

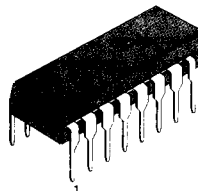
5-BAND GRAPHIC EQUALIZER AMPLIFIER

The KA2223 is a monolithic integrated circuit consisting of an operational amplifier with five resonant circuits and a active filter, and it is suitable for radio-cassette tape recorders, car stereos or music center audio systems.

FEATURES

- Tone control with independent adjustment of each band through an external capacitor.
- Gain control through an external variable resistor.
- Increasing the bands by adding resonant circuit or using two KA2223 in series.
- Low noise ($V_{NO} = 7\mu V$: Typ. Flat).
- Low distortion (THD=0.02% Typ. $f=1\text{KHz}$ Flat).
- Large allowable input ($V_I = 2.3V$: Typ, $V_{CC} = 9V$, $f=1\text{KHz}$ Flat).
- Operating supply voltage range: $V_{CC} = 5V \sim 13V$

16 DIP



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2223	16 DIP	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

BLOCK DIAGRAM

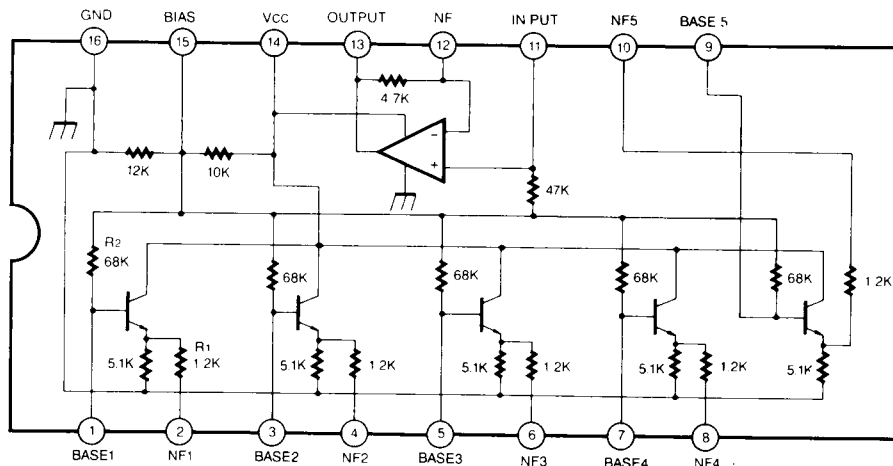


Fig. 1

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

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	20	V
Power Dissipation	P_D	700	mW
Operating Temperature	T_{OPR}	$-20 \sim +70$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +125$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS

($T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{V}$ unless otherwise specified)

Characteristic		Symbol	Test		Min	Typ	Max	Unit
			f(Hz)	Conditions				
Quiescent Circuit Current		I _{CCQ}		V _I = 0	3.0	5.2	8.0	mA
Voltage Gain	Flat	G _V (Flat)	1K	V _I = - 10dBm	- 3.8	- 0.8	2.2	dB
	Boost	G _V (Boost)	108	V _I = - 10dBm	8	10.5	12	dB
			343					dB
			1.08K					dB
			3.43K					dB
			10.8K					dB
	Cut	G _V (Cut)	108	V _I = - 10dBm	- 12	- 10.5	- 8	dB
			343					dB
			1.08K					dB
			3.43K					dB
			10.8K					dB
Total Harmonic Distortion		THD	1K	V _I = 1V		0.02	0.1	%
Output Noise Voltage		V _{NO}	Flat, Input Short BW(- 3dB) = 10Hz ~ 30KHz			7.0	30	μV

TEST CIRCUIT

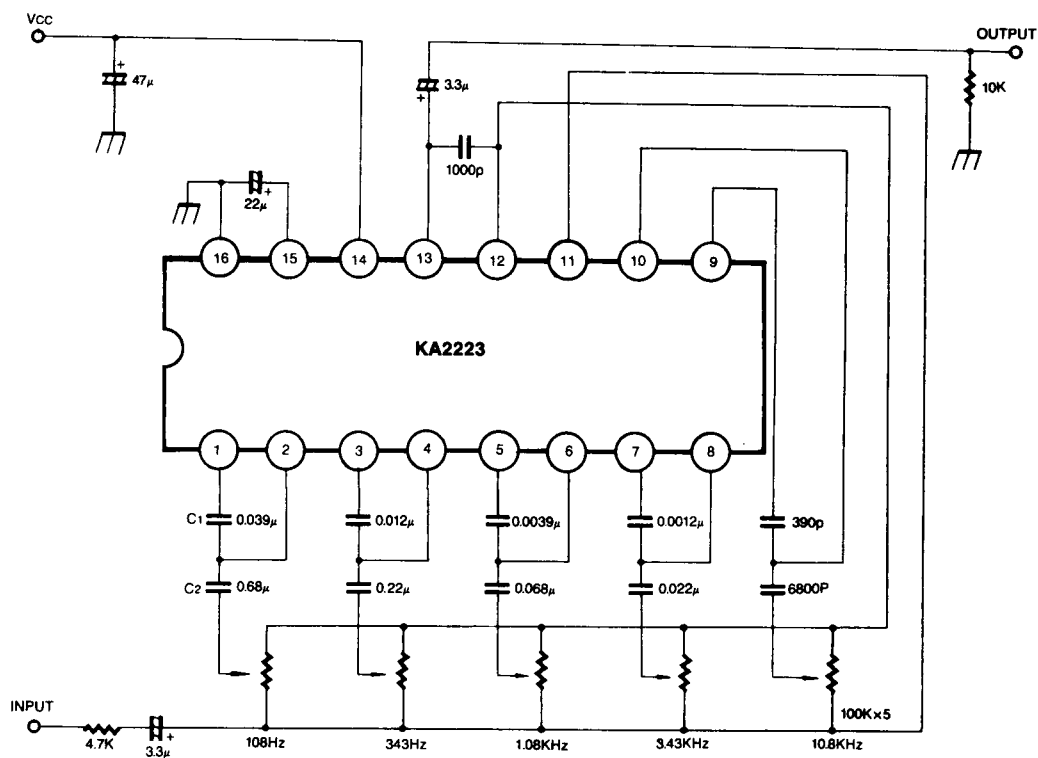


Fig. 2

$$\text{Resonant frequency } f_0 = \frac{1}{2\pi\sqrt{R_1 R_2 C_1 C_2}}$$

($R_1 = 1.2K$, $R_2 = 68K$ on-chip resistor)

APPLICATION CIRCUIT

1. 7 BAND

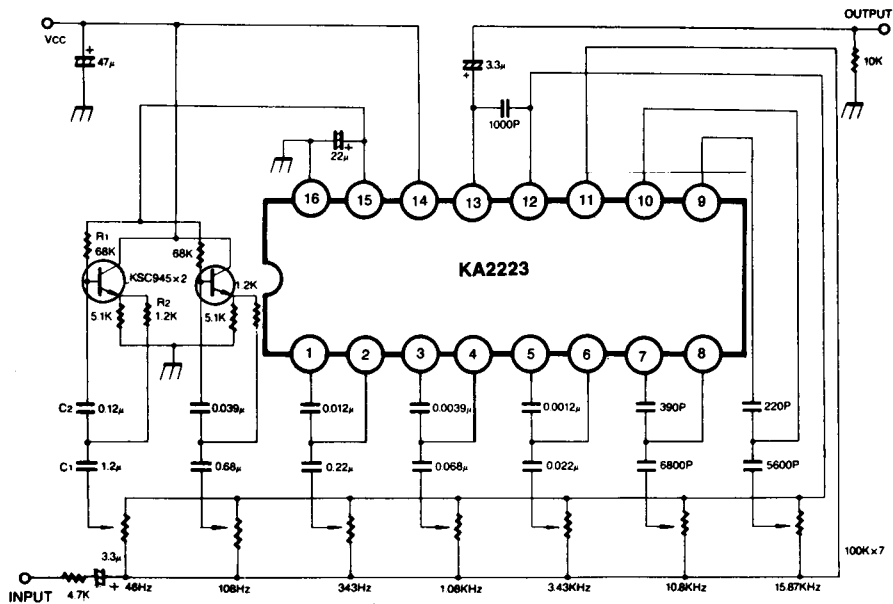


Fig. 3

2. 10 BAND

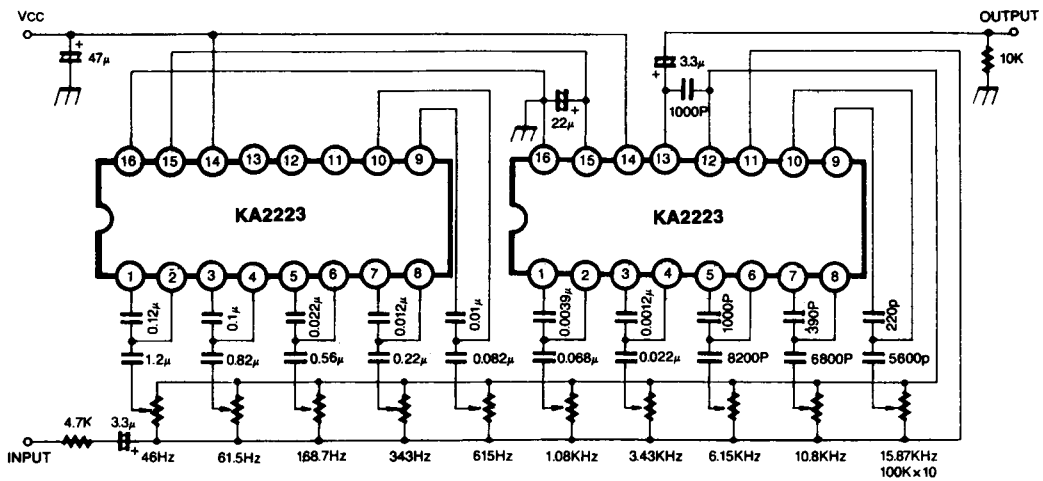


Fig. 4