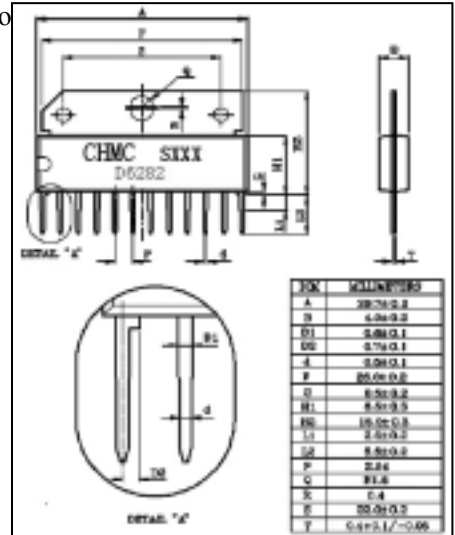


4.6W DUAL AUDIO POWER AMPLIFIER KIA6282

GENERAL DESCRIPTION

KIA6282 is an audio power IC with built-in two Channels developed for portable radio cassette tape recorder with power ON/OFF switch. Thermal shut down protection circuit is built in. Because of the parts reduction and SIP (Single in line package), space merit is remarkable.



FEATURES

High

Power

Outline Drawing

$P_{out}=2.5W/CH(Typ.)$: ($V_{cc}=9V, R_L=4\Omega, f=1kHz, THD=10\%$)

$P_{out}=4.6W/CH(Typ.)$: ($V_{cc}=12V, R_L=4\Omega, f=1kHz, THD=10\%$)

- Low popping noise at power ON
- Small Quiescent Current : $I_{ccQ}=19mA(Typ.)$ ($V_{cc}=9V, V_{in}=0$)
- Soft Clip
- Built-in thermal shut down protection circuit
- Best for supply voltage 9V, 12V
- Supply voltage range : $V_{cc}=6\sim 15V$

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{cc}	16	V
Output Current (Peak/CH)	$I_{Q(peak)}$	2.0	A
Power Dissipation	P_D	12.5	W
Operating Temperature	T_{opr}	-20~75	°C
Storage Temperature	T_{stg}	-55~150	°C

TYPICAL DC VOLTAGE OF EACH TERMINAL ($V_{CC}=9V, T_a=25^\circ C$)

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12
DC VOLTAGE (V)	8.2	4.5	V _{CC}	8.9	0.6	0.01	0.01	0.6	GND	4.5	8.2	V _{CC}

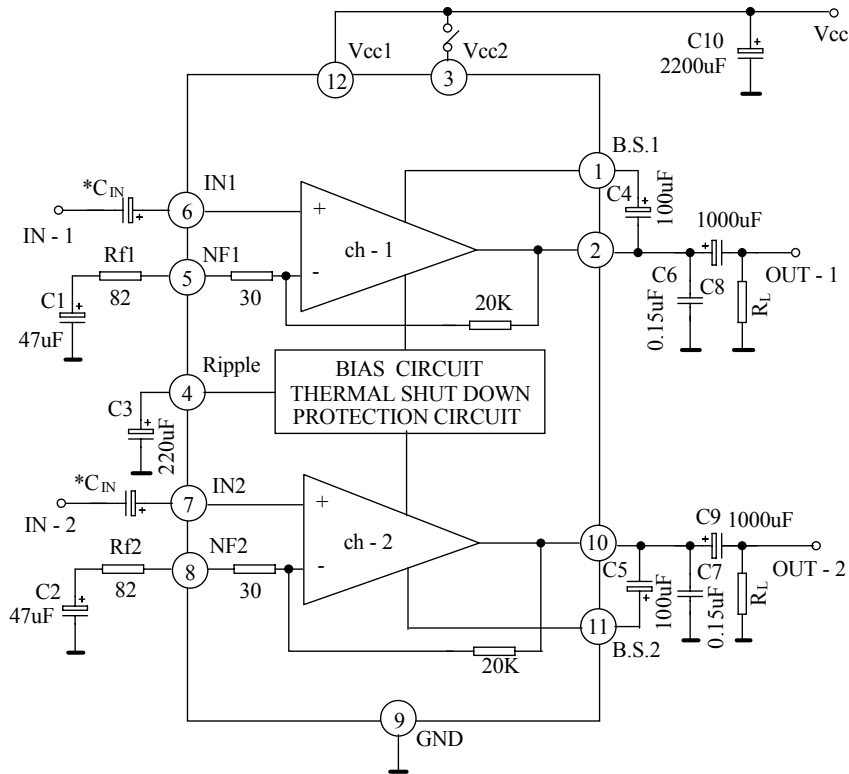
*3 pin is connected to V_{CC}

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{CC}=9V, f=1kHz, R_g=600\Omega, R_L=4\Omega, T_a=25^\circ C$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _{CCQ}	V _{IN} =0	-	19	45	mA
Output Power	P _{out} (1)	THD=10%	2.0	2.5	-	W
	P _{out} (2)	THD=10%, V _{CC} =12V	-	4.6	-	
Total Harmonic Distortion	THD	P _{out} =1W/CH	-	0.25	1.0	%
Voltage Gain	G _v (1)	R _f =82 Ω , V _{out} =0dBm	43	45	47	dB
	G _v (2)	R _f =0, V _{out} =0dBm	-	56	-	
Input Resistance	R _{IN}	-	-	30	-	k Ω
Output Noise Voltage	V _{NO}	R _g =10k Ω , BW=20Hz~20kHz	-	0.3	1.0	mV _{rms}
Ripple Rejection Ratio	R.R	R _g =600 Ω , V _{RIP} =0.2V _{rms} f _{RIP} =100Hz	-	54	-	dB
Cross Talk	C.T	R _g =600 Ω . Amp1↔2 V _{out} =0dBm, f=1kHz	-	45	-	dB
Input Offset Voltage	V ₆ , V ₇	-	-	20	60	mV

TEST CIRCUIT & BLOCK DIAGRAM



* This IC can be used without coupling capacitor (CIN), If volume slide noise occurred by input offset voltage is undesirable, it needs to use the capacitor(CIN).

APPLICATION INFORMATION AND APPLICATION METHOD

1. ADJUSTMENT OF VOLTAGE GAIN

The voltage gain G_v is obtained as follows by R_1, R_2 and R_f in Fig.1.

$$G_v = 20 \log \left(\frac{R_f + R_1 + R_2}{R_f + R_1} \right)$$

When $R_f = 0$ $G_v = 56 \text{dB (Typ.)}$

When $R_f = 82 \Omega$ $G_v = 45 \text{dB (Typ.)}$

By increasing R_f , reduction of G_v is possible, However, since the feedback

increase is liable to produce oscillation, it is recommended to use this at 40dB or over.

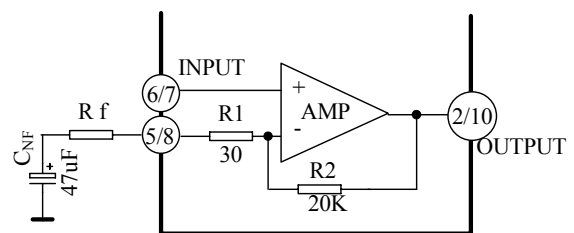


Fig 1.

2. THERMAL SHUT-DOWN CIRCUIT

The thermal shut-down circuit is built in for the purpose of preventing the destruction of IC due to the abnormal temperature rise when the heat radiation is insufficient . The operation temperature is set at radiation Fin temperature 175°C(Typ.)

At this temperature or over the bias is interrupted to prevent the destruction of IC.

3. INPUT STAGE

The input circuit of this IC is as shown in Fig.2.PNP TR: Q1 is provided in the input circuit so as to make its usage. Possible without the input coupling capacitor. However , at pins and ,max 60mV offset voltage is produced.

Application after checking volume slide noise is recommended. For cutting the volume slide noise, Insert the input capacitor: C_{IN} in series to interrupt the DC component

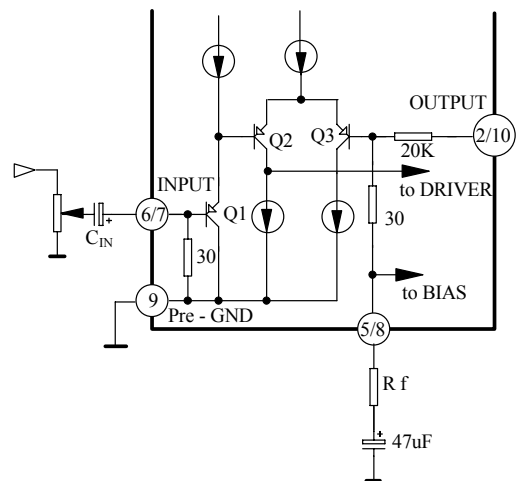


Fig.2

4. OSCILLATION PREVENTIVE MEASURES

For oscillation preventive capacitor C6 and C7 between the output terminal and GND ,it is recommended to use Polyester film capacitor having good characteristics for temperature and for high frequency.

Since the characteristics of the capacitor is liable to be influenced by the temperature, use this capacitor after the temperature test to check the oscillation allowance.

In addition ,as the position of the electrolytic capacitor has a remarkable influence on the oscillation ,connect C10 to Vcc at the nearest possible position from power GND.

At using this application with the voltage gain reduced, oscillation is liable to be produced ,Apply the capacitor after checking enough for its capacity ,type and mounting position.

As the oscillation allowance varies according to the printed pattern layout, the standard printed board is recommended to be referred to design it

5. INPUT VOLTAGE

When the excessive signal is input, turning-up is produced in the clip waveform. The turning-up point is $V_{IN}=300mV_{rms}(Typ.) : V_{CC}=9V, R_L=4\Omega, f=1kHz$: Enough care must be taken for this phenomenon.

6. POWER ON/OFF SWITCH

There is power ON/OFF switch at pin 3. However, output power is changed by pin 3 supply voltage when pin 3 voltage is not same pin 12 supply voltage, after referring to attached date, select pin 3 supply voltage.

7. GND LINE

GND pin is not separated for Pre-GND and for Pw-GND. That is liable to cause distortion and cross talk worse. Before use this IC, please check it.

CHARACTERISTICS CURVES

