

Re: Need ideas for 8-channel output

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- *From:* Jamie <jamie_kallpa_not_valid_after_kallpa_@xxxxxxxxxxx>
 - *Date:* Wed, 01 Jul 2009 13:36:58 -0400
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Doug B. wrote:

Hello all,

I am getting started in electronics and would like some design advice for a circuit that I have built, but am trying to improve.

This project involves a simple, 8-channel power amplifier. The input will be a 1–10 Hz, audio-level control signal that will be either a pure sine wave or something very close to it. The output stage will drive a mainly resistive load (NOT audio at all, just driving lamps, solenoids or similar). My current design and prototype uses IRF-511 power MOSFETs, driven in switching mode from a 13.2 V regulated power supply.

The client is a artist friend of mine who uses sub-audio range signals to control a bunch of different gadgets he has built. Currently he amplifies these with a stack of car stereo amps that are hard to transport and only provide four mono channels each. I believe we can get all eight channels of amplification into a small box, as long as the output stage is driven PWM-like. I am basically looking for a way to provide reasonable dynamic range on the output, given the audio-level inputs.

My current prototype uses an LM124 op amp with > 100db gain to transform the input into a square wave, directly into the gate of the IRF-511. This "on or off" amplification is not flexible enough. My current thinking is that PWM is the way to go on the output, but how to do that for 8 channels? I have looked into Class D amps, but workable designs seem over my head in complexity and would require absurdly large output filters for the low frequencies involved.

I have thought of using an analog Mux and microcontroller with ADC to sample the levels on the 8 input channels. Given the low frequencies this should be fairly straightforward.

I'm not sure how to handle the output, however. I could create a PWM signal in the uController and analog Mux it out to an op amp buffer/

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gate driver, but I would only get 1/8 of the PWM cycle on each channel.

Ideas, anyone?

Thanks,

doug beeson

Maybe that'll help you out.

<http://focus.ti.com/lit/an/sloa031/sloa031.pdf>

you could make a board that holds a single Class D IC and power driving section, out source the boards to be etched and drill and simply make a form of card rack to support the number of channels desired.

This rack would have one main power supply for it.

Just an idea..

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