

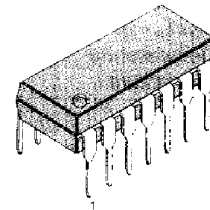
TV SOUND IF AMPLIFIER

The KA2101 is a monolithic integrated circuit for TV sound IF amplifiers. It contains an IF amplifier, IF limiting, detection, electronic attenuation, audio amplifier and audio driver capabilities.

FEATURES

- Electronic attenuator replaces conventional DC volume.
- Differential peak detector requires one single tuned coil.
- Internal zener diode regulated supply.
- High stability.
- Excellent AM rejection at 4.5 MHz, 5.5 MHz, 6.0 MHz, 6.5 MHz.
- Low harmonic distortion.
- High sensitivity 200 $\mu$ V limiting at 4.5 MHz.
- Audio driver capability 6.0 mA<sub>r.p.</sub>
- Undistorted audio output voltage 7 V<sub>r.p.</sub>
- Minimum undesirable output signal at maximum attenuation.

14 DIP

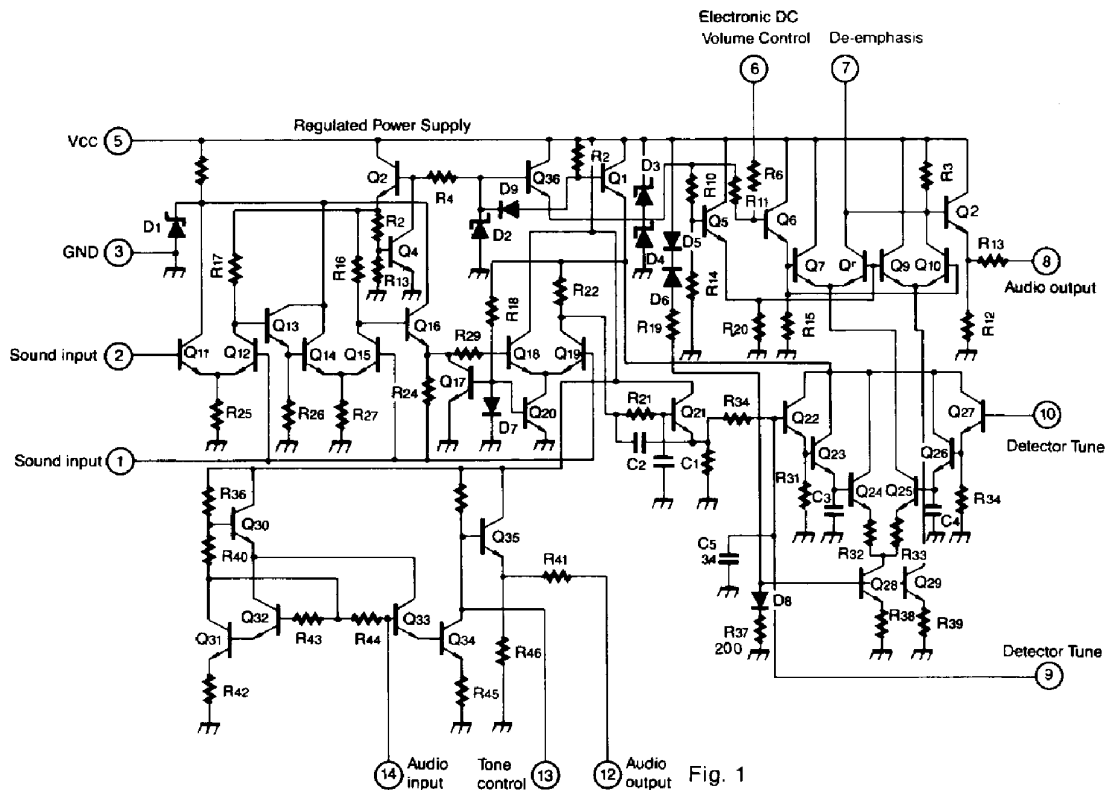


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ORDERING INFORMATION

Device	Package	Operating Temperature
KA2101	14 DIP	-20 ~ +75°C

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Value	Unit
Input Signal Voltage (Pin 1, Pin 2)	$V_{in}$	$\pm 3$	V
Power Supply Current (Pin 5)	$I_5$ (max)	50	mA
Total Power Dissipation	$P_o$	625	mW
Derate Above $T_a = 25^\circ\text{C}$		5.0	mW/ $^\circ\text{C}$
Operating Temperature	$T_{opr}$	$-20 \sim +75$	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-65 \sim +150$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 24\text{V}$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	Test Fig
Regulated Voltage (Pin 5)	$V_5$		10.3	11.5	12.2	V	
DC Supply Current (Pin 5)	$I_5$	$V_{CC} = 9\text{V}$ , $R_S = 0$	10	13	24	mA	
Quiescent Output Vtg (Pin 12)	$V_{12}$		4.5	5.1	5.8	V	—
AM Rejection*	AMR	$V_{in} = 2, 10, 100\text{mV}$ $f_o = 4.5\text{MHz}$ , $\Delta f = \pm 25\text{KHz}$	40	55	—	dB	4
Input Limiting Threshold Voltage	$V_i$ (lim)	$f_o = 4.5\text{MHz}$ , $\Delta f = \pm 25\text{KHz}$	—	200	400	$\mu\text{Vrms}$	4
Recovered Audio Output Voltage	$V_o$ (AF)	$V_{in} = 10\text{mV}$ , $f_o = 4.5\text{MHz}$ , $\Delta f = \pm 25\text{KHz}$	0.5	0.90	—	Vrms	4
Output Distortion	THD	$V_{in} = 10\text{mVrms}$	—	0.9	2	%	4
Input Resistance (Pins 1 & 2)	$R_i$ (IF)	$f = 4.5\text{MHz}$	—	17	—	K $\Omega$	
Input Capacitance (Pins 1 & 2)	$C_i$ (IF)	$f = 4.5\text{MHz}$	—	4	—	pF	
Output Resistance (Pin 9 & GND)	$R_o$ (IF)	$f = 4.5\text{MHz}$	—	3.25	—	K $\Omega$	
Output Capacitance (Pin 9 & GND)	$C_o$ (IF)	$f = 4.5\text{MHz}$	—	7.5	—	pF	
Output Resistance,	Pin 7	$R_o$	—	7.5	—	K $\Omega$	
	Pin 8		—	250	—	$\Omega$	
Volume Reduction Range		DC Volume Control = $\infty$	60	—	—	dB	4
Maximum Undesirable Signal (Note 1)			—	0.02	1	mVrms	4
Audio Amplifier Voltage Gain	A (AF)	$V_{in} = 0.2\text{Vrms}$ , $f = 400\text{Hz}$	17.5	20.5	—	dB	5
Total Harmonic Distortion (Pin 12)	THD	$V_o = 2\text{Vrms}$ , $f = 400\text{Hz}$	—	1.5	—	%	5
Output Voltage (Pin 12)		THD = 5%, $f = 400\text{Hz}$	2	3.4	—	Vrms	5
Input Resistance (Pin 14 & GND)	$R_i$ (AF)	$f = 400\text{Hz}$	—	70	—	K $\Omega$	
Output Resistance (Pin 12 & GND)	$R_o$ (AF)	$f = 400\text{Hz}$	—	270	—	$\Omega$	

\* 100% FM, 30% AM

Note 1. Undesirable signal is measured at Pin 8 when the volume control is set for minimum output.

TYPICAL APPLICATION CIRCUIT

A. 1.5 Watts Output

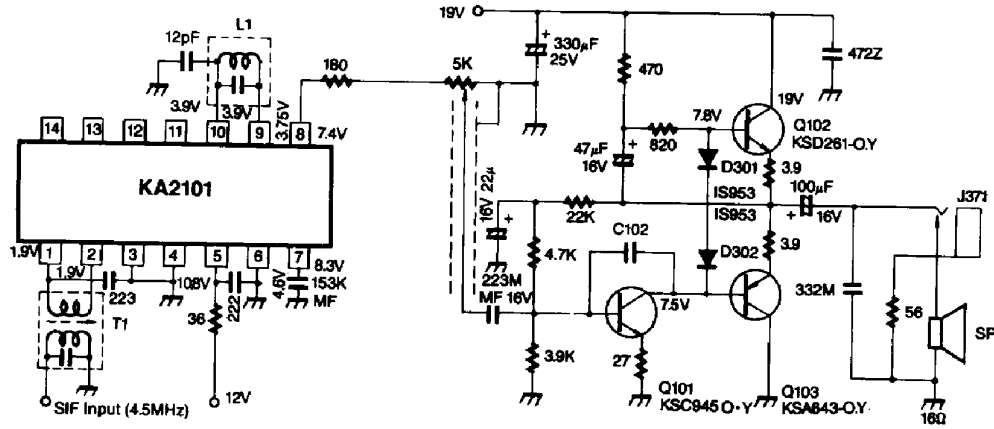


Fig. 2

B. 0.8 Watts Output

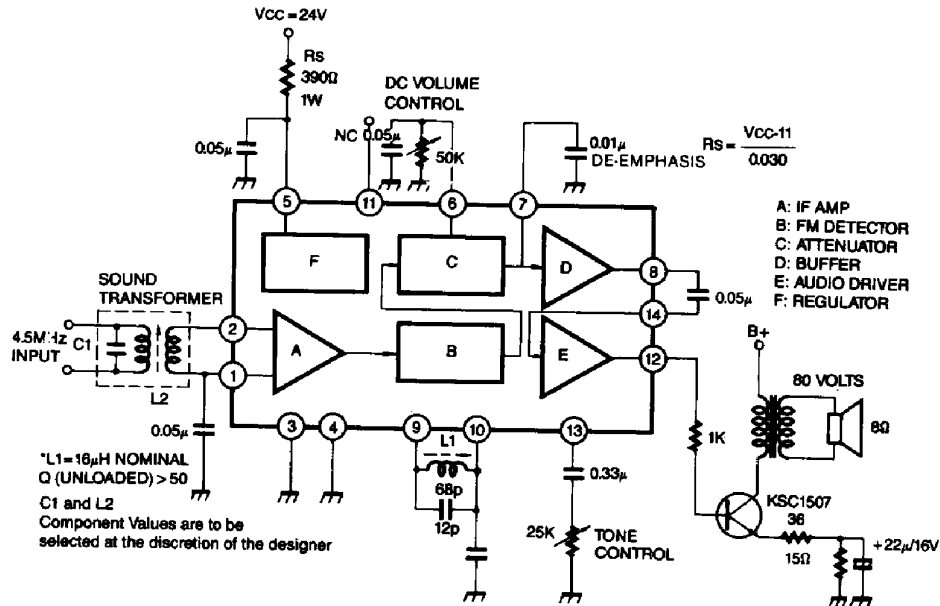


Fig. 3

TEST CIRCUIT 1

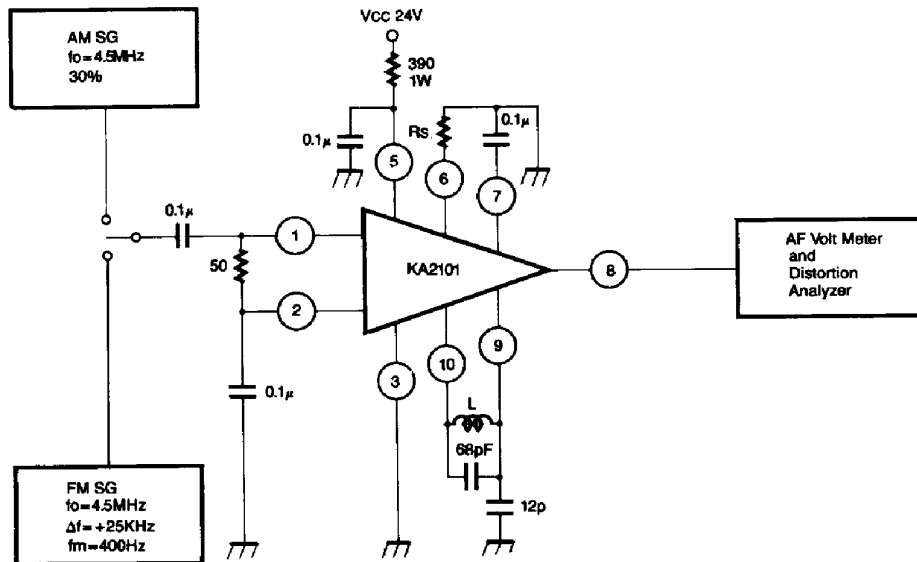


Fig. 4

TEST CIRCUIT 2

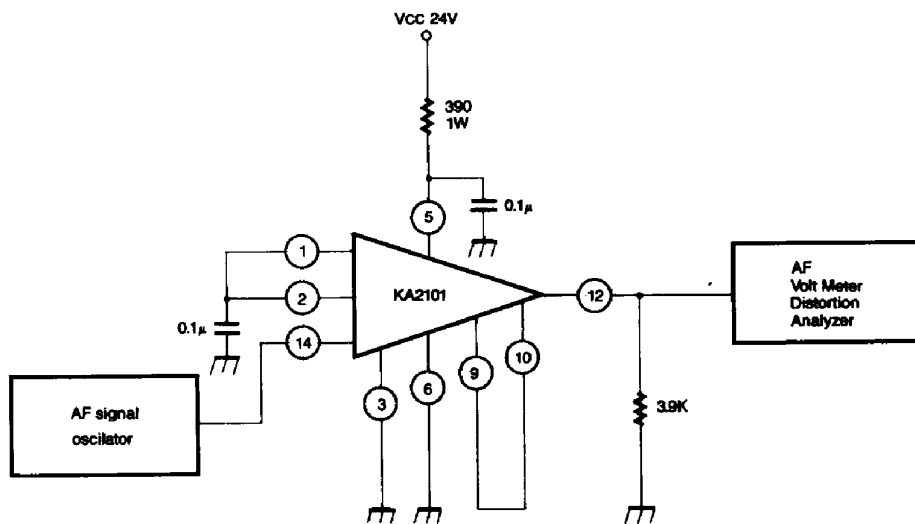


Fig. 5

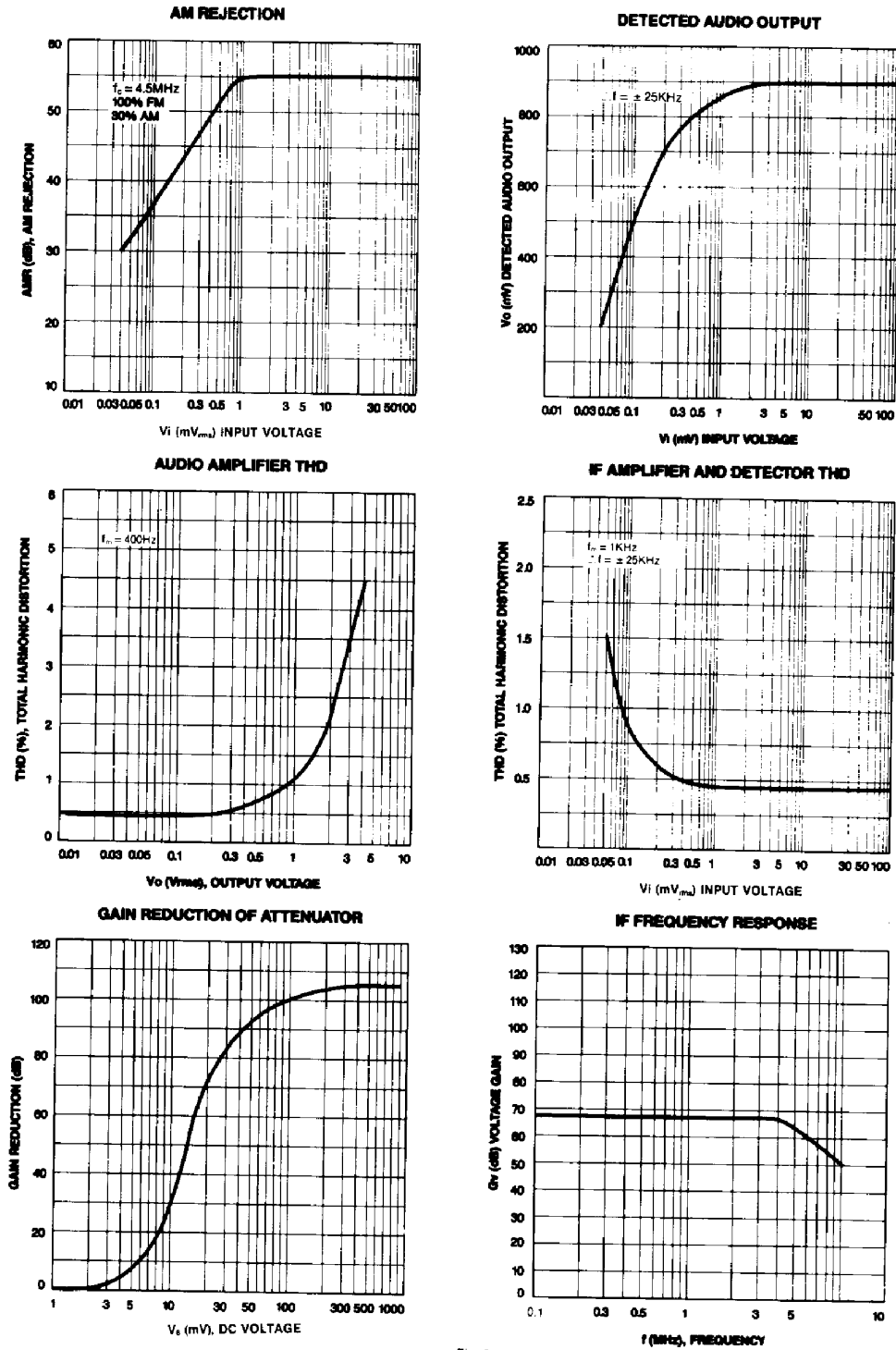


Fig. 6