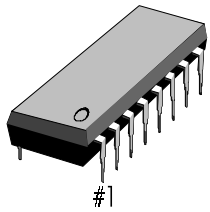
## INTRODUCTION

The KA22134 is a monolithic integrated circuit designed for use in low voltage and low power applications. It has various functions including those of a dual audio pre-power amplifier, DC volumecontrol and headphone drive circuits.
It is suitable for portable tape recorders or headphone cassette recorders.

16–DIP–300A




## FEATURES

- Built-in DC volume control circuit
- Wide operation supply voltage: $V_{CC}$ = 1.8V ~ 6V
- Only a few components needed to build headphone cassette tape recorders
- Built-in ripple filter

## ORDERING INFORMATION

| Device | Package | Operating Temperature |
|---|---|---|
| KA22134 | 16–DIP–300A | –20°C ~ +75°C |

## BLOCK DIAGRAM

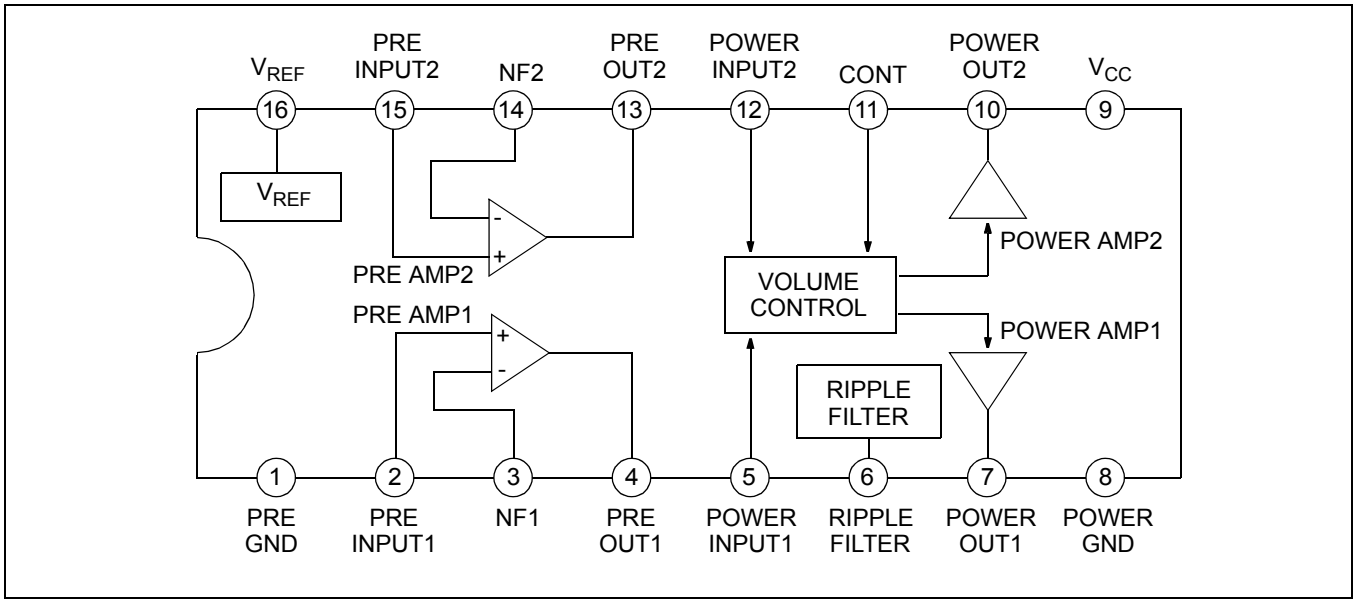



**Figure 1.**

## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 7 | V |
| Power Dissipation | $P_D$ | 750 | mW |
| Operating Temperature | $T_{OPR}$ | – 20 ~ +75 | °C |
| Storage Temperature | $T_{STG}$ | – 40 ~ +125 | °C |

## ELECTRICAL CHARACTERISTICS

($V_{CC}$ = 3V, Ta = 25°C, f = 1kHz, $R_{L1}$ = 10kΩ, unless otherwise specified)

| Characteristic | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Quiescent Circuit Current | $I_{CCQ1}$ | $V_I$ = 0, $V_{OL}$ = MIN | – | 9 | 13 | mA |
| | $I_{CCQ2}$ | $V_I$ = 0, $V_{OL}$ = MAX | – | 11 | – | mA |
| Cross Talk | CT | $R_G$ = 2.2kΩ, $V_O$ = –10dBm | 34 | 40 | – | dB |

## PRE-AMPLIFIER SECTION

($V_{CC}$ = 3V, Ta = 25°C, f =1kHz, $R_{L1}$ =10kΩ, unless otherwise specified)

| Characteristic | Symbol | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Open Loop Voltage Gain | $G_{VO}$ | $V_I$ = 0.2mV | 55 | 62 | – | dB |
| Closed Loop Voltage Gain | $G_{VC1}$ | $V_O$ = – 10dBm, NAB 1kHz | – | 33 | – | dB |
| Output Voltage | $V_O$ | THD = 1% | 600 | 720 | – | mV |
| Total Harmonic Distortion | $THD_1$ | $V_O$ = – 10dBm | – | 0.04 | 0.1 | % |
| Ripple Rejection Ratio | $RR_1$ | $R_G$ = 2.2kΩ<br>$V_R$ = –20dBm, $f_R$ = 100Hz | – | 46 | – | dB |
| Equivalent Input Noise Voltage | $V_{NI}$ | $R_G$ = 2.2kΩ, BW = 30 ~ 20kHz<br>Gain for NAB 1kHz | – | 1.2 | 2.0 | μV |

## POWER AMPLIFIER SECTION

($V_{CC}$ = 3V, Ta = 25°C, f = 1kHz, $R_{L2}$ = 32Ω, unless otherwise specified)

| Characteristic | Symbol | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Output Power | $P_{O1}$ | THD2 = 10% | 20 | 27 | – | mW |
| | $P_{O2}$ | THD2 = 10%, RL = 16Ω | – | 39 | – | mW |
| Total Harmonic Distortion | $THD_2$ | $P_O$ = 10mW, Volume: 100% | – | 0.5 | 1.2 | % |
| | $THD_3$ | $P_O$ = 10mW, Volume: 50% | – | 0.3 | – | % |
| Closed Loop Voltage Gain | $G_{VC2}$ | $V_O$ = – 0dBm, Volume: 100% | 28 | 30 | 32 | dB |
| | $G_{VC3}$ | $V_O$ = – 10dBm, Volume: 50% | – | 15 | – | dB |
| Channel Balance | $C_B$ | $V_O$ = – 10dBm | – 1.5 | 0 | 1.5 | dB |
| Volume Rejection Ratio | $VOL_{REJ}$ | $V_O$ = – 10dBm<br>Volume: 100% to 0% | 66 | 72 | – | dB |
| Output Noise Voltage | $V_{NO}$ | BW = 30 ~ 20kHz,<br>$R_G$ = 600Ω | – | 250 | 320 | μV |
| Ripple Rejection Ratio | $RR_2$ | $R_G$ = 600Ω, $f_r$ = 100Hz<br>$V_r$ = – 20dBm | – | 46 | – | dB |

## TEST CIRCUIT

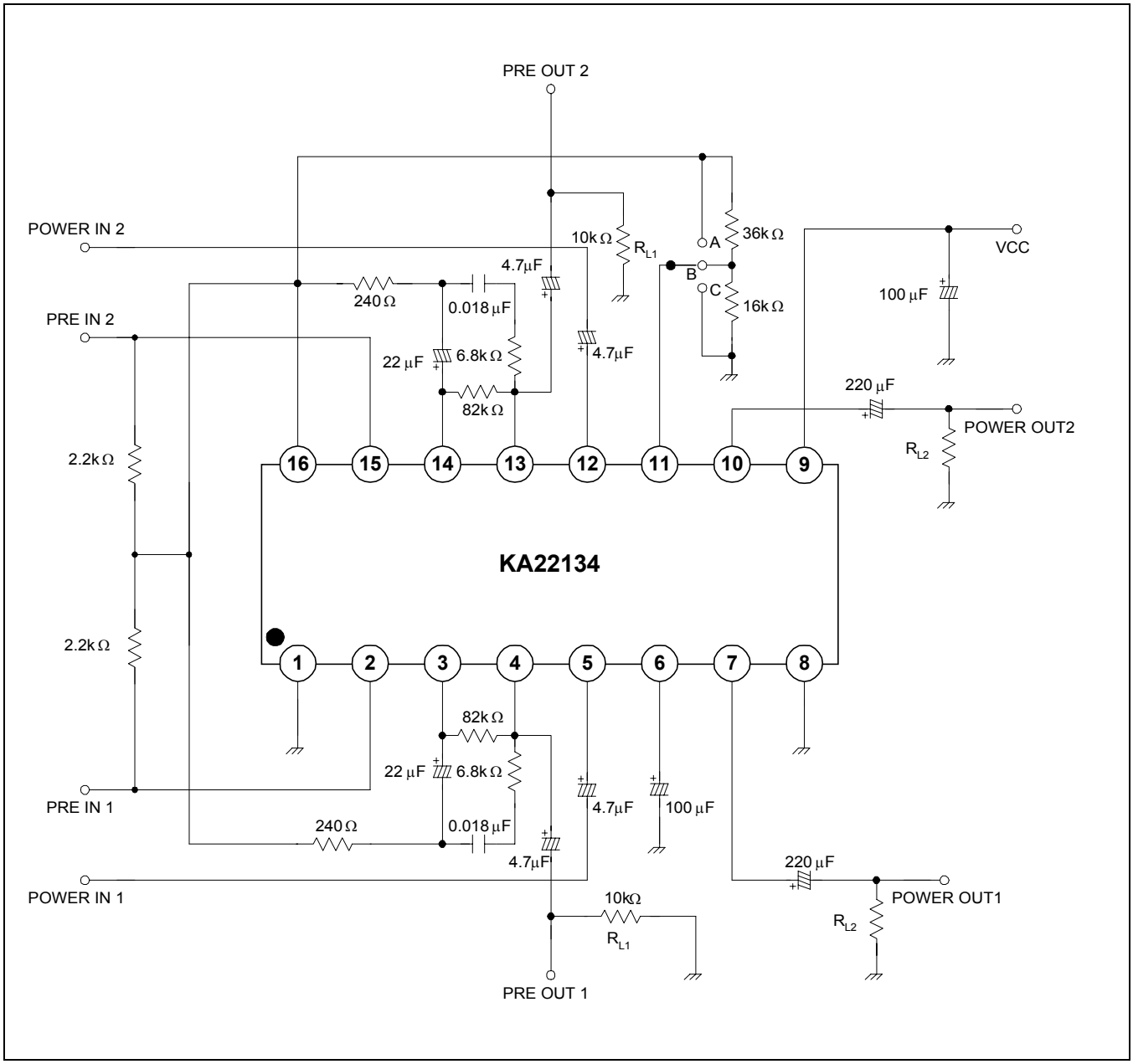



**Figure 2.**

## APPLICATION CIRCUIT

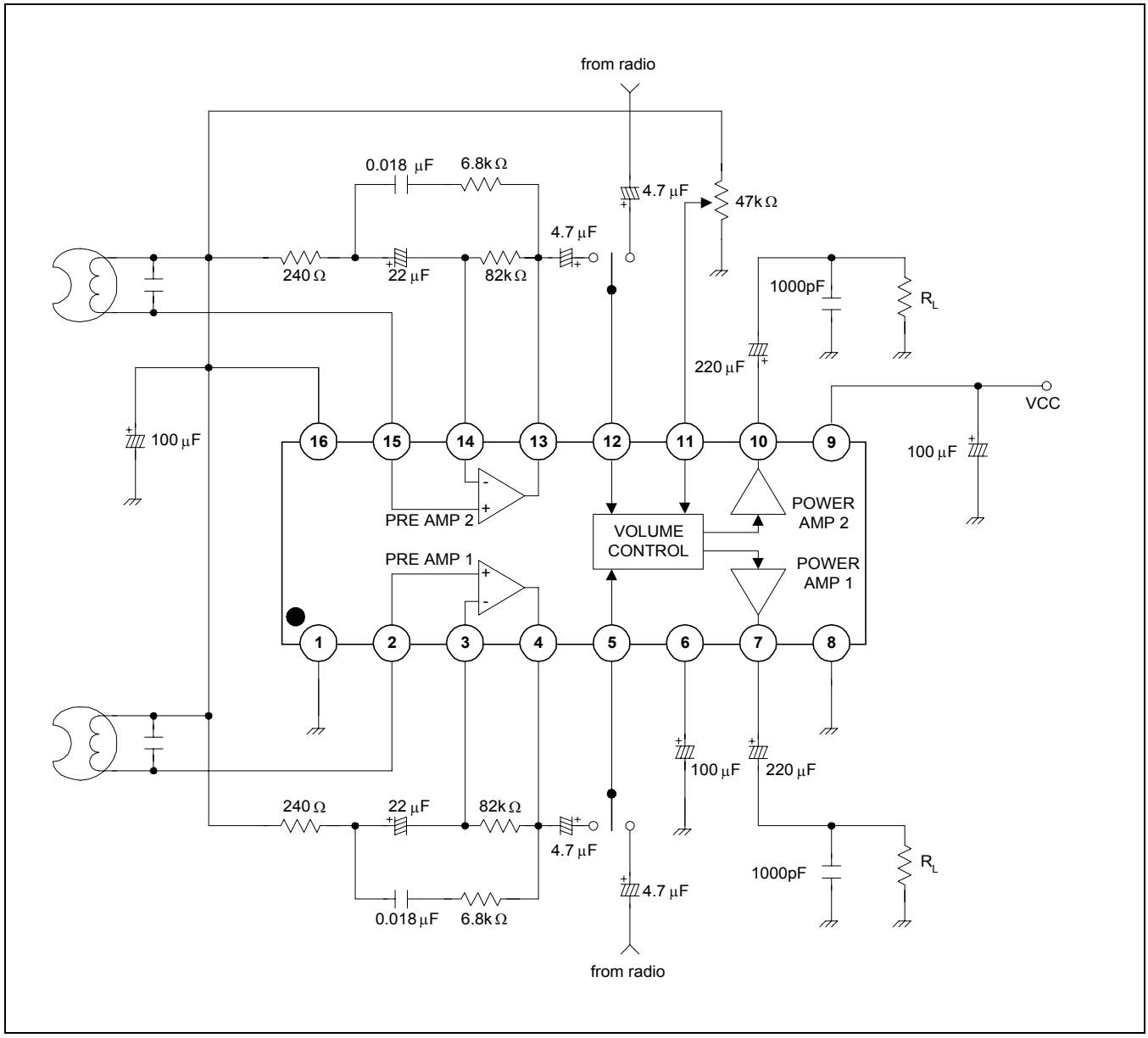



**Figure 3.**

## NOTES