

## Re: Rectifier-LP filter circuit

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- *From:* Fred Bloggs <nospam@xxxxxxxxxxx>
  - *Date:* Sun, 11 Nov 2007 12:00:25 -0500
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Spehro Pefhany wrote:

On Sat, 10 Nov 2007 20:40:29 -0500, the renowned Fred Bloggs <nospam@xxxxxxxxxxx> wrote:

Spehro Pefhany wrote:

Hi, I'm analyzing a circuit (which I didn't design). It's part of a meter that outputs a DC voltage related to a 1kHz fairly low-level square-wave signal. Supply is +/-8 regulated. The JFET op-amps can handle +/-30V differential input voltage (provided the inputs don't go below the negative rail in particular).

<http://server2.hostingplex.com/~zstoretr/meter.gif>

This circuit is a little different from what I'm used to using for the precision rectification/LPF stages. C7 is polarized, minus on top, BTW.

Can anyone see a good reason for D3? (or R13 for that matter, other than to increase the noise)?

Thanks!

Best regards, Spehro Pefhany

Re: Rectifier-LP filter circuit

It's not a rectifier, it's an inverting positive peak detector with gain of 12.1.

Looks like that doesn't it? .. but that's not how it behaves (in simulation anyway), and not how it functionally has to work.

<http://server2.hostingplex.com/~zstoretr/output.gif>

The waveform at pin 1 is exceedingly ugly. Looks like it's slew rate limited.

<http://server2.hostingplex.com/~zstoretr/outputa.gif>

Best regards, Spehro Pefhany

That would be right, looking at the schematic of the TL082 in the TI datasheet, you see a bipolar Class AB output stage with 64 ohms in each emitter joined to a common 128 ohm in series with the output. That's about 200 ohm making for a 1ms time constant for the 4.7u load, while things are open loop. I'm not sure about D3, thought it maybe a reverse current compensation for D1 but R15 contributes so much bleed current, don't think that's it. Another possibility may have been for a nonlinear resistance, expediting reaching a balance condition when voltage drop exceeds 0.6V or so, but don't really see how that fits in that diagram. Must be for some kind of transient response that's not obvious, don't think it has to do with ESL on C7 since U2B should be able to follow anything U2A dishes out, but maybe, dunno. Are those gif's a simulation or measurement?