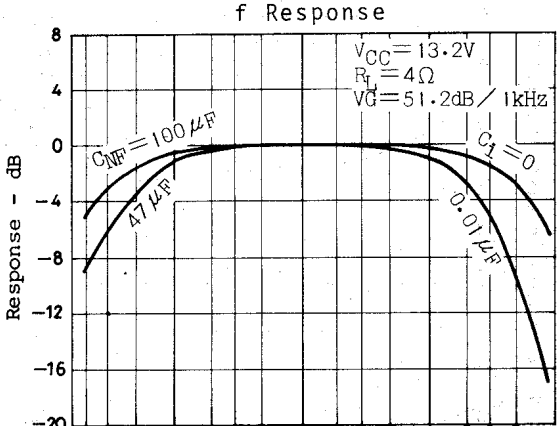
1-C on page 4.



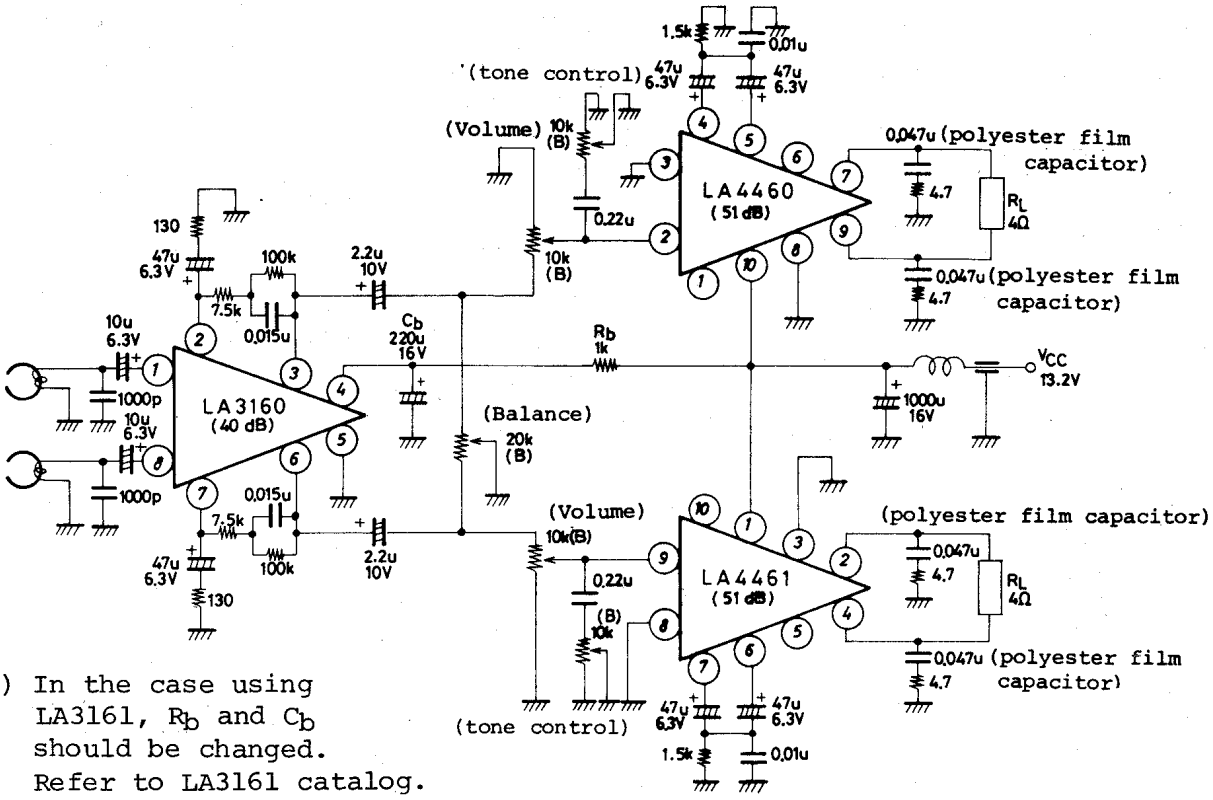




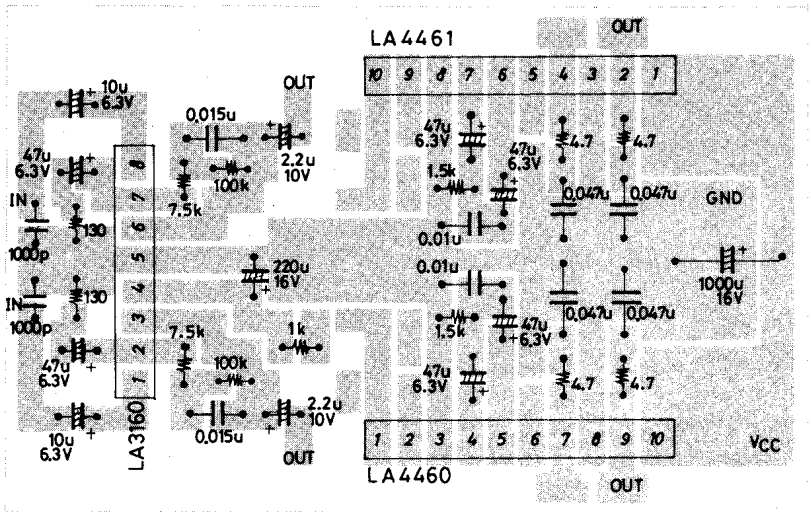




Application 3



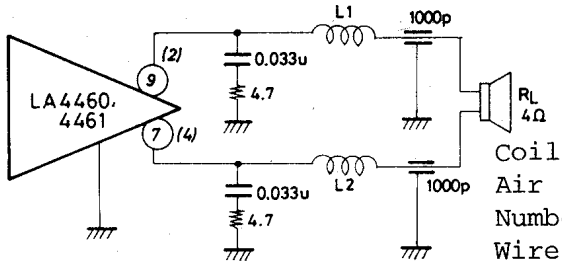
Notice) In the case using LA3161, R_b and C_b should be changed. Refer to LA3161 catalog.



An Example of Printed Pattern, (42x65mm^2, bottom view)

Example of oscillaiton compensation where through line capacitors are used at the output terminals.

1)



Coil Used :
Air core Inner diameter : 8 ø
Number of turns : 6 turns
Wire size : UEW 1.5 Winding method : solenoid (0.3uH)