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Subject: 300B cascode + grid choke Spice simulation

Posted by [Damir](#) on Sun, 04 Dec 2005 15:36:43 GMT

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There`s a E182CC cascode driver + 300 B SE stage simulation. I substituted 220k grid resistor with grid choke model, consists of (constant) inductance in series with its winding resistance, and with stray shunt capacitance,  $C_w$ . The  $C_w=200\text{pF}$  value I "made up", like not too good example. This is a simplified model, but "good enough" for our simplified considerations :-). Our driver has some good properties (low Miller capacitance, amplification  $\sim 35$ , good sound ), but unfortunately, has  $R_{out} \sim R_a$ , or 12kOhms in this example. The simulated frequency response we can see in lower diagram - high frequency started to fall after 20kHz, and we have LF resonance ( $\sim 8\text{dB}$ ) on 10Hz. For later, if we want to avoid this and have a linear response down to 2Hz, we must use a much larger coupling cap  $C_i$ , about  $4,7\mu\text{F}$ . And for HF - use a grid choke with smaller  $C_w$ , or another driver - with lower  $R_{out}$ . If we use, say, common cathode 6C45Pi, our  $R_{out}$  would be much smaller, about 1/10 then cascode, and now HF "falling" problem is gone, but 10Hz "hump" would be even larger - need larger  $C_i$ ... Knowing  $C_w$  helps a lot in design process - especially with rel. high  $R_{out}$  drivers (cascodes, pentodes, some triodes).

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