

# SIMPLE AUDIO CIRCUITS

## Part 1 – Introduction and Power Amplifiers



*A selection of "pic-n-mix" low-cost audio circuits – from preamplifier to speaker!*

**W**HATEVER their particular area of interest, most electronics enthusiasts encounter the need to amplify and reproduce audio signals. The final stages of radio receivers, intercom units, security and surveillance installations, or just a hankering for a big sound from a Walkman or portable CD player, all involve audio amplification and a speaker system. And the amplification usually goes hand-in-hand with some form of signal processing.

Music reproduction calls for a wide frequency response and tone-control circuitry. Speech communication, especially

under difficult conditions, is greatly clarified if the frequency response is curtailed.

This short series of articles describes simple, but effective, ways of meeting these different requirements. Although the circuits are capable of a good standard of reproduction, they will particularly interest the constructor who looks for plenty of performance per pound or dollar.

We begin with the power amplifier. Six alternatives are given and, with the requirement of maximum performance for minimum cost and effort, they are all based on widely available integrated circuits (i.c.s):

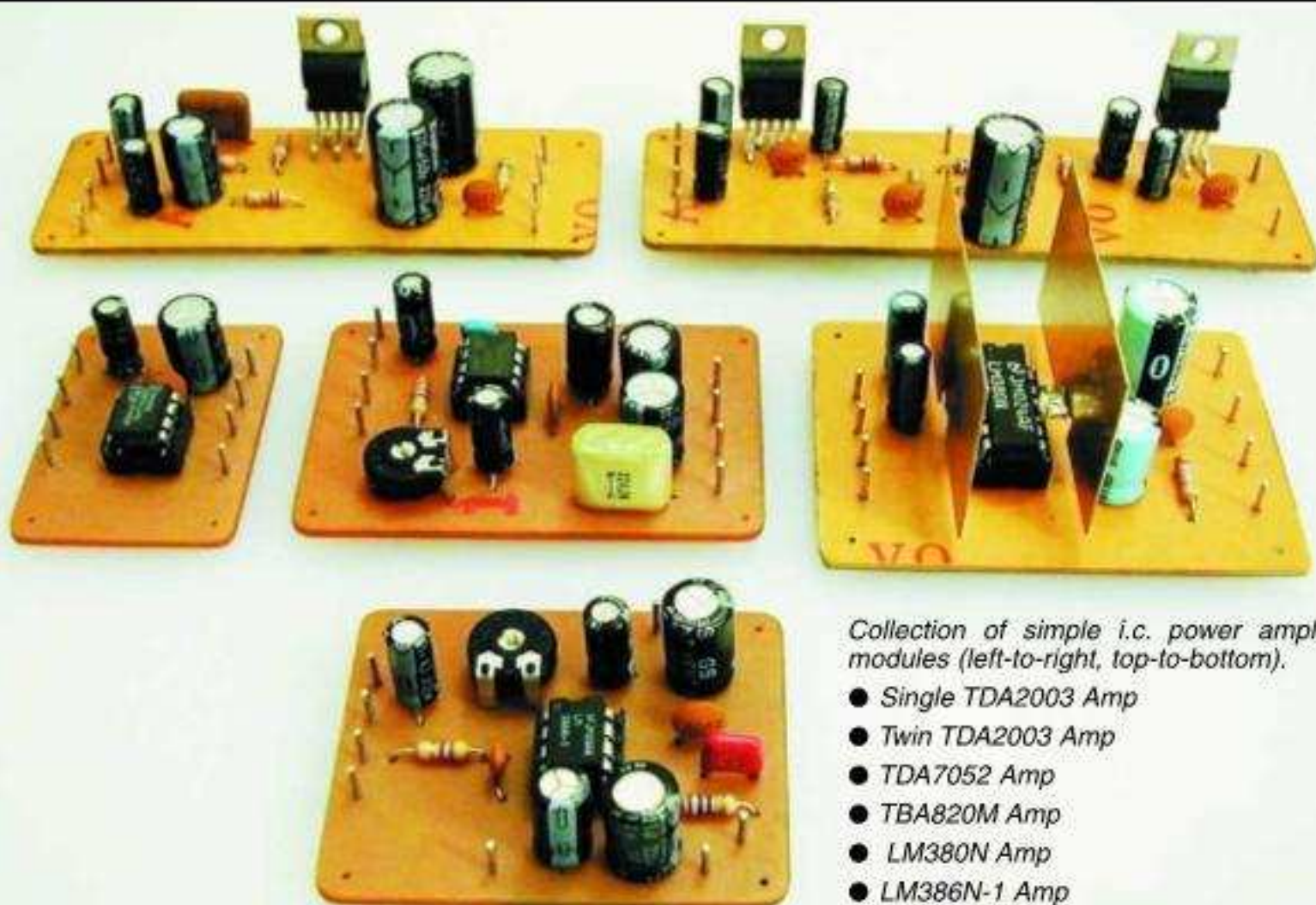
### HOW MUCH POWER?

Before considering the various circuits, it is worthwhile to reflect on the amount of power actually needed.

Clear reproduction in Walkman type earphones of reasonable sensitivity can be achieved with a miserly milliwatt (0.001W). When listening to talk programmes in a quiet domestic setting, the power fed to the speaker will hover around 50mW (0.05W), and this is ample for the operator of a communications receiver whose ears are closer to the sound source.

During the valve era, ten watts was considered adequate for the realistic reproduction of orchestral music, and some experts suggested a figure as low as five. One watt of power delivered to a

● LM386N-1    ● TDA7052    ● TBA820M    ● LM380N    ● TDA2003.



*Collection of simple i.c. power amplifier modules (left-to-right, top-to-bottom).*

- Single TDA2003 Amp
- Twin TDA2003 Amp
- TDA7052 Amp
- TBA820M Amp
- LM380N Amp
- LM386N-1 Amp