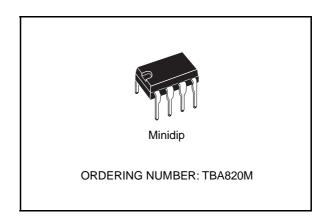


1.2W AUDIO AMPLIFIER

DESCRIPTION

The TBA820M is a monolithic integrated audio amplifier in a 8 lead dual in-line plastic package. It is intended for use as low frequency class B power amplifier with wide range of supply voltage: 3 to 16V, in portable radios, cassette recorders and players etc. Main features are: minimum working supply voltage of 3V, low quiescent current, low number of external components, good ripple rejection, no cross-over distortion, low power dissipation.

Output power: P_0 = 2W at 12V/8 Ω , 1.6W at 9V/4 Ω and 1.2W at 9V/8 Ω .



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
Vs	Supply voltage	16	V
Io	Output peak current	1.5	Α
P _{tot}	Power dissipation at T _{amb} = 50°C	1	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	°C

TEST AND APPLICATION CIRCUITS

Figure 1. Circuit diagram with load connected to the supply voltage

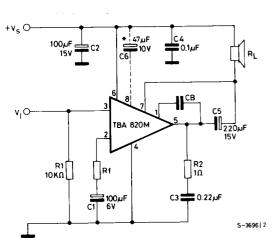
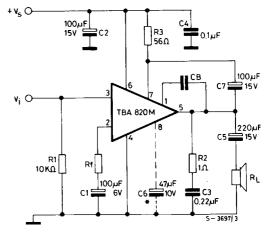


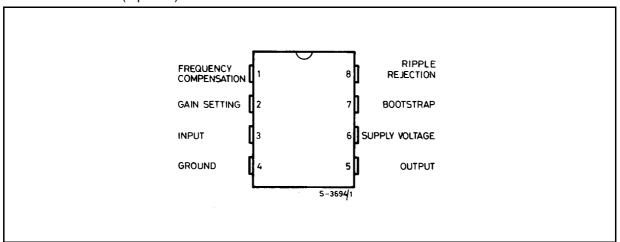
Figure 2. Circuit diagram with load connected to ground



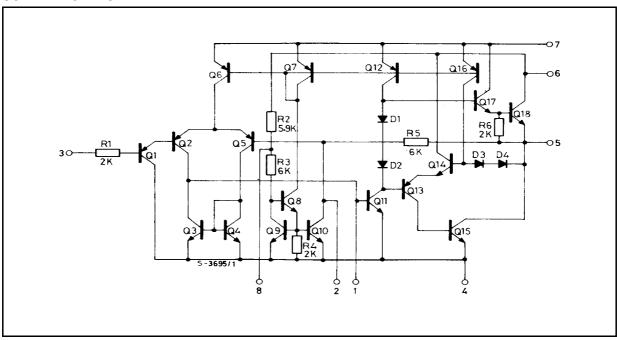
 Capacitor C6 must be used when high ripple rejection is requested.

September 2003

PIN CONNECTION (top view)



SCHEMATIC DIAGRAM



THERMAL DATA

Symbol	Parameter	Value	Unit
R _{th-j-amb}	Thermal resistance junction-ambient max	100	°C/W

2/6

ELECTRICAL CHARACTERISTICS (Refer to the test circuits Vs = 9V, T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
Vs	Supply voltage			3		16	V
Vo	Quiescent output voltage (pin 5)			4	4.5	5	V
I _d	Quiescent drain current				4	12	mA
I _b	Bias current (pin 3)				0.1		μΑ
Po	Output power	$d = 10\% \\ R_f = 120\Omega \\ V_S = 12V \\ V_S = 9V \\ V_S = 9V \\ V_S = 6V \\ V_S = 3.5V$	$f = 1 \text{ kHz}$ $R_L = 8\Omega$ $R_L = 4\Omega$ $R_L = 8\Omega$ $R_L = 4\Omega$ $R_L = 4\Omega$ $R_L = 4\Omega$	0.9	2 1.6 1.2 0.75 0.25		W W W W
Ri	Input resistance (pin 3)	f = 1 kHz			5		MΩ
В	Frequency response (-3 dB)	$R_L = 8\Omega$ $C_5 = 1000 \ \mu F$ $R_f = 120\Omega$	C _B = 680 pF	25 to 7,000		00	
			C _B = 220 pF	25 to 20,000		Hz	
d	Distortion	$P_{o} = 500 \text{ mW}$ $R_{L} = 8\Omega$ $f = 1 \text{ kHz}$	$R_f = 33\Omega$		0.8	0/	0/
			$R_f = 120\Omega$		0.4		%
Gv	Voltage gain (open loop)	f = 1 kHz	$R_L = 8\Omega$		75		dB
Gv	Voltage gain (closed loop)	$R_L = 8\Omega$	$R_f = 33\Omega$		45		dB
		f = 1 kHz	$R_f = 120\Omega$		34		ub.
e _N	Input noise voltage (*)				3		μV
i _N	Input noise current (*)				0.4		nA
<u>S + N</u> N	Signal to noise ratio (*)	$P_o = 1.2W$ $R_L = 8\Omega$ $G_v = 34 \text{ dB}$	R1 = 10KΩ		80		40
			R1 = 50 kΩ		70		dB
SVR	Supply voltage rejection (test circuit of fig. 2)	$R_L = 8\Omega$ $f_{(ripple)} = 100 \text{ Hz}$ $C6 = 47 \mu\text{F}$ $R_f = 120\Omega$			42		dB

^(*) B = 22 Hz to 22 KHz

Figure 3. Output power vs. supply voltage

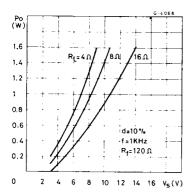


Figure 4. Harmonic distortion vs. output power

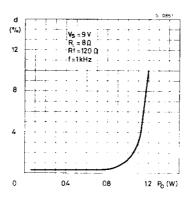


Figure 5. Power dissipation and efficiency vs. output power

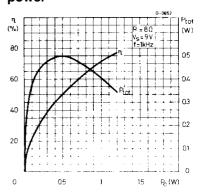


Figure 6. Maximum power dissipation (sine wave operation)

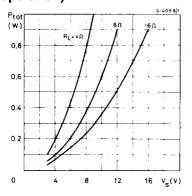


Figure 7. Suggested value of C_B vs. R_f

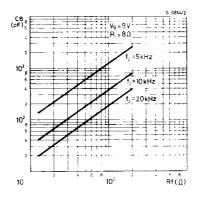


Figure 8. Frequency response

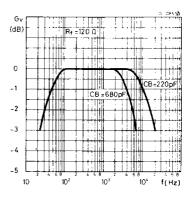


Figure 9. Harmonic distortion vs. frequency

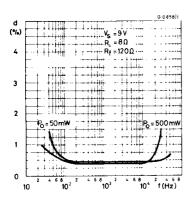


Figure 10. Supply voltage rejection (Fig. 2 circuit)

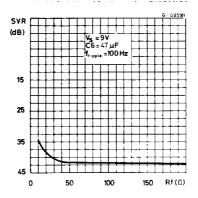
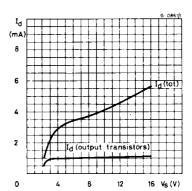


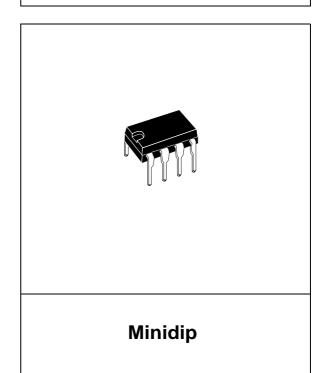
Figure 11. Quiescent current vs. supply voltage

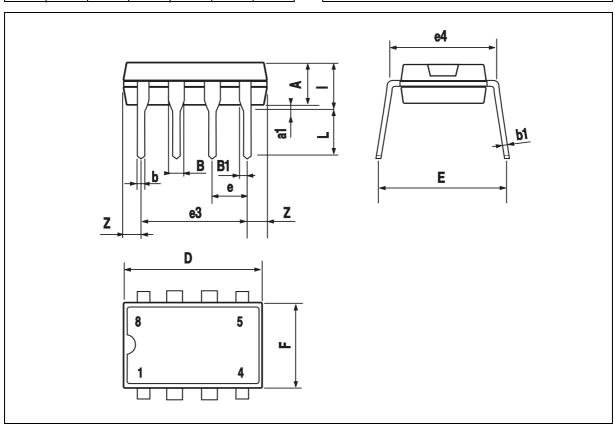


4/6

DIM.	mm			inch			
DIW.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α		3.32			0.131		
a1	0.51			0.020			
В	1.15		1.65	0.045		0.065	
b	0.356		0.55	0.014		0.022	
b1	0.204		0.304	0.008		0.012	
D			10.92			0.430	
E	7.95		9.75	0.313		0.384	
е		2.54			0.100		
e3		7.62			0.300		
e4		7.62			0.300		
F			6.6			0.260	
I			5.08			0.200	
L	3.18		3.81	0.125		0.150	
Z			1.52			0.060	

OUTLINE AND MECHANICAL DATA





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