

Upgrading headphone amplifier to produce more power

I have recently constructed the SILICON CHIP High-Performance Stereo Headphone Amplifier (September & October 2011; www.siliconchip.com.au/Series/32). As I wish to drive loudspeakers, I installed the 4700pF capacitors and obtained the 22VA plugpack, as per the articles.

I am very happy with the amplifier's performance with headphones, however I feel that the 4.25W music power available is somewhat limiting when running small hifi loudspeakers.

So I am now considering modifications to increase the audio power output and would appreciate any comments or recommendations you can offer.

The first possibility I have considered is to adopt some of the design changes that were incorporated in the Tiny Tim amplifier design (October & December 2013 and January 2014; www.siliconchip.com.au/Series/131).

In other words, to continue using the plugpack but take the unregulated

voltages (approximately $\pm 17V$ DC) at the cathode of D3 and the anode of D5 and feed these to the points C and D via jumpers as shown in December 2013 Tiny Tim article.

I would also feed the regulated voltage via jumpers to the points shown in the article (after cutting the tracks as mentioned in the article, of course).

The second possibility is to build the general purpose supply as used in the Tiny Tim amplifier and remove the now-redundant parts from the headphone amplifier in order to implement this change, as well as upgrading the components indicated in the Tiny Tim article.

The power transformers specified raise a question. Will the 30VA transformer provide more power compared with the 20VA unit or will the difference in power be negligible?

Thank you for the efforts which obviously go into producing an interesting quality magazine. (R. K., Cessnock, NSW)

• We recommend that you build the Tiny Tim version of the amplifier

but it is largely immaterial whether you use the 20V or 30VA transformer. The larger transformer would allow slightly higher continuous power output to be delivered from both channels but the difference would be completely inaudible on normal program signals.

If you do decide to modify your board to the Tiny Tim standard, don't forget to also make the component changes which allow it to operate at a higher power level, such as changing the transistors to the versions which can handle higher dissipation (ie, Q7, Q9, Q19 and Q21). Refer to the changes shown in red on Fig.5 (pages 60 & 61 of the October 2013 issue).

By the way, we tested the Headphone Amplifier driving a pair of Wharfedale Atlantic AT-400 tower speakers and achieved very adequate volume levels for listening in a modest-size room, however, they have a rated sensitivity of 92dB/1W @ 1m which is quite high. Chances are your speakers are less sensitive, or perhaps you are running them in a larger room.