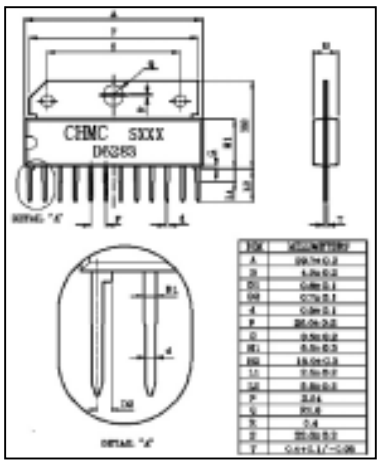
4.6W DUAL AUDIO POWER AMPLIFIER D6283

GENERAL DESCRIPTION

D6283 is an audio power IC with built-in two Channels developed for portable radio cassette tape recorder. Thermal shut down protection circuit is built in .

Because of the parts reduction and SIP (Single in line package), space merit is remarkable.



Outline Drawing

FEATURES

- High Power
  Pout=2.5W/CH(Typ.) :(Vcc=9V,R_L=4Ω,f=1kHz,THD=10%)
  Pout=4.6W/CH(Typ.) :(Vcc=12V,R_L=4Ω,f=1kHz,THD=10%)
- Low popping noise at power ON
- Small Quiescent Current : I_{CCQ}=19mA(Typ.) (Vcc=9V Vin=0)
- Soft Clip
- Built-in thermal shut down protection circuit
- Best for supply voltage 9V, 12V
- Operation supply voltage range : Vcc=6~15V

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	Vcc	20	V
Output Current (Peak/CH)	$I_{Q(peak)}$	2.5	A
Power Dissipation	P_D	12.5	W
Operating Temperature	Topr	-20~75	°C
Storage Temperature	Tstg	-55~150	°C

TYPICAL DC VOLTAGE OF EACH TERMINAL (Vcc=9V,Ta=25°C)

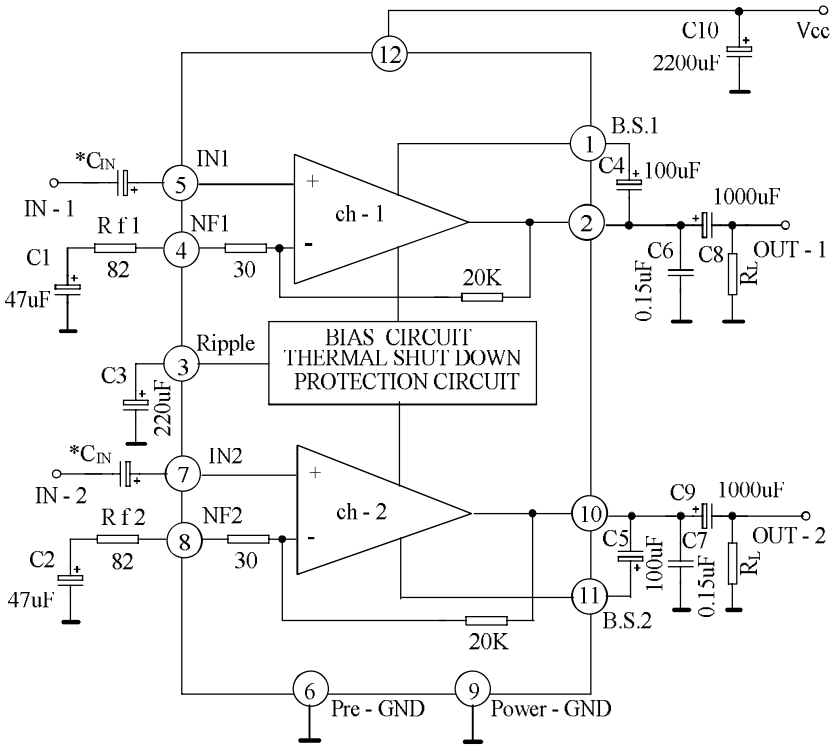
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12
DC VOLTAGE (V)	8.2	4.5	8.9	0.6	0.01	GND	0.01	0.6	GND	4.5	8.2	Vcc

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Vcc=9V,f=1kHz,Rg=600Ω, R_L=4Ω, Ta=25°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%, Vcc=12V	-	4.6	-	
Total Harmonic Distortion	THD	Pout=1W/CH	-	0.2	1.0	%
Voltage Gain	Gv(1)	Rf=82Ω, Vout=0dBm	43	45	47	dB
	Gv(2)	Rf=0, Vout=0dBm	-	56	-	
Input Resistance	R_{IN}	-	-	30	-	kΩ
Output Noise Voltage	V_{NO}	Rg=10kΩ, BW=20Hz~20kHZ	-	0.3	1.0	mVrms
Ripple Rejection Ratio	R.R	Rg=600Ω, V_{RIP}=0.2Vrms f_{RIP}=100Hz	-	54	-	dB
Cross Talk	C.T	Rg=600Ω.Amp1↔2 Vout=0dBm,f=1kHz	-	60	-	dB
Input Offset Voltage	V_5,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 Gv is obtained as follows by R1,R2 and Rf in Fig.1.

$$Gv=20\log((Rf+R1+R2)/(Rf+R1))$$

When Rf=0 Gv=56dB(Typ.)

When Rf=82Ω Gv=45dB(Typ.)

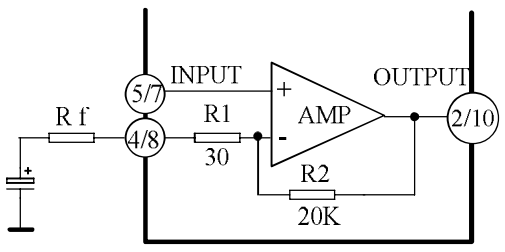


Fig1.

By increasing Rf, reduction of Gv is possible , However, since the feedback increase is liable to produce oscillation , it is recommended to use this at 40dB or over.

2. THERMAL SHUT-DOWN CIRCUIT

The thermal shut-down circuit is built in for 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 5 and 7, max 60mV offset voltage is produced.

4. 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.

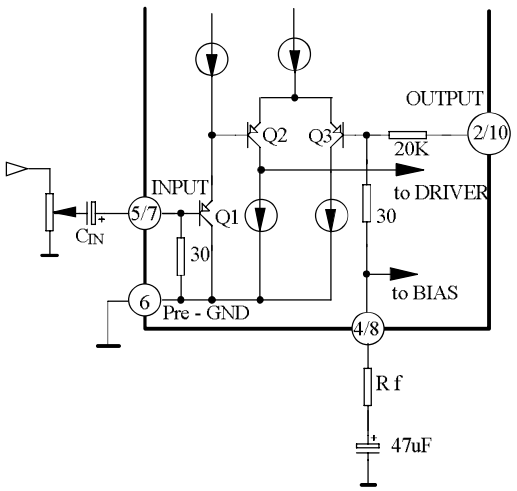


Fig.2

5. OSCILATION 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 C_{10} to Vcc at the nearest possible position from power GND.

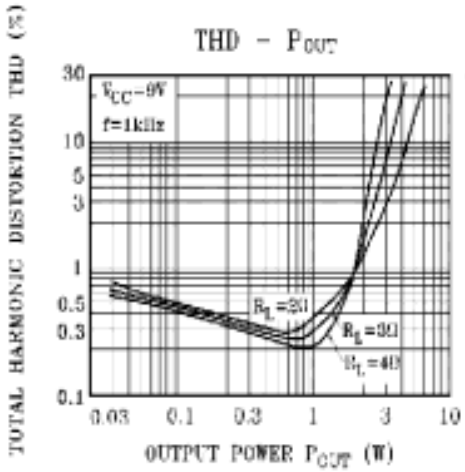
At using this application with the voltage gain reduced, oscillation is liable to be produced. Apply the capacitor after checking enough for its capacity, type and mounting position.

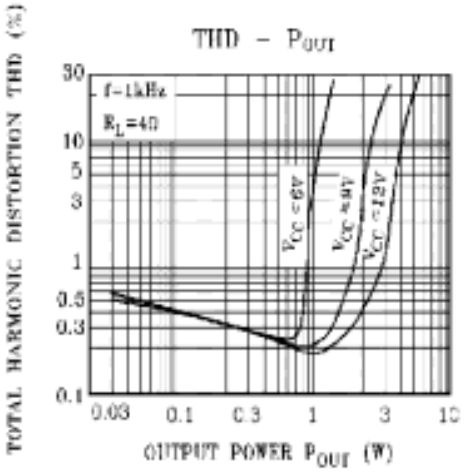
As the oscillation allowance varies according to the printed pattern layout, the standard printed board is recommended to be referred to design it.

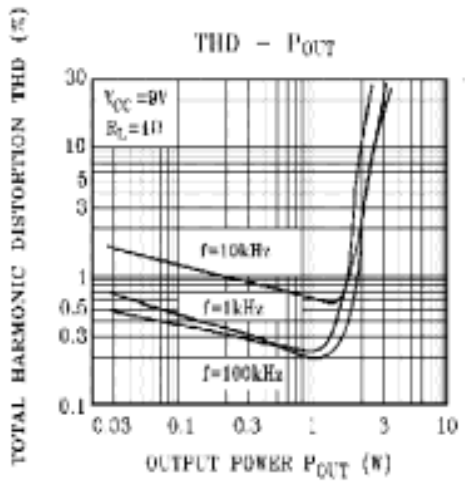
6. INPUT VOLTAGE

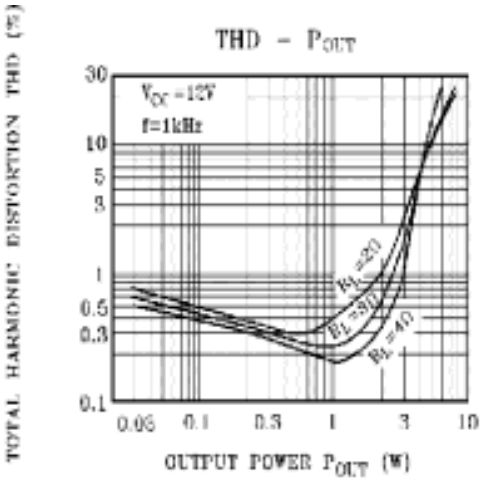
When the excessive signal is input, turning-up is produced in the clip waveform. The turning-up point is VIN=300mVrms(Typ.): Vcc=9V, RL=4Ω,f=1kHz : Enough care must be taken for this phenomenon.

CHARACTERISTICS CURVES

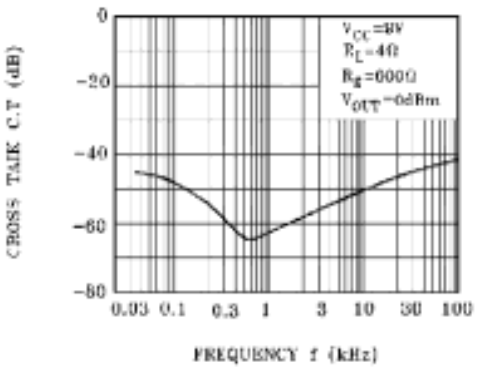




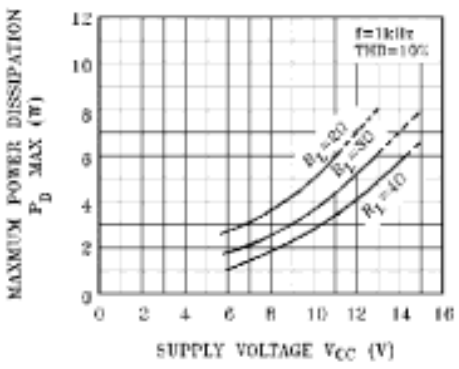




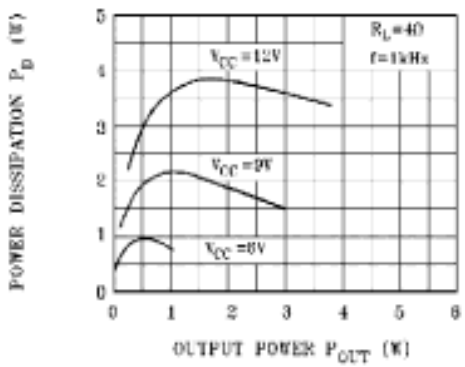
C.T – f



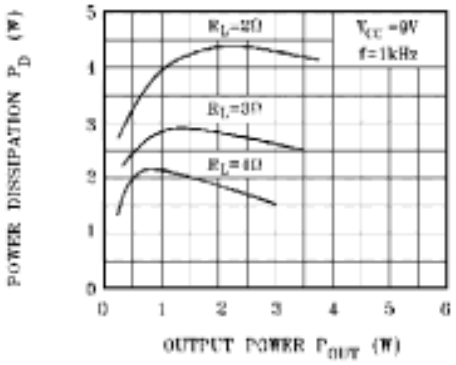
P_D MAX – V_{CC}



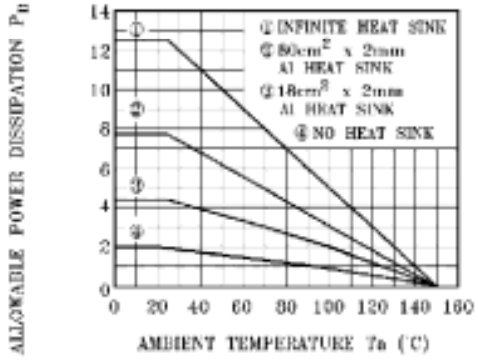
P_D – P_{OUT}



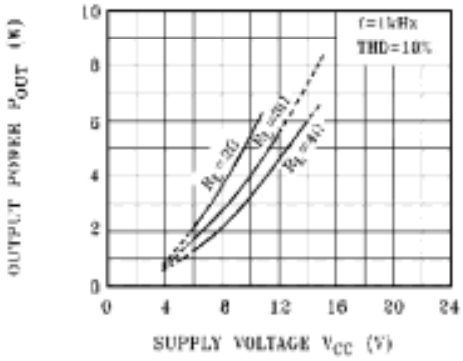
P_D – P_{OUT}

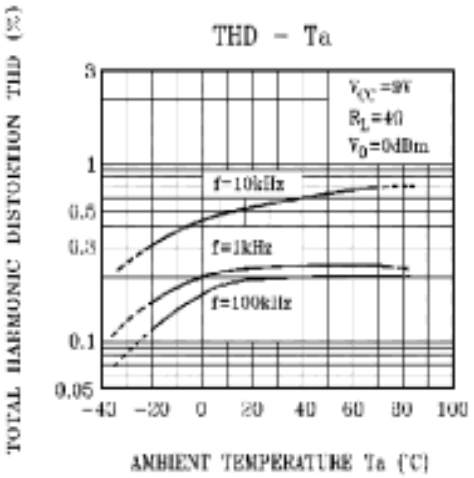


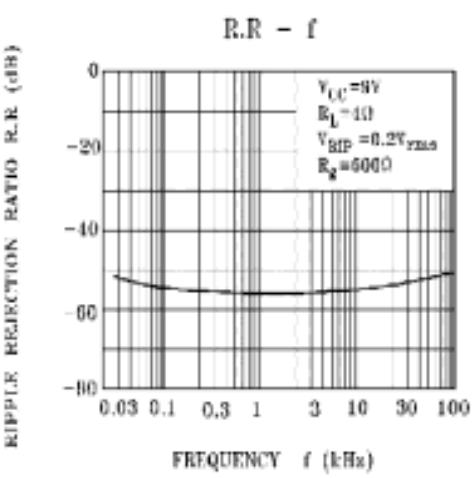
P_D – T_a



P_{OUT} – V_{CC}




THD – Ta
TOTAL HARMONIC DISTORTION THD (%)
3
1
0.5
0.3
0.1
0.05
V_{CC}=9V
R_L=4Ω
V_O=0dBm
f=10kHz
f=1kHz
f=100kHz
-40 -20 0 20 40 60 80 100
AMBIENT TEMPERATURE Ta (°C)


R.R – f
RIPPLE REJECTION RATIO R.R (dB)
0
-20
-40
-60
-80
V_{CC}=9V
R_L=4Ω
V_{RIP}=0.2V_{rms}
R_g=600Ω
0.03 0.1 0.3 1 3 10 30 100
FREQUENCY f (kHz)