Subject: Questions/Guenivere
Posted by Manualblock on Sat, 01 Jan 2005 16:00:06 GMT
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Can we figure the output impedance of the pre? If so, can someone volunteer to take the walking tour through the procedure of finding and figuring the numbers. Then how to adapt or figure the required input impedance for the eventual power amp. Thanks for bearing with these unreasonable demands with patience; J.R.

Subject: Re: Questions/Guenivere
Posted by Damir on Sat, 01 Jan 2005 20:04:37 GMT
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If we use "normal", anode output, then output impedance of the stage is anode resistance in our working point (about 2,5 kOhms, or little less) in parallel with anode load (in this case CCS with about 1MOhms resistance). Then our Rout=ra~2k5.When we use "mu" (or Source) output, then our Rout is somewhat lower. I have no experience with depletion-mode mosfets and can`t say exact number, but I suspect not by much (simple CCS). The "rule of thumb" for the impedance "tuning" is at least 10:1, or we can "drive" about 25kOhms input impedance. That means every "normal" tube amp with Rin of 47k or more can be used with our preamp.And few words about actual building - IMO, it`s very easy to build nice oscillator, but not so easy "clean" preamp. I`d use resistor "stoppers" on everything. Grid stopper (say 1k) on the 5687 (solder close to the pin, no lead). Then, Gate stopper (1k), and our P1 substitute with required resistor (adjusted on test). This resistor (between the Source and anode pin) solder in a way that both leads are very short. I`d use resistor between B+ and Drain, say 220 Ohms, again - short lead to the mosfet. And finally, I`d use output resistor, between Source and C2, say 220 Ohms again (close to S). That resistor would raise output impedance a bit, but it`s a precaution against oscillations. Maybe I`m overly paranoid and have a bad luck before?Doug, feel free to jump in with your experience/opinion ...

Subject: More... :-)
Posted by Damir on Sun, 02 Jan 2005 09:58:43 GMT
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Forgot to add... Source follower output has another good feature, it isolates our triode and the load (capacitive cable + low input resistance of the amp). If we have rel. high input amp (say, >100k), we can try anode output, too. Then our triode has load Rccs//Ramp - not so high anymore.Our DN2540 facing upward (in TO-220 case) has leads (from left to right) - G,D,S. Note that D is connected at the tab. We must use a little heatsink (see the picture, hosted by

"ImageShack" :-)), and thermally conductive insulator. Better not to mount heatsink on the chasis - safety and negative influence of the stray capacitance.We`d use two series connected cheap LED, cathode (short lead) goes to ground.

Subject: Re: More... :-)
Posted by Wayne Parham on Sun, 02 Jan 2005 20:57:35 GMT
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Looks like it's getting about time to get out the soldering iron and give legs to some of these ideas. Now that the holidays are through, some of us will probably have more time. I have a lot on my plate, but I plan on finding time to prototype these designs and give 'em a try.

Subject: Re: More... :-)
Posted by Damir on Sun, 02 Jan 2005 23:01:18 GMT
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I saw "down there" that you have OrCad (PSpice) program. I think there`s a model for DN2540 on the "Supertex" pages. Some simulations would be nice... For example, we can find output resistance of the circuit - use small input AC voltage (say 50mV) and measure output voltage on the large load (several Megs), say we`d get 0,8V. Then lower the load resistor til you got half of it - 0,4V, it means that output resistance is equal to the load resistance.BTW - I don`t have this program and real DN2540...

Subject: Output Z
Posted by PakProtector on Mon, 03 Jan 2005 00:12:22 GMT
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Hey-Hey!!!,There are two things to account for the output Z. First is the series cpaacitor we are using for coupling. For a 5-mike we're looking at ~1k5 @ 20 cps. 1/[2*Pi*{frequency in cps}*{capacitance in farads}] if you feel like breaking out your slide-rule.I have seen measurements made by a trustworthy and skilled experimenter indicating that the mu output, at the currents we are looking at(10 mA) is granting output z in the few hundreds of Ohms.So the low freq performance is dictated by the cap, and at mid-band won't be worse than a few hundred Ohms. Makes silly-expensive patch cords less of a requirment, no?regards,Douglas

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Subject: OrCAD Demo CD
Posted by Wayne Parham on Mon, 03 Jan 2005 00:28:22 GMT
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I'd be happy to model the circuit. I have the Supratex Spice models, so I can model circuits with the DN2540. I'm pretty sure I have a model for the 5687 tube too, but I'll check. If not, I know where to get it; Check here.You might ask OrCAD to send you their demo CD. Click here to go to the request form. It will analyze circuits having up to 50 parts (I think), which is plenty for many tube designs. I'll be happy to make a model of any of these circuits we're talking about, but I think you would enjoy having the demo version of OrCAD/PSpice.

Subject: Re: OrCAD Demo CD
Posted by Damir on Mon, 03 Jan 2005 12:38:47 GMT
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Thanks, PSpice is the "standard", but I use "Circuit Maker", with 3f4/3f5 spice "engine", more "intuitive" to work with, for me - of course (tried "OrCad" and some others)... My old PC is filled with those tube/spice things :-).You can find a (nearly) value of "current setting" resistor (P1) too.

Subject: Re: Output Z
Posted by Manualblock on Mon, 03 Jan 2005 17:19:46 GMT
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Say T; can you explain the patchcord comment please? Is that a function of the cable's capacitance in series with the coupling cap?

Subject: Re: Output Z
Posted by PakProtector on Mon, 03 Jan 2005 18:44:44 GMT
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The explanation, as I see it:The Kenwood L-07 pre-amp had optional 10m cables to connect to the L-07m monoblock amps. They claimed that the super-low output z of the pre made the 5000 pF of cable capacitance (39 and change feet worth...) a non-issue. It was capable of driving a capacitive load, or so the claims went.So the few hundred ohms will do just fine with a few feet of moderatly capacitive patch cords...regards,Douglas