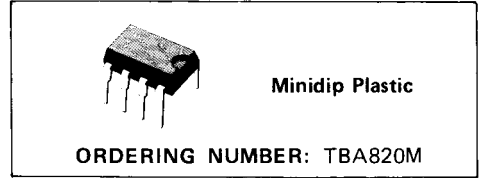


MINIDIP 1.2W AUDIO AMPLIFIER

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: $P_o = 2W$ at $12V/8\Omega$, $1.6W$ at $9V/4\Omega$ and $1.2W$ at $9V/8\Omega$.


ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	16	V
I_o	Output peak current	1.5	A
P_{tot}	Power dissipation at $T_{amb} = 50^\circ C$	1	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	$^\circ C$

TEST AND APPLICATION CIRCUITS

Fig. 1 - Circuit diagram with load connected to the supply voltage

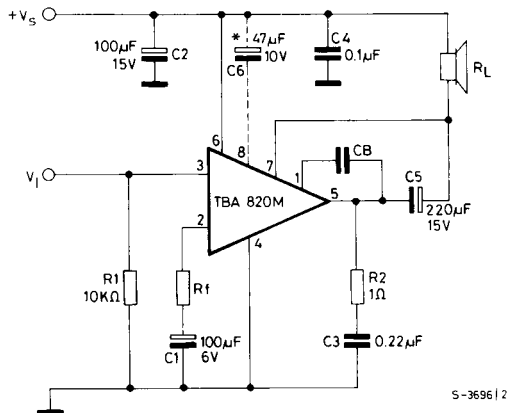
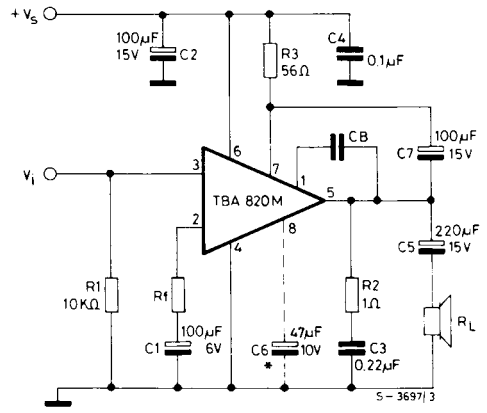


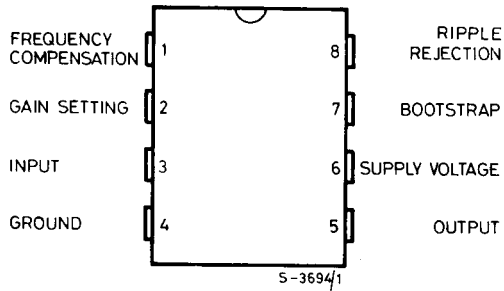
Fig. 2 - Circuit diagram with load connected to ground



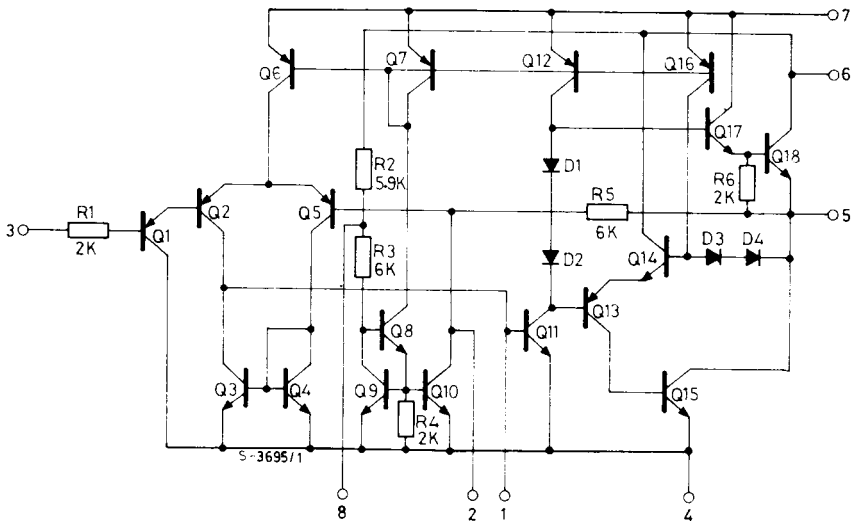
* Capacitor C6 must be used when high ripple rejection is requested.

CONNECTION DIAGRAM

(top view)



SCHEMATIC DIAGRAM



THERMAL DATA

$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	100	°C/W
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ELECTRICAL CHARACTERISTICS (Refer to the test circuits $V_s = 9V$, $T_{amb} = 25^\circ C$ unless otherwise specified)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
V_s	Supply voltage			3		16	V
V_o	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		μA
P_o	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 kHz $R_L = 8\Omega$ $R_L = 4\Omega$ $R_L = 8\Omega$ $R_L = 4\Omega$ $R_L = 4\Omega$	0.9	2 1.6 1.2 0.75 0.25		W W W W W
R_i	Input resistance (pin 3)	f = 1 kHz			5		M Ω
B	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			Hz
			$C_B = 220 pF$	25 to 20,000			
d	Distortion	$P_o = 500 mW$ $R_L = 8\Omega$ f = 1 kHz	$R_f = 33\Omega$	0.8			%
			$R_f = 120\Omega$	0.4			
G_v	Voltage gain (open loop)	f = 1 kHz $R_L = 8\Omega$			75		dB
G_v	Voltage gain (closed loop)	$R_L = 8\Omega$ f = 1 kHz	$R_f = 33\Omega$		45		dB
			$R_f = 120\Omega$		34		
e_N	Input noise voltage (*)				3		μV
i_N	Input noise current (*)				0.4		nA
$\frac{S+N}{N}$	Signal to noise ratio (*)	$P_o = 1.2W$ $R_L = 8\Omega$ $G_v = 34 dB$	$R_1 = 10K\Omega$		80		dB
			$R_1 = 50 k\Omega$		70		
SVR	Supply voltage rejection (test circuit of fig. 2)	$R_L = 8\Omega$ f (ripple) = 100 Hz $C_6 = 47 \mu F$ $R_f = 120\Omega$			42		dB

(*) B = 22 Hz to 22 KHz

Fig. 3 - Output power vs. supply voltage

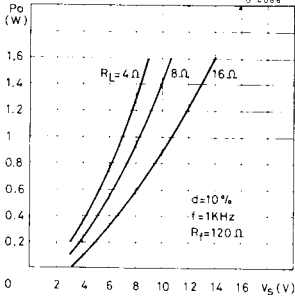


Fig. 4 - Harmonic distortion vs. output power

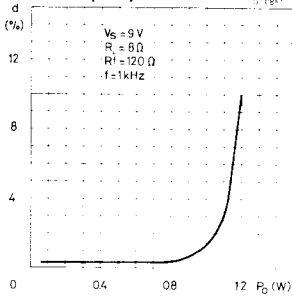


Fig.5-Power dissipation and efficiency vs. output power

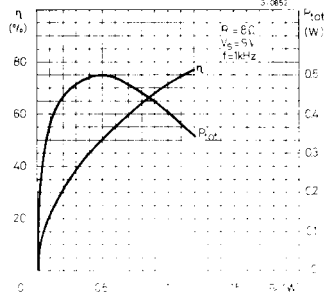


Fig. 6 - Maximum power dissipation (sine wave operation)

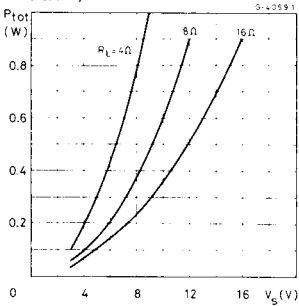


Fig. 7 - Suggested value of CB vs. Rf

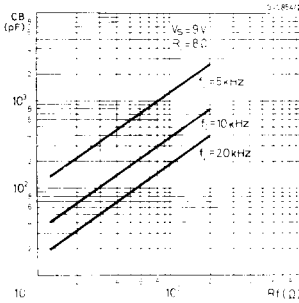


Fig. 8 - Frequency response

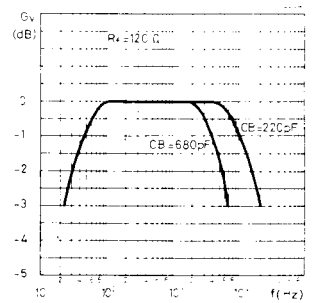


Fig. 9 - Harmonic distortion vs. frequency

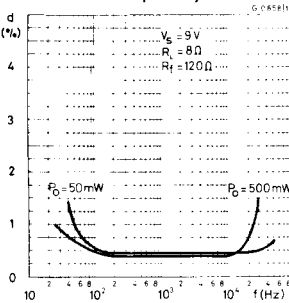


Fig. 10 - Supply voltage rejection (Fig. 2 circuit)

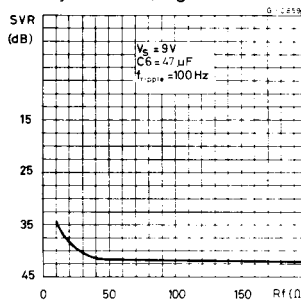


Fig. 11 - Quiescent current vs. supply voltage

