

# POOR MAN'S HEARING AID

## ■ EFY LAB

This miniature stereo preamplifier-cum-headphone amplifier circuit works off a 3V battery (lithium non-rechargeable coin cell). Although its performance is not comparable to that of commercially available sophisticated hearing aids, still it can serve the purpose well for persons with a low degree of hearing impairment. Its maximum power output at 1 kHz is around 8 mW, which is adequate for driving the headphones.

The circuit, as shown in Fig. 1, is wired around Sanyo's MSI (medium-scale-integrated) surface-mount 10-pin DIL IC LA4537M, which measures just  $8 \times 6.4 \times 1.5$  mm<sup>3</sup>. A functional block diagram of LA4537M IC is shown in Fig. 2. Since the MSI's pin-to-pin (centre-to-centre) distance is only 1 mm, the circuit has to be assembled on a properly designed PCB using soldering iron with a pointed bit. Two ICs (LA4537M) have been cascaded to increase the overall sensitivity and thereby the reception range. You can adjust the volume of the stereo channels indi-

vidually, as per your requirement, using presets VR1 and VR2, respectively.

With 3V supply voltage, you can afford to use 1/8-watt resistors, while the electrolytic capacitors' voltage rating can be as low as 5V. This will allow the assembled circuit to occupy very little space. Apart from the usual battery 'on'/'off' switch S1, muting 'on'/'off' switch S2 has also been provided. Both S1 and S2 could be PCB-mount slide switches.

After assembling the main circuit,

house it in a thin metallic case, which can then be mounted in the middle of a metallic/plastic headband (generally used by telephone operators), while the two microphones with their associated earpieces are to be extended using screened wires so that these (microphone-earpiece sets) can be kept closest to the respective earlobes.

**Caution.** Ensure that shielded microphone wires do not touch (short) the shielded earpiece

wires, as these are connected to different pins (reference input pin 5 and ground pins 3 and 8, respectively) of ICs LA4537M. You may use an insulating sleeve over each of the shielded wires. ●

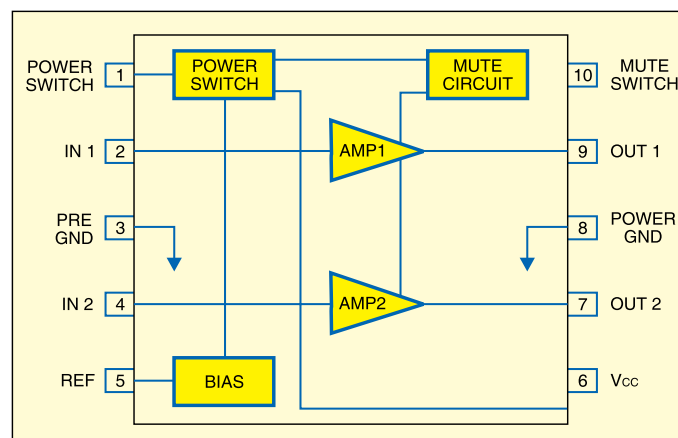


Fig. 2: Functional diagram of IC LA4537M

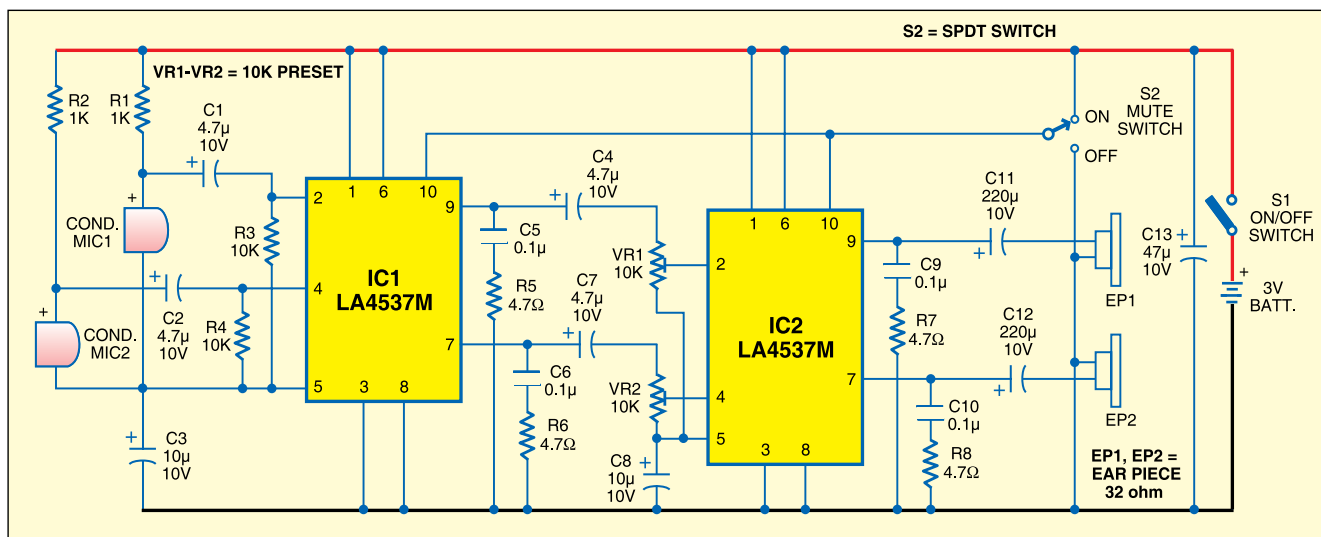


Fig. 1: Circuit for the hearing aid