LINEAR INTEGRATED CIRCUIT

TBA800

5W AUDIO AMPLIFIER

The TBA 800 is a monolithic integrated power amplifier in a 12-lead quad in-line plastic package. The external cooling tabs enable 2.5W output power to be achieved without external heatsink and 5W output power using a small area of the P.C. board copper as a heatsink.
It is intended for use as a low frequency Class B amplifier.

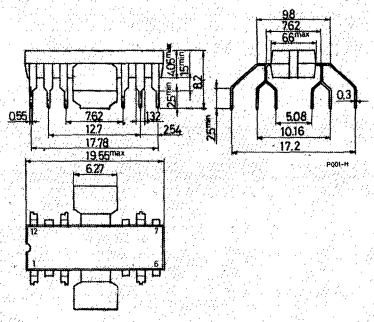
ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	30	V
I_o	Peak output current (non repetitive)	2	A
I_o	Peak output current (repetitive)	1.5	A
P_{tot}	Power dissipation at T_{amb}= 80°C	1	W
	at T_{tab} = 90°C	5	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	°C

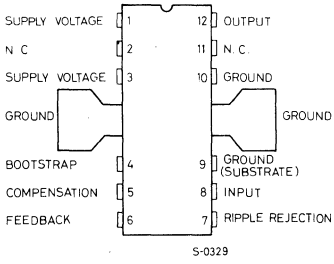
ORDERING NUMBER: TBA 800

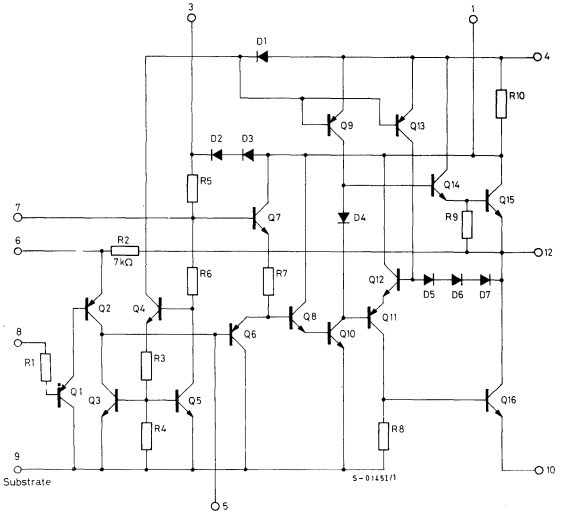
MECHANICAL DATA

Dimensions in mm

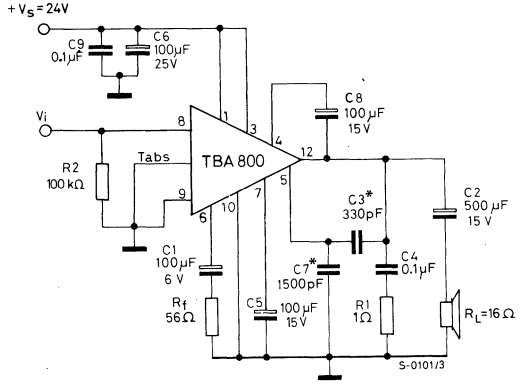


CONNECTION AND SCHEMATIC DIAGRAMS
(top view)





TEST CIRCUIT



* C3, C7 see fig. 5.

THERMAL DATA

$R_{th\ j\text{-}tab}$	Thermal resistance junction-tab	max	12	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	70*	°C/W

* Obtained with tabs soldered to printed circuit with minimized copper area.

ELECTRICAL CHARACTERISTICS (Refer to the test circuit, $T_{amb}=25°C$, $V_s=24V$, $R_L=16\Omega$, unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
V_o	Quiescent output voltage (pin 12)		11	12	13	V
I_d	Quiescent drain current			9	20	mA
I_b	Input bias current (pin 8)			1	5	μA
P_o	Output power	d = 10% f = 1 kHz	4.4	5		W
$V_{i(rms)}$	Input saturation voltage		220			mV
V_i*	Input sensitivity	P_o = 5W f = 1 kHz		80		mV
R_i	Input resistance (pin 8)	f = 1 KHz		5		MΩ
B	Frequency response (-3 dB)	C3 = 330 pF	40 to 20,000			Hz
d	Distortion	P_o = 50 mW to 2.5W f = 1 kHz		0.5		%
G_v	Voltage gain (open loop)	f = 1 kHz		80		dB
G_v	Voltage gain (closed loop)	f = 1 kHz	39	42	45	dB
e_N	Input noise voltage	B = 22 Hz to 22 KHz		5		μV
i_N	Input noise current			0.2		nA
η	Efficiency	P_o = 5W f = 1 kHz		75		%
SVR	Supply voltage rejection	f_{ripple} = 100 Hz C5 = 25 μF C5 = 100 μF		35 38		dB dB
I_d	Drain current	P_o = 5W		280		mA

* See fig. 6.

Fig. 1 - Output power vs. supply voltage

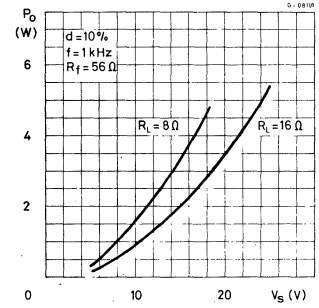


Fig. 2 - Maximum power dissipation vs. supply voltage

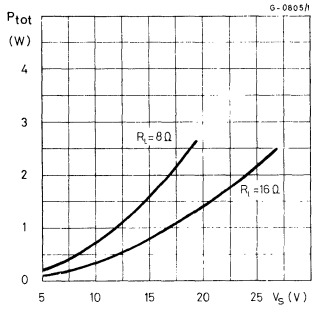


Fig. 3 - Distortion vs. output power

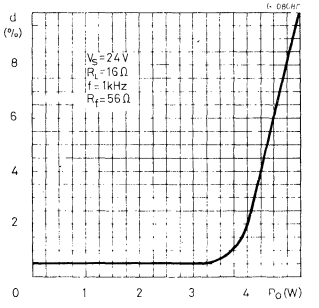


Fig. 4 - Distortion vs. frequency

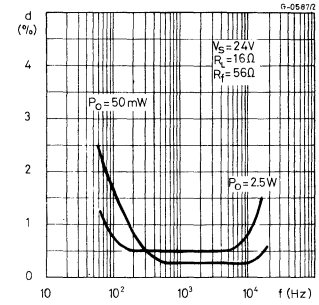


Fig. 5 - Value of C3 vs. R_f for various values of B

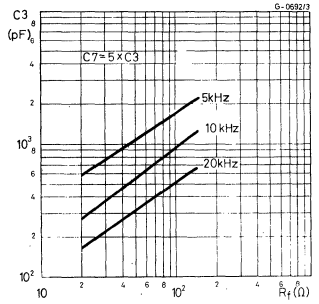


Fig. 6 - Voltage gain (closed loop) and input voltage vs. R_f

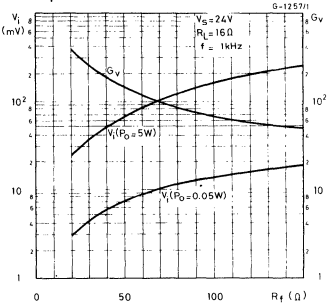


Fig. 7 - Power dissipation and efficiency vs. output power

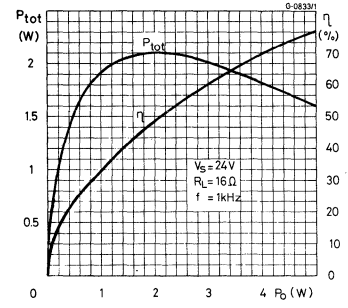


Fig. 8 - Quiescent output voltage (pin 12) vs. supply voltage

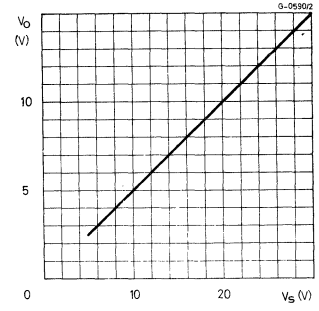
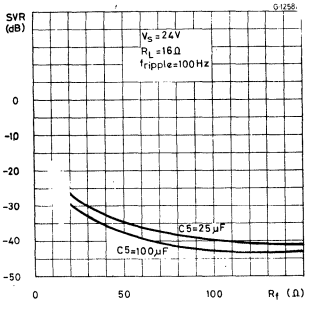
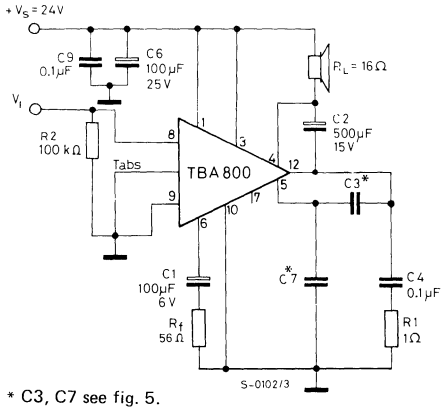


Fig. 9 - Supply voltage rejection vs. R_f.



APPLICATION INFORMATION

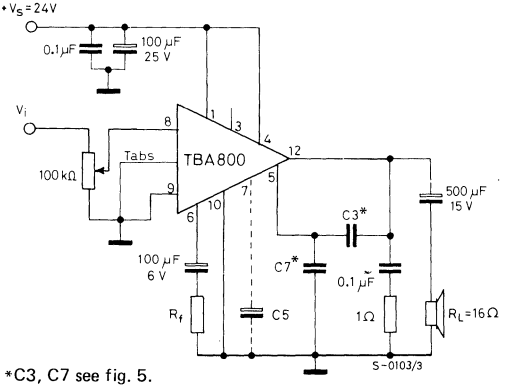
Fig. 10 - Circuit with the load connected to the supply voltage



* C3, C7 see fig. 5.

Compared with the other circuits, this configuration entails a lower number of external components and can be used at low supply voltages.

Fig. 11 - Circuit with load connected to ground without bootstrap.



*C3, C7 see fig. 5.

This circuit is only for use at high voltages. The pin 3 is left open circuit, this automatically inserts diodes D2-D3 (see schematic diagram) and this enables a symmetrical wave to be obtained at the output.