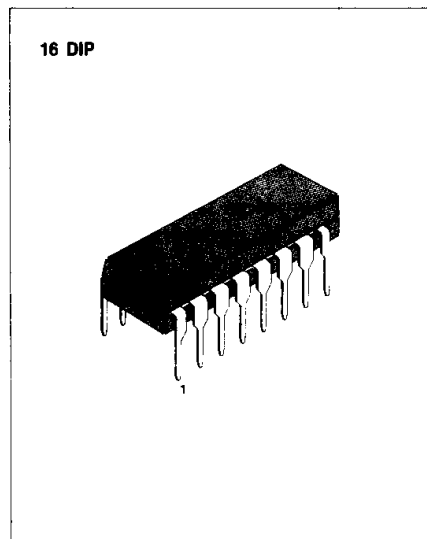


5-BAND GRAPHIC EQUALIZER AMPLIFIER

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=1KHz Flat).
- Large allowable input ($V_i = 2.3V$: Typ, $V_{CC} = 9V$, f = 1KHz Flat).
- Operating supply voltage range: $V_{CC} = 5V \sim 13V$



ORDERING INFORMATION

| Device | Package | Operating Temperature |
|--------|---------|-----------------------|
| KA2223 | 16 DIP | - 20°C ~ + 70°C |

BLOCK DIAGRAM

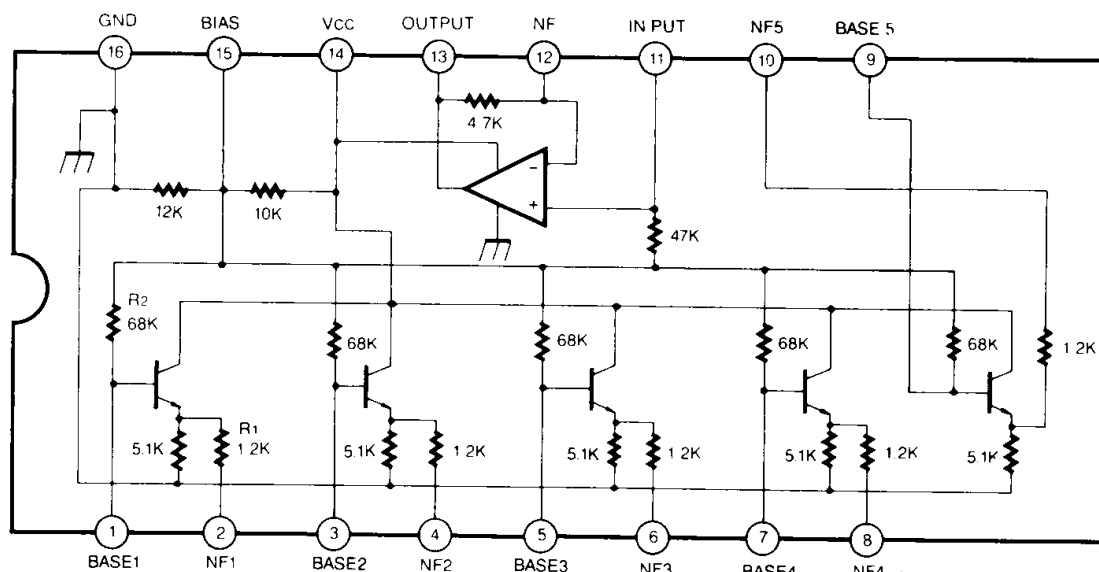


Fig. 1

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Characteristic | Symbol | Value | Unit |
|-----------------------|------------------|------------|------|
| Supply Voltage | V _{CC} | 20 | V |
| Power Dissipation | P _D | 700 | mW |
| Operating Temperature | T _{OPR} | -20 ~ +70 | °C |
| Storage Temperature | T _{STG} | -55 ~ +125 | °C |

ELECTRICAL CHARACTERISTICS

(T_a = 25°C, V_{CC} = 9V 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

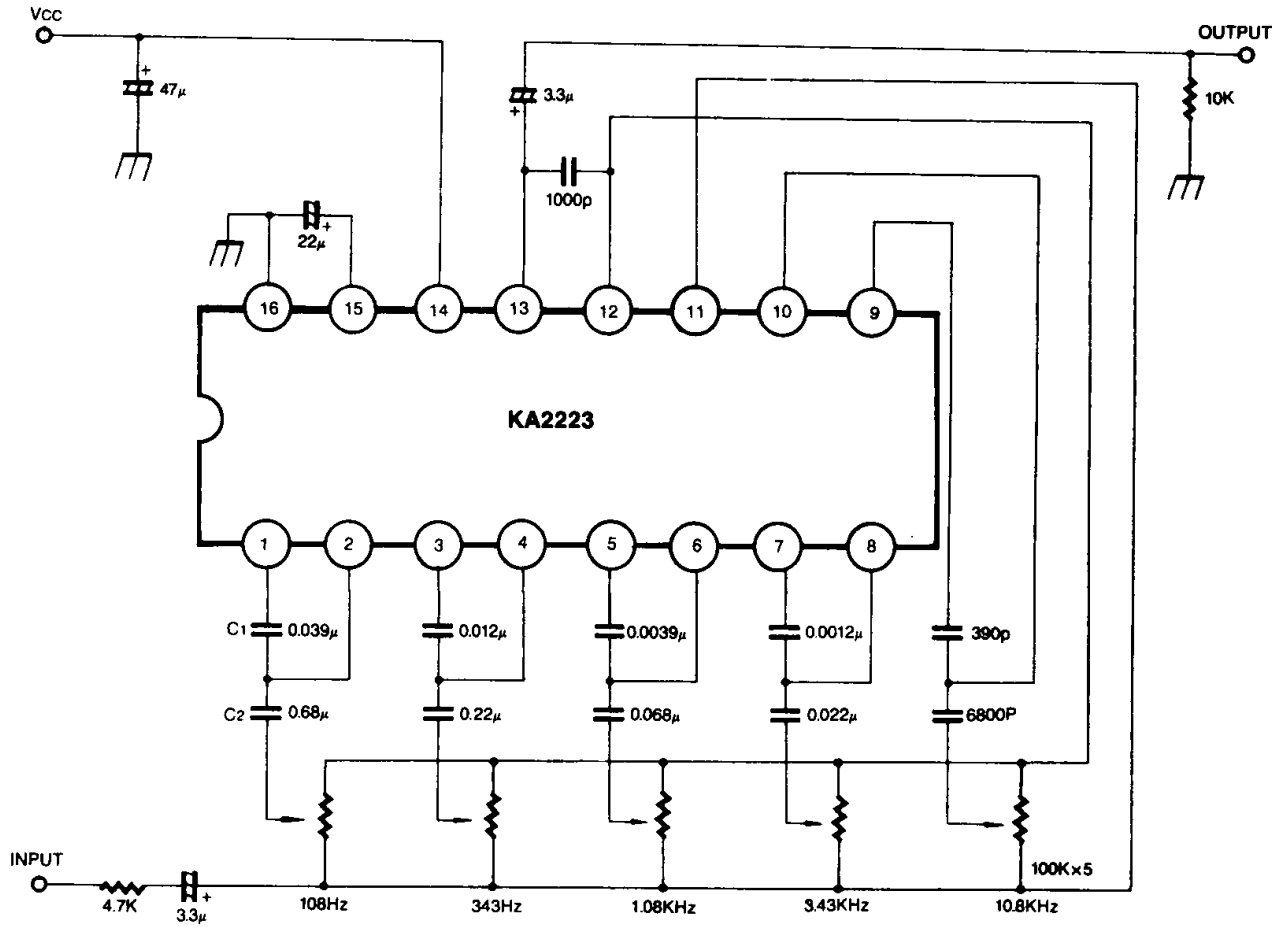


Fig. 2

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

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

APPLICATION CIRCUIT

1. 7 BAND

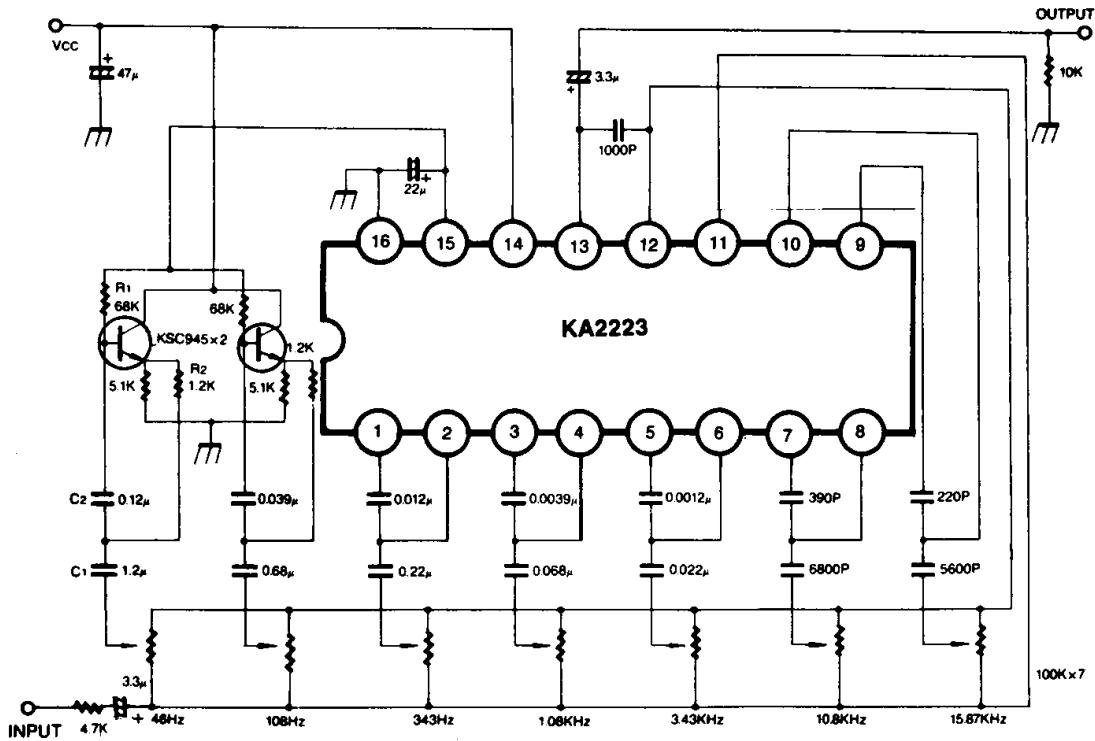


Fig. 3

2. 10 BAND

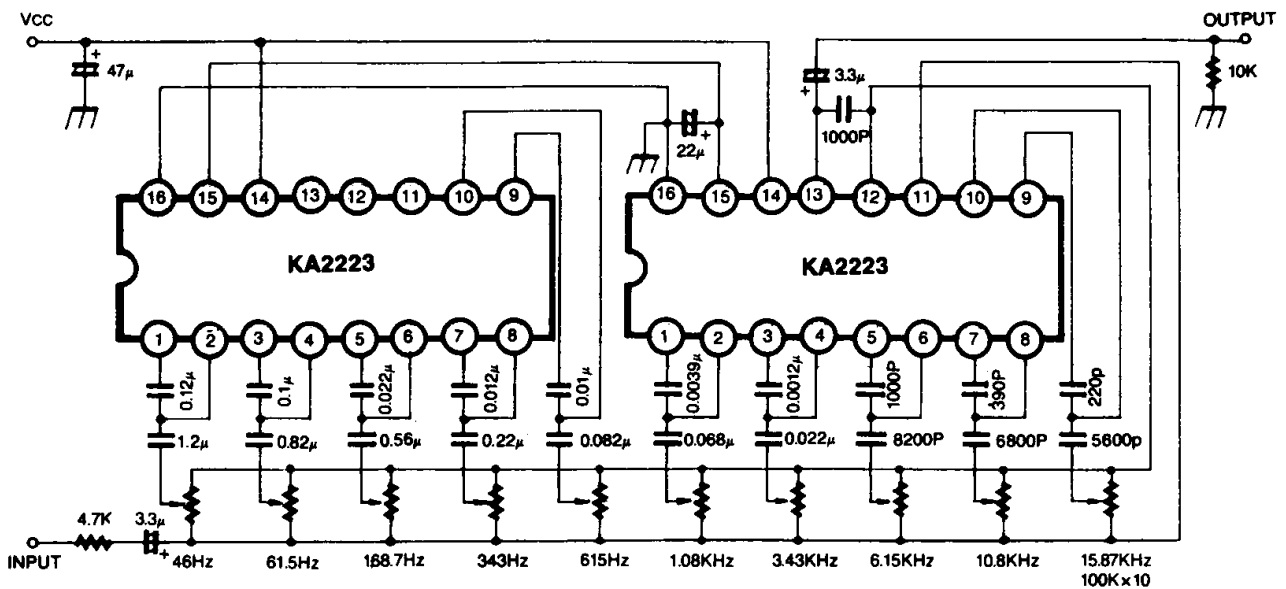


Fig. 4