Subject: SMPS Trick
Posted by gofar99 on Sun, 05 May 2024 02:33:04 GMT
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Hi Everyone this was posted on another site for their benefit as well.

Hi everyone. Once in a while a light bulb comes on in my brain. I had one of hose moments this morning. You have all probably seen the under $10 (US) DC to DC SMPS. The ones with both plus and negative outputs. Supposed to be able to do about 400 VDC from 12 VDC. They are noisy, have crappy regulation and largely not too useful in audio designs. I did manage to use one in the tube headphone amp that uses a push-pull arrangement like an Oddwatt. It used a 6DJ8 per channel and had a voltage gain of less than unity. It actually works quite well and the SMPS had 300uf and 0.1uf capacitor with a 1.5H choke to filter it. S/N surprisingly was really good and the gain was no issue as 1 volt output (max is about 10) will push about 16 mw into 62 ohms and with most phones having sensitivities in the 100 db per mw it will bust your ears. At max output into 62 ohms (seems a typical impedance) it will deliver over one watt. Ouch. So back to the thought for the day. If instead of using the +V and ground connections in the SMPS use the +V to -V and leave the ground disconnected. What happens is that common mode noise between them is less than on either side by themselves. In my testing today it was about 6 db. The waveform was the same though. It is a steep turn on with a sloping drop. Under test this AM it seemed to be about 7.5KHZ with minimal load. It will likely change frequency with loading. Without any external filtering and set for 44+44 (the lowest it would go) the peak junk was about 8%. So filtering is clearly still needed. Anyhow the tip might be of use to some of you