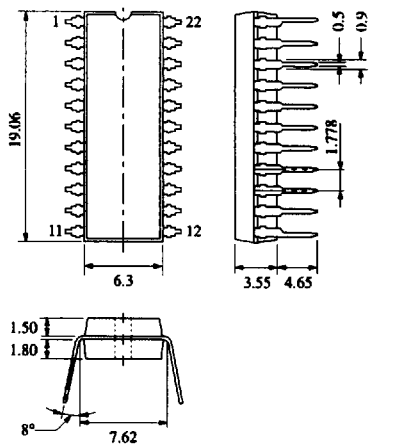
AN7082K/S

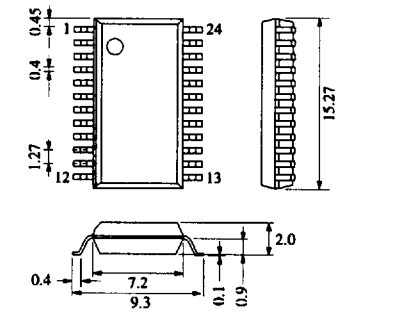
Pre/Power Amplifier, Governor Single Chip IC for 3V Headphone Stereo

AN7082K Unit : mm



22-Lead Shrunk DIL Plastic Package (22-SDIP)

AN7082S Unit : mm



24-Lead PANAFLAT Plastic Package (SO-24D)

■ Description

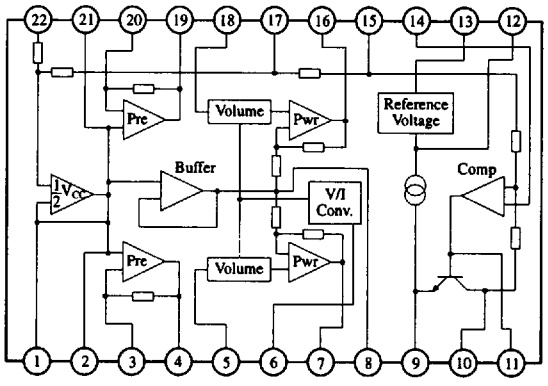
The AN7082K/S are the monolithic integrated circuits most suitable for stereo headphone cassette player with integrated pre-amp., power amp., motor governor into a single chip and built-in electronic VR.

■ Features

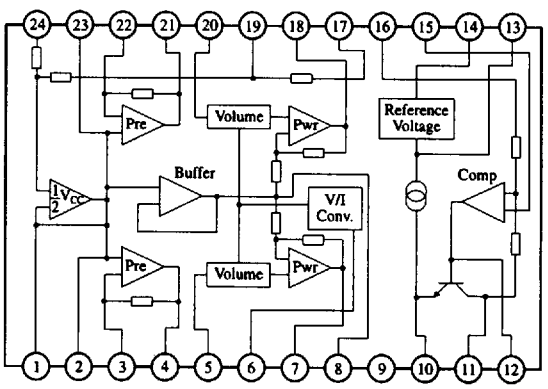
- Wide operating supply voltage range: $V_{CC(opr)}$ = 1.8V ~ 6V
- Fewer peripheral parts
- Both channel VR control by single string VR is possible due to electronic VR built-in
- Available for graphic equalizer

■ Block Diagram

AN7082K



AN7082S



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	7	V
Supply Current	I_{CC}	1000	mA
Power Dissipation	P_D	1000	mW
Operating Ambient Temperature	Topr	-25 ~ +75	°C
Storage Temperature	Tstg	-55 ~ +150	°C

Operating Supply Voltage Range: V_{CC} = 1.8V ~ 6.0V

■ Electrical Characteristics (Ta=25°C, V_{CC}=3V, f=1kHz, R_L=32Ω, Volume Max.)

Item	Symbol	Condition	min.	typ.	max.	Unit
Quiescent Current	I_{CQ}	V_{in} = 0V, I_m = 0mA	10	20	35	mA
Pre Amplifier						
Close Loop Gain	G_{VC}	V_O = 0.3V	34	37.5	40	dB
Maximum Output Voltage	$V_{O(max)}$	THD = 1%	0.6	0.8		V
Total Harmonic Distortion	THD	V_O = 300mV		0.05	0.5	%
Input Noise Voltage	V_{ni}	V_{in} = 0V, R_g = 2.2kΩ, BPF (300Hz ~ 20kHz)		1.8	5.0	μV
Channel Balance	CB	V_{in} = 5mV	-2	0	+2	dB
Attenuator						
Maximum Attenuation	$V_{a(max)}$	V_O = 0.4V, Pin 6 = 0	60	65		dB
Power Amplifier						
Voltage Gain	G_V	P_{out} = 5mW	25.5	28	30.5	dB
Maximum Power	P_O	THD = 10%, R_L = 32Ω	15	20		mW
Total Harmonic Distortion	THD	P_{out} = 5mW		0.2	1.0	%
Channel Balance	CB	V_O = 0.4V	-2	0	+2	dB
Output Noise Voltage	V_{no}	BPF (300Hz ~ 20kHz)		0.3	0.4	mV
Ripple Rejection	RR	f = 100Hz, 50mV	34	40		dB
Crosstalk	CT	V_O = 0.6V	25	35		dB
Motor Governor						
Load Regulation 1	$\frac{\Delta V_a}{V_a}/\Delta I_a$	I_{10} = 30mA ~ 200mA		0.01	0.1	%/mA
Line Regulation 1	$\frac{\Delta V_a}{V_a}/\Delta V_{CC}$	I_m = 50mA, V_{CC} = 1.8 ~ 6.0V		0.1	1.0	%/V
Reference Voltage	V_{REF}	I_m = 100mA, $R_{13\text{-}12}$ > 10kΩ		1.28		V
Saturation Voltage	V_{sat}	I_m = 100mA, 1.8V, R_a = 4.7Ω		0.2		V
Line Regulation 2	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta V_{CC}$	I_m = 50mA, V_{CC} = 1.8 ~ 6.0V		0.2		%/V
Temperature Characteristics	$\frac{\Delta V_a}{V_a}/\Delta T_a$	T_a = -25°C ~ +75°C		0.01		%/°C

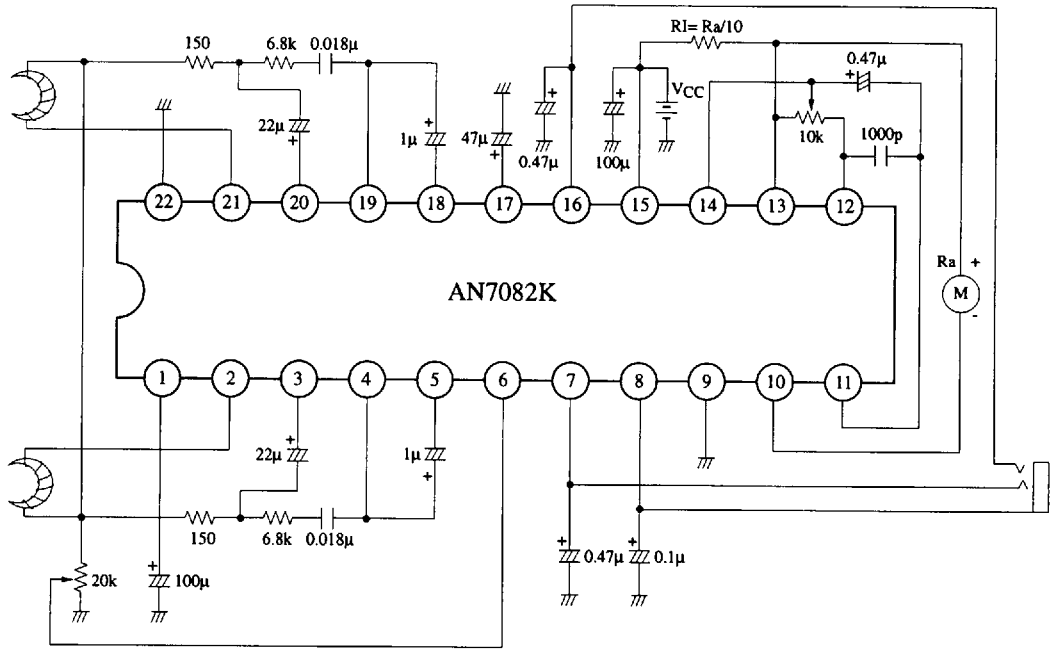
■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1(1)	Pre-V_{REF}	13 (12)	Motor Ref. Voltage (-)
2(2)	Channel 1 Pre Amp. Input	14 (13)	Motor Ref. Voltage (+)
3(3)	Channel 1 Pre Negative Feedback	15 (14)	Comparator Input
4(4)	Channel 1 Pre Amp. Output	16	Motor V_{CC}
5(5)	Channel 1 Volume Input	17 (15)	Power V_{CC}
6(6)	Volume Control	18 (16)	Channel 2 Power Amp. Output
7(7)	Channel 1 Power Amp. Output	19 (17)	Ripple Filter
8(8)	Buffer Output	20 (18)	Channel 2 Volume Input
9(9)	Power GND	21 (19)	Channel 2 Pre Amp. Output
10	Motor GND	22 (20)	Channel 2 Pre Negative Feedback
11 (10)	Motor Terminal (-)	23 (21)	Channel 2 Pre Amp. Input
12 (11)	Phase Compensation	24 (22)	Pre GND

Note: The pin numbers in the parenthesis are for AN7082K

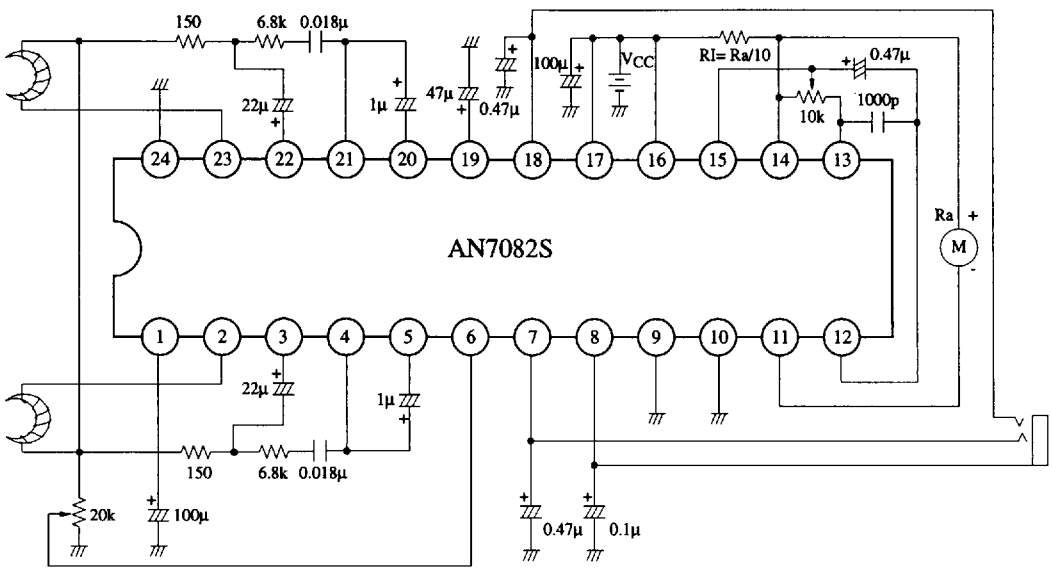
■ Application Circuit

(AN7082K)

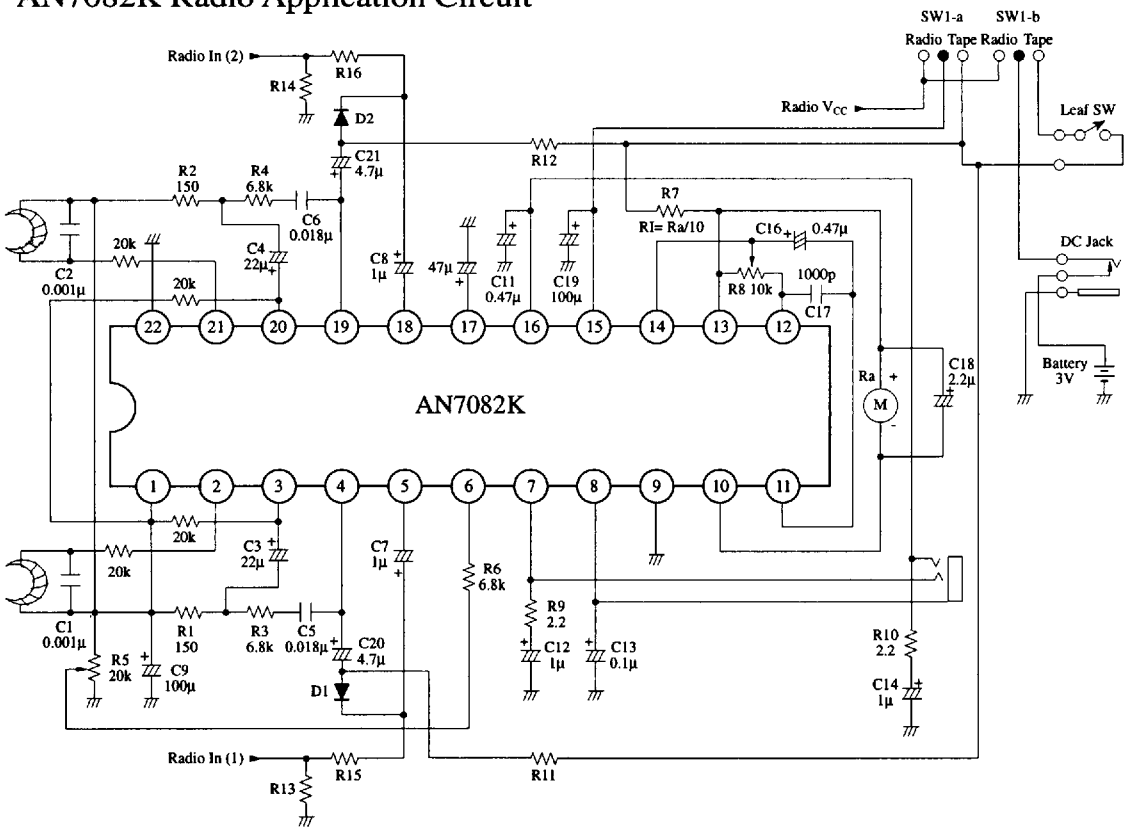


■ Application Circuit (Continue)

(AN7082S)



■ AN7082K Radio Application Circuit



Note: Resistors R11/R12 and diodes D1/D2 are used to mute pre-amp during radio mode.
Resistor R13/R14 act as multiplexer load.
Resistors R15/R16 are used to achieve same output level during radio/playback mode.

■ Application Notes

1. Tuner Connection

a) AN7082K can be combined with any tuner IC to form 2-chip Headphone stereo player. This is possible by adding 2 resistors, R11/R12 & 2 diodes, D1/D2 to function as Pre-amp Mute circuit during Radio operation.

b) During Tape playback mode R11/R12 & D1/D2 are being DC biased through Tape V_{CC}, such that the Tape signal from Pre-amp output can pass through & be amplified by the subsequent power stage.

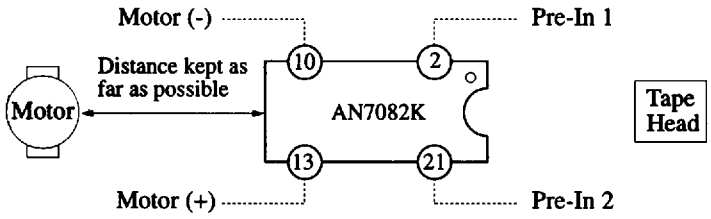
c) During Radio Mode, V_{CC} supply to R11/R12 & D1/D2 is cut off, causing D1/D2 to be inoperative. As such, any Pre-amp output signals from tape will be blocked by the diodes and will not contribute to radio noise.

d) Values of R11/R12 are selected to be equal to that of Tuner MPX load. Values of R13/R14 are adjusted to achieve same output power level during tape playback & radio modes.

2. Motor Hum Noise

a) To reduce output noise, add C7/C8 1000p between Pre NF pins & Pre-Out pins on both channels respectively.

b) Where practical, the distance between Motor and AN7082K on PCB should be kept as far as possible, especially the orientation of Pre-amp input pins. This is to reduce Motor Hum Noise feedback through to AN7082K/S inputs.



c) The PCB layout tracks from pin 10 and pin 13 to Motor(-) and Motor(+) terminals should also be maintained as far as possible from Pre-amp inputs pins to reduce motor interference.

d) The motor assembly is preferably covered by some metal shield to reduce noise radiation of the unit.