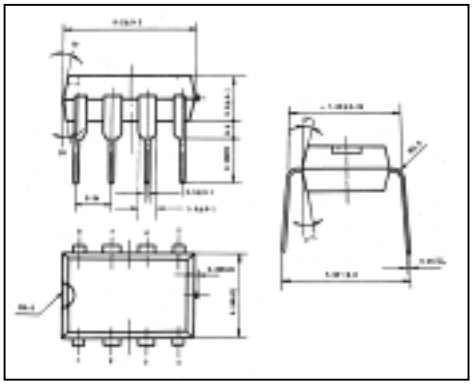
1.2W AUDIO POWER AMPLIFIER TBA820M

GENERAL DESCRIPTION

The TBA820M is a monolithic integrated circuit in 8 lead dual in-line plastic package. It is intended for use aslow frequency class B power amplifier in portable cassette players and radios.

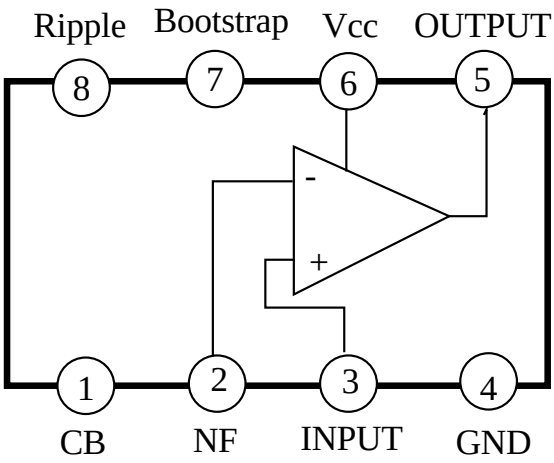


Outline Drawing

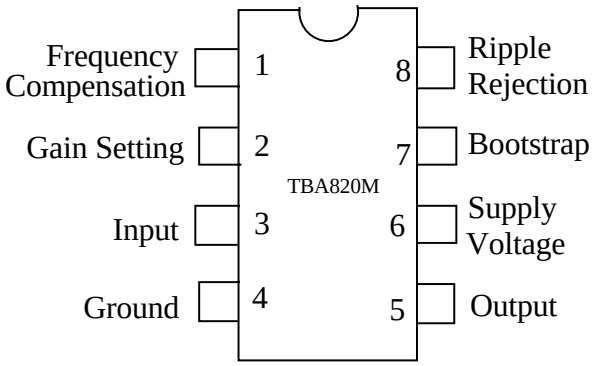
FEATURES

- Wide range of supply voltage : Vcc=3V~16V in portable radios, cassette recorders and players etc.
  Main features are : minimum working supply voltage of 3V
- Low quiescent supply current (Icc=4mA , typical)
- Good ripple rejection
- Low number of external components
- No crossover distortion
- Low power dissipation
  Output Power : Po=2W at 12V/8Ω , 1.6W at 9V/4Ω and 1.2W at 9V/8Ω

BLOCK DIAGRAM



PIN CONNECTION



ABSOLUTE MAXIMUM RATINGS

Characteristics	Symbol	Value	Unit
Supply Voltage	Vcc	16	V
Peak Output Current	Ipk	1.5	A
Power Dissipation(at Tamb=50°C)	P_D	1.25	W
Operating Temperature	Topr	-20~70	°C
Storage Temperature	Tstg	-40~150	°C

THERMAL DATA

Characteristics	Symbol	Value	Unit
Thermal resistance junction-ambient	Rth(j-a)	100	°C/W

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified Vcc=9V,Tamb=25°C)

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Supply Voltage	Vcc			3		16	V
Quiescent Output Voltage(pin 5)	Vo			4	4.5	5	V
Quiescent Drain Current	Id				4	12	mA
Bias current (pin 3)	Ib				0.1		μA
Output Power	Po	THD=10% f=1kHz Rf=120Ω	Vcc=12V;R_L=8Ω		2		W
			Vcc=9V;R_L=4Ω		1.6		
			Vcc=9V;R_L=8Ω	0.9	1.2		
			Vcc=6V;R_L=4Ω		0.75		
			Vcc=3.5V;R_L=4Ω		0.25		
			Vcc=3V;R_L=4Ω		0.2		
Input sensitivity	Vi(rms)	Po=1.2W R_L=8Ω f=1kHz	Rf=33Ω		16		mV
			Rf=120Ω		60		
		Po=50mW R_L=8Ω f=1kHz	Rf=33Ω		3.5		mV
			Rf=120Ω		12		
Input resistance(pin 3)	Ri	f=1kHz			5		MΩ
Frequency response (-3dB)	B	R_L=8Ω Rf=120Ω C5=1000μF	C_B=680pF	25 to 7000			Hz
			C_B=220pF	25 to 20000			

ELECTRICAL CHARACTERISTIVCS

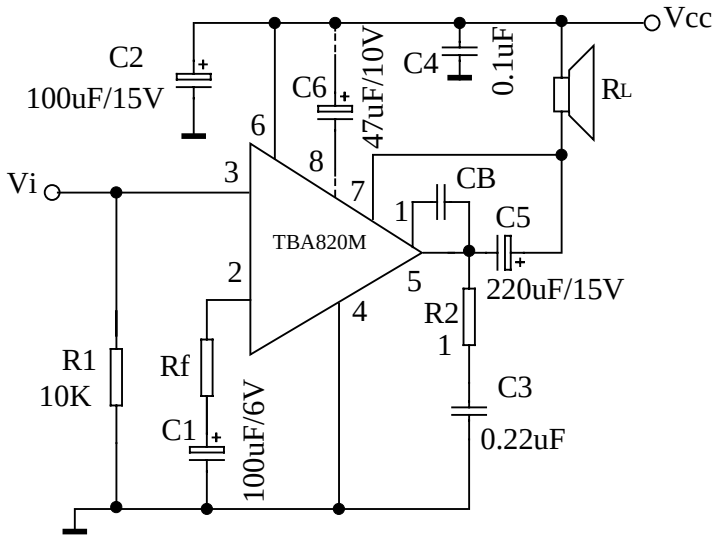
(Unless otherwise specified Vcc=9V,Tamb=25°C) Continue

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Distortion	THD	Po=500mW R_L=8Ω f=1kHz	Rf=33Ω		0.8		%
			Rf=120Ω		0.4		
Voltage Gain (open loop)	Gv	R_L=8Ω f=1kHz			75		dB
Voltage Gain (closed loop)	Gv	R_L=8Ω f=1kHz	Rf=33Ω		45		dB
			Rf=120Ω		34		
Input noise Voltage	V_N	Vcc=9V,B(-3dB)=25~20000Hz			3		μA
Input noise current	I_N	Vcc=9V,B(-3dB)=25~20000Hz			0.4		nA
Signal to noise ratio (*)	S+N/N	Po=1.2W R_L=8Ω Gv=34dB	R1=10kΩ		80		dB
			R1=50kΩ		70		
Supply voltage rejection (test circuit of 2)	SVR	R_L=8Ω f(ripple)=100Hz C6=47μF Rf=120Ω			42		dB

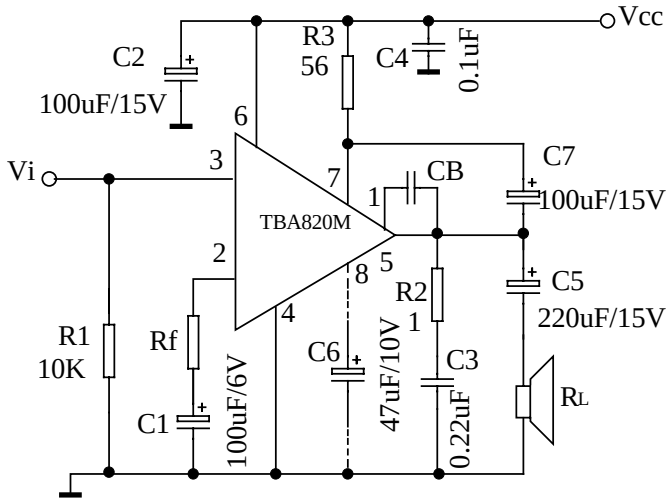
(*) B(-3dB)=25~20000Hz

TEST CIRCUIT

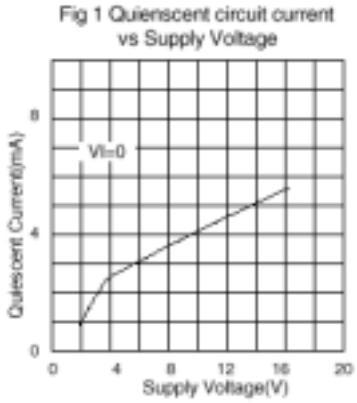
1. Circuit diagram with load connected to the supply voltage

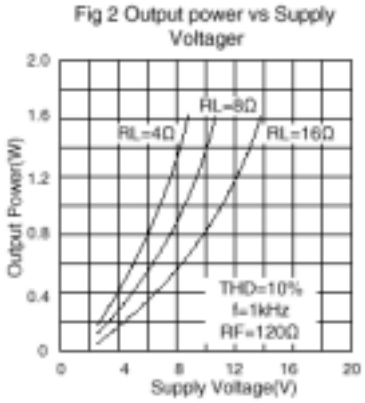


2. Circuit diagram with load connected to ground



CHARACTERISTICS CURVES





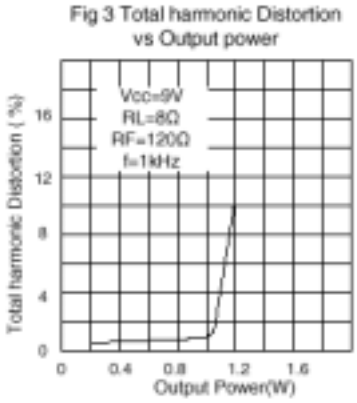


Fig 4 Voltage Gain vs Feedback resistance

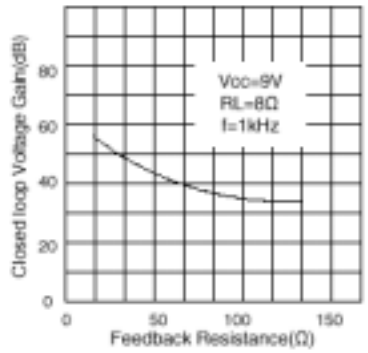


Fig 5 Power Dissipation vs Output power

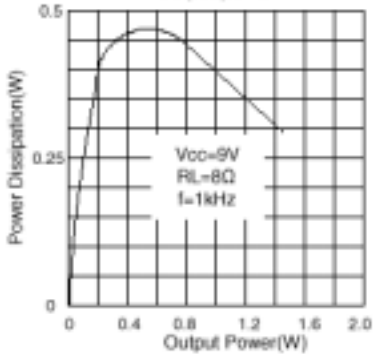


Fig 6 Power Dissipation vs Supply Voltage

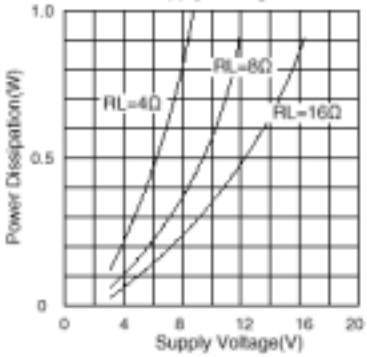


Fig 7 Frequency response

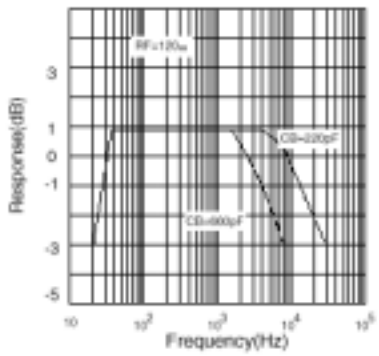


Fig 8 Total Harmonic distortion vs frequency