

COMPONENTS

TBA820M AMPLIFIER

Resistors

R1 22Ω
R2 1Ω
All 0.25W 5% carbon film

Potentiometers

VR1 10k min. rotary carbon, log.
VR2 100Ω enclosed carbon preset

Capacitors

C1 4μ7 radial elect. 25V
C2, C8 220μ radial elect. 25V (2 off)
C3, 100n disc ceramic
C4 100μ radial elect. 25V
C5 47μ radial elect. 25V
C6 390p ceramic
C7 220n polyester

Semiconductor

IC1 TBA820M audio power amp i.c.

Miscellaneous

LS1 4 to 32 ohm loudspeaker (see text)

Printed circuit board available from the EPE PCB Service, code 345 (TBA820M); case (optional), size and type to choice; 8-pin d.i.l. socket; multistrand connecting wire; audio screened cable; solder pins; solder etc.

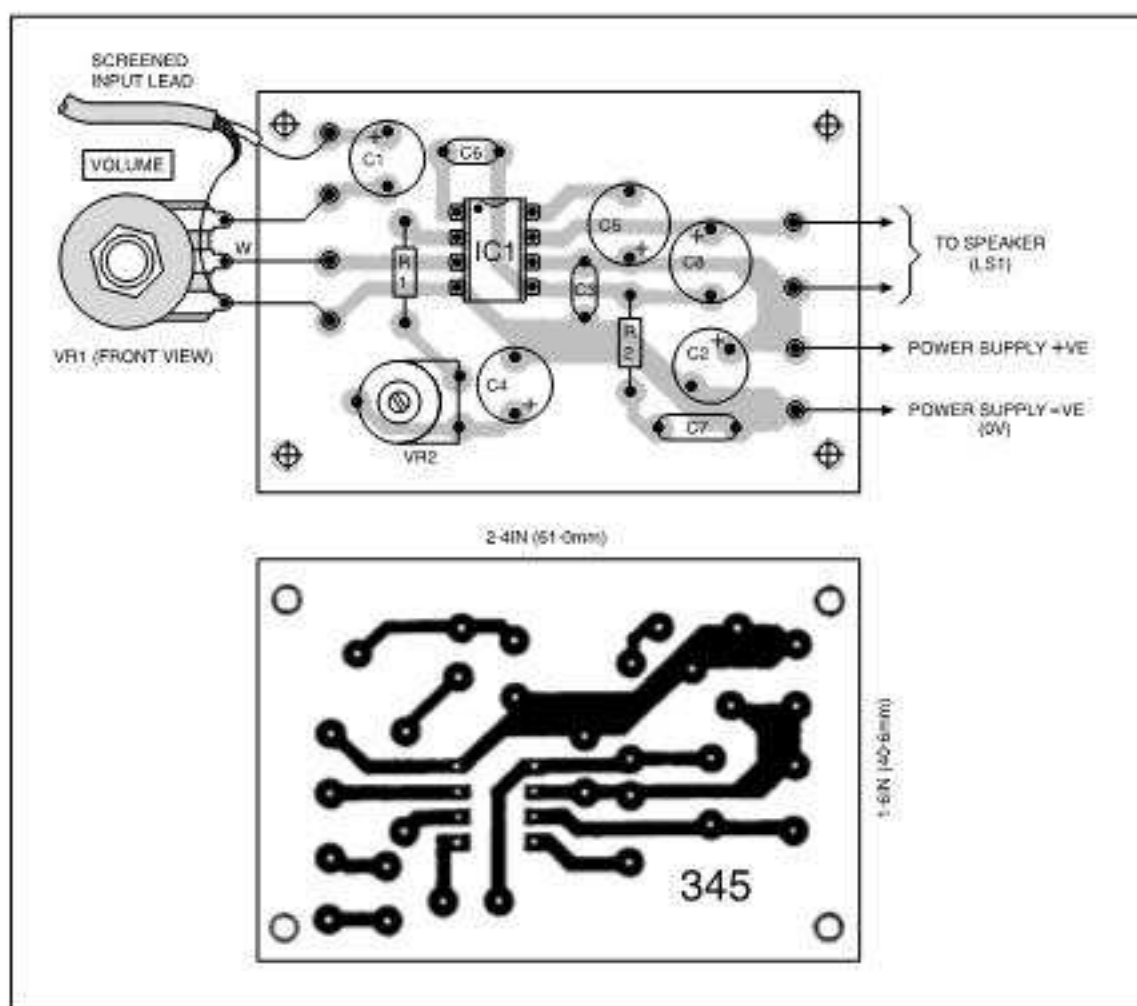


Fig.6. Topside component layout, off-board wiring details and full-size copper foil master for the TBA820M Amplifier.

series with capacitor C4, controls the shunting effect and, with the sample tested, gain could be set between 40 and 230.

High frequency response is determined by capacitor C6. The response at the -3dB points for different capacitor values is also listed in the table. If desired, the value of C6 can be increased to reduce the upper frequency response even more.

In this application, the speaker LS1 is

connected to the positive supply rail as this reduces the component count (a capacitor and resistor are saved).

CIRCUIT BOARD

The printed circuit board component layout, wiring details and full-size copper foil master pattern are shown in Fig.6. This board is available from the EPE PCB Service, code 345 (TBA820M).

LM380N AMPLIFIER

An amplifier circuit diagram incorporating the LM380N audio i.c. is shown in Fig.7. A general specification guide is shown below.

The manufacturers, National Semiconductor, have made provision for optional heatsinking via some of the pins, and this makes the package larger (14-pin). The output is short-circuit proofed and there is dissipation limiting. Gain is fixed.

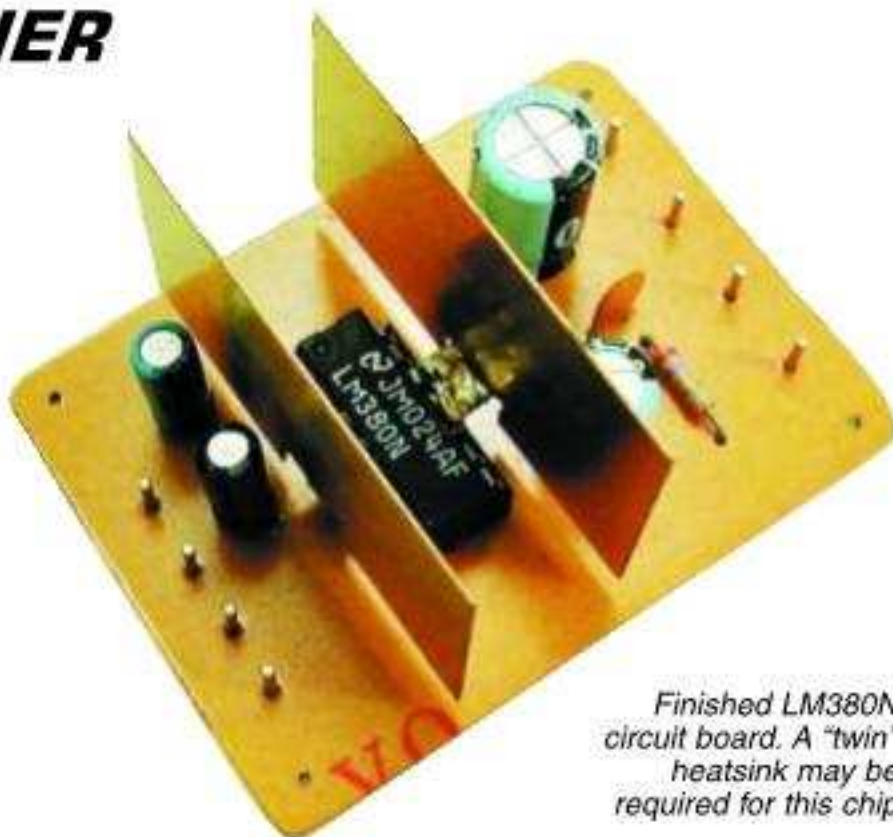
Again, the purpose of the various components will be evident from earlier descriptions. In this version of the circuit, the signal

LM380N POWER AMPLIFIER

R.M.S. power output just before the onset of waveform clipping

Speaker Impedance Ohms	Supply Voltage			
	9V	12V	15V	18V
4	400mW	1.12W	1.62W	—
8	275mW	720mW	1.32W	2.25W
16	137mW	405mW	720mW	1.32W
32	68mW	202mW	360mW	765mW

Quiescent current	13mA
Input resistance	150k ohms
Input sensitivity for 720mW output (8 ohm load, 12V supply)	50mV r.m.s. (gain 50)
Absolute maximum supply voltage beyond which damage will occur	22V



Finished LM380N circuit board. A "twin" heatsink may be required for this chip

A heatsink should be fitted if the device is to be operated, other than intermittently, at output levels in excess of 1W.

Without a heatsink, the suggested maximum supply voltages are:

with a 4 ohm speaker	12V
with an 8 ohm speaker	15V
Frequency response	up to 100kHz