

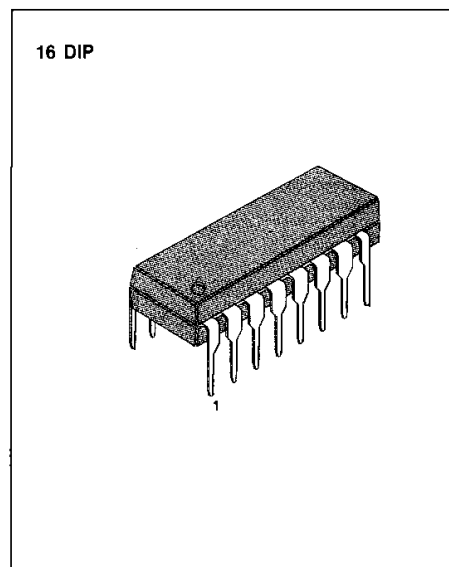
## DUAL PRE-POWER AMPLIFIER WITH DC VOLUME CONTROL

The KA22134 is a monolithic integrated circuit designed for use in low voltage and low power applications. It has all functions including a dual audio pre-power amplifier, DC volume control and headphone drive circuits.

It is suitable for portable tape recorders or headphone cassette recorders.

### FEATURES

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



### ORDERING INFORMATION

Device	Package	Operating Temperature
KA22134	16 DIP	-20°C ~ +75°C

### BLOCK DIAGRAM

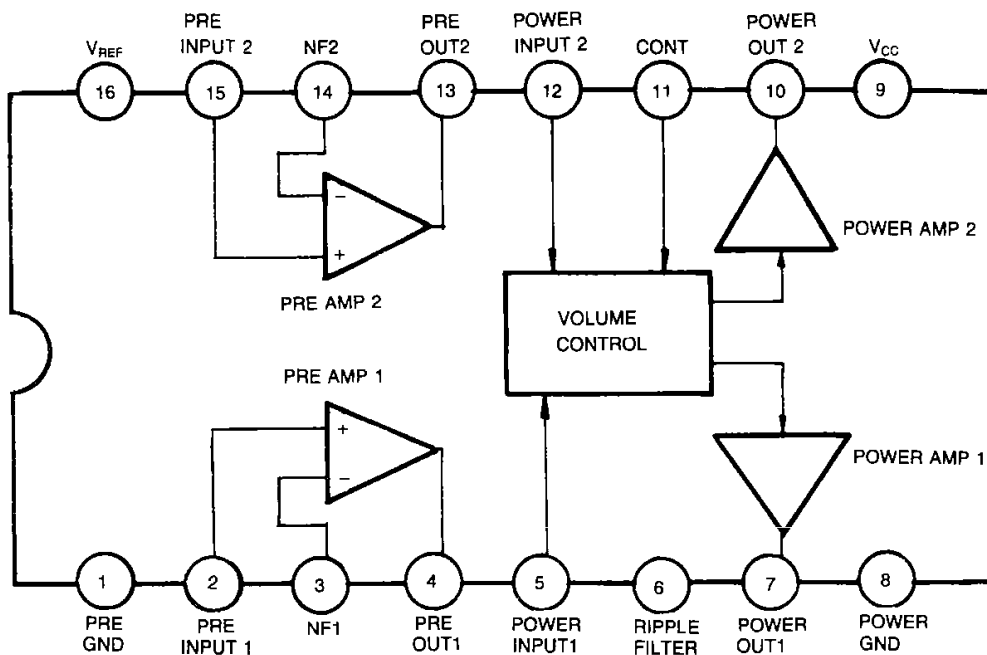


Fig. 1

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

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	7	V
Power Dissipation	$P_D$	75	mW
Operating Temperature	$T_{OPR}$	-20 ~ +75	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 ~ +125	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS**( $V_{CC} = 3\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Circuit Current	$I_{CCQ1}$	$V_I = 0$ , $V_{OL} = \text{MIN}$		9	13	mA
	$I_{CCQ2}$	$V_I = 0$ , $V_{OL} = \text{MAX}$		11.0		mA
Cross Talk	CT	$R_G = 2.2\text{K}\Omega$ , $V_O = -10\text{dBm}$	34	40		dB

**PRE-AMPLIFIER SECTION**( $V_{CC} = 3\text{V}$ ,  $T_a = 25^\circ\text{C}$ ,  $f = 1\text{KHz}$ ,  $R_{L1} = 10\text{K}\Omega$ , unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Open Loop Voltage Gain	$G_{VO}$	$V_I = 0.2\text{mV}$	55	62		dB
Closed Loop Voltage Gain	$G_{VC1}$	$V_O = -10\text{dBm}$ , NAB 1KHz		33		dB
Output Voltage	$V_O$	THD = 1%	600	720		mV
Total Harmonic Distortion	THD <sub>1</sub>	$V_O = -10\text{dBm}$		0.04	0.1	%
Ripple Rejection Ratio	RR <sub>1</sub>	$R_G = 2.2\text{K}\Omega$ $V_R = -20\text{dBm}$ , $f_R = 100\text{Hz}$		46		dB
Equivalent Input Noise Voltage	$V_{NI}$	$R_G = 2.2\text{K}\Omega$ , BW = 30 ~ 20KHz Gain for NAB 1KHz		1.2	2.0	$\mu\text{V}$

**POWER AMPLIFIER SECTION**( $V_{CC} = 3\text{V}$ ,  $T_a = 25^\circ\text{C}$ ,  $f = 1\text{KHz}$ ,  $R_{L2} = 32\Omega$ , unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Power	$P_{O1}$	THD <sub>2</sub> = 10%	20	27		mW
	$P_{O2}$	THD <sub>2</sub> = 10%, $R_L = 16\Omega$		39		mW
Total Harmonic Distortion	THD <sub>2</sub>	$P_O = 10\text{mW}$ , Volume: 100%		0.5	1.2	%
	THD <sub>3</sub>	$P_O = 10\text{mW}$ , Volume: 50%		0.3		%
Closed Loop Voltage Gain	$G_{VC2}$	$V_O = -10\text{dBm}$ , Volume: 100%	28	30	32	dB
	$G_{VC3}$	$V_O = -10\text{dBm}$		15		dB
Channel Balance	CB	$V_O = -10\text{dBm}$	-1.5	0	-1.5	dB
Volume Rejection Ratio	VOL <sub>REJ</sub>	$V_O = -10\text{dBm}$ , Volume: 100% to 0%	66	72		dB
Output Noise Voltage	$V_{NO}$	BW = 30 ~ 20KHz, $R_G = 600\Omega$		250	320	$\mu\text{V}$
Ripple Rejection Ratio	RR <sub>2</sub>	$R_G = 600\Omega$ , $f_R = 100\text{Hz}$ $V_R = -20\text{dBm}$		46		dB

TEST CIRCUIT

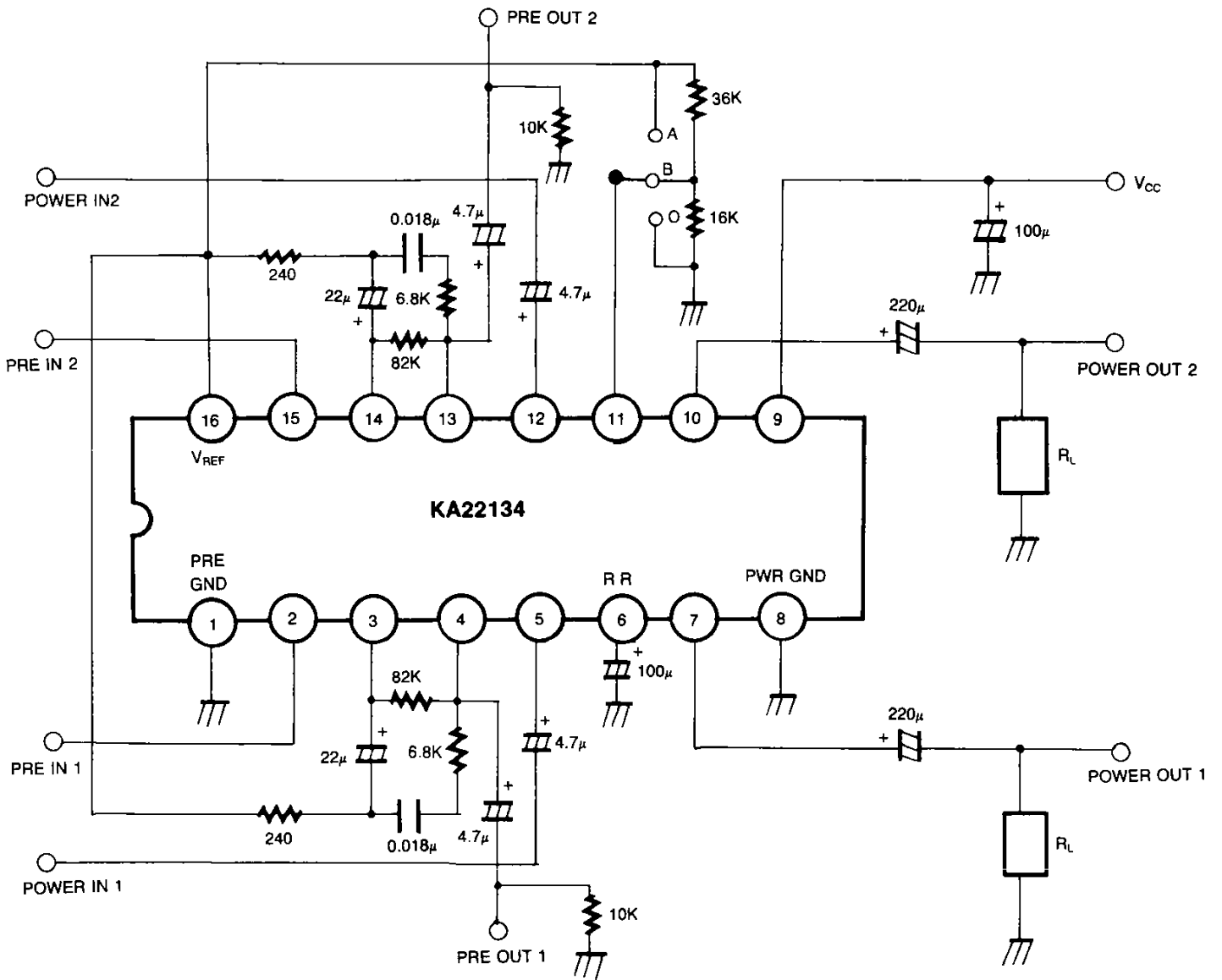


Fig. 2

**APPLICATION CIRCUIT**

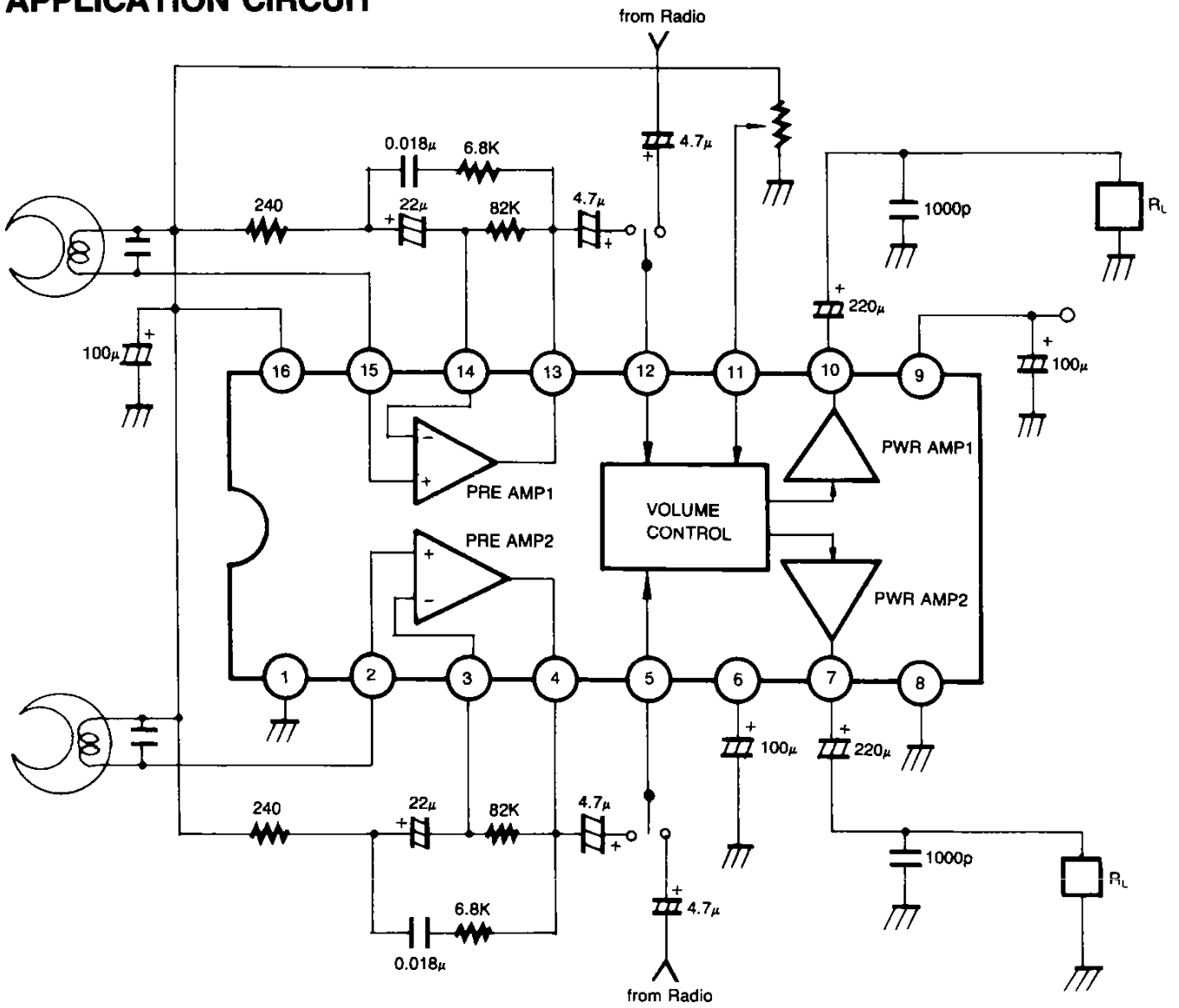


Fig. 3