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Subject: Here's Guinevere

Posted by [PakProtector](#) on Wed, 29 Dec 2004 14:03:00 GMT

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here is the link in copy and paste format. and hotlinked

below:<http://gallery.AudioAsylum.com/cgi/gi.mpl?u=12633&f=GuinevereLS.jpg> regards, Douglas

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Subject: Here's Guinevere

Posted by [PakProtector](#) on Wed, 29 Dec 2004 14:23:50 GMT

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HEy-Hey!!!, Seems to have lost some detail, I will get a better image up soon. regards, Douglas

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Subject: Re: Here's Guinevere

Posted by [Manualblock](#) on Wed, 29 Dec 2004 14:49:44 GMT

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Very nice work T; how does it sound?

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Subject: Re: Here's Guinevere

Posted by [PakProtector](#) on Wed, 29 Dec 2004 17:02:08 GMT

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It should sound quite good, haven't listened to a single MOSFET CCS in a while, but it isn't anything like bad. Here is a better pic. regards, Douglas....damned Thrintun!

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Subject: Re: Here's Guinevere

Posted by [Wayne Parham](#) on Wed, 29 Dec 2004 17:42:03 GMT

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Cool! Looks like it will be a lot of fun!

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Subject: Re: Here's Guinevere  
Posted by [Manualblock](#) on Wed, 29 Dec 2004 18:33:10 GMT  
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Say T is R3 the cathode resistor?

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Subject: Re: Here's Guinevere  
Posted by [Damir](#) on Wed, 29 Dec 2004 18:34:42 GMT  
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Hey, Doug, now we finally have something to talk about:-).Is this LED cathode bias? If yes, then you draw it wrong way. Is the tube 5687? Than we`ll probably need two in series, the voltage drop across one cheap red LED is about 1,7V...

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Subject: Excellent!!!  
Posted by [colinhester](#) on Wed, 29 Dec 2004 19:40:35 GMT  
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Buy that man a beer. Thanks for taking the time to draw this for us. I cannot tell you how excited I am to start the discussions and build.....Colin

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Subject: Re: Here's Guinevere/BOM  
Posted by [Manualblock](#) on Wed, 29 Dec 2004 19:43:46 GMT  
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Is there a bill of materials available for printing?

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Subject: Re: Here's Guinevere  
Posted by [PakProtector](#) on Wed, 29 Dec 2004 21:10:10 GMT  
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That's an LED. If I didn't have a string of them to look at every time I build another, I would have to go and look it up somewhere else. It is for a 5687 and two would probably be best. The pot for

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setting the current of the CCS ought to be a 500R or 1k multi-turn unit. Set it for 15 mA per channel. A 9V, some clip leads, and a DMM with current measuring capability is all that is required for that. rig a single series circuit with the DMM, 9V and CCS, and twist the screw until you get the required current. regards, Douglas

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Subject: notes, and a correction.

Posted by [PakProtector](#) on Wed, 29 Dec 2004 21:17:16 GMT

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Here are some answers: R3 is a 500k. it serves very little purpose, but is good to put in to take care of small DC when in operation R1 is a carbon comp, quarter of a watt. Mouser has them cheap from Xlcon. value is between 510R and 1k. I have used 510 with no troubles, but if you find 1k to be a useful thing, bet them in qty... S2 is the Mute, short it out and you won't have to worry about a 'thump' on start up. There is a mistake!!!! P1 in the source-gate circuit should be configured as a variable resistance, tie the end at the plate to the wiper and we'll be fine. regards, Douglas

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Subject: Re: Here's Guinevere

Posted by [Damir](#) on Wed, 29 Dec 2004 21:30:38 GMT

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Then, IMO it is best to substitute pot with discrete resistor(s). Add a grid stopper resistor, and maybe an additional grid leak. B+ will be about 200V, and Uak ~ 100V-110V. Two cheap red LED in series, and bias voltage Ugk will be about 3,4 - 4V. Ia = 15mA seems fine. But, anode of the LED (longer lead) must go to the tube cathode, and cathode of the LED (shorter lead) to the ground. When we reach the final design, I can PC-draw it and send.

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Subject: Grid stoppers

Posted by [PakProtector](#) on Wed, 29 Dec 2004 22:13:42 GMT

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The grid stopper is a good idea. I have made the suggestion to buy the 1/4 watt 500-1k grid/gate stoppers in bulk, they're quite cheap in 100 count from Mouser... one size will be close enough to fitting all. regards, Douglas

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Subject: Here's Guinevere/BOM

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Posted by [PakProtector](#) on Tue, 04 Jan 2005 16:03:11 GMT

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Here is the parts list and some options: Power TX, Hammond 261G6 Power choke, Hammond 157G, 30 Hy/40 mA Filter Cap, 100 uF/370vac ASC motor Run from 'Midorimeadows' on ebay. Might want to buy two more for the amps-to-come 2x 9-pin sockets 5687 amplifier valve 6CA4 full-wave rectifier DN2540N5 mosfet's from Mouser 2 minimum, but recommend 6 for later upgrade and spares 510R 1/4 watt carbon comp gate-stoppers Xicon from Mouser 1k/10 or 15 turn trim pots for setting current 2 req'd 20 mA cheap red LED's 100k audio taper stereo volume pot (the RadioShack Alps is a good one) 4 RCA jacks 5-7.5 uF output coupling caps. ASC from Allied in 330 vac is ~\$6 ea. Filament TX, 12.6-0-12.6 @2A ( 25.2vac CT ) from RadioShack 2x 4700 uF, 25V filter caps ~10 1.5R 2W resistors to adjust voltage ( C-R-C filter ), Mouser has 'em. Two diodes, 5A min, 50V min PIV for full wave rectifier ( CT is ground ) Mute switch, DPST, on-off of almost any AC rating will do, RS has 'em as well as Mouser. Main off-on switch--same sources Fuse and holder, fuse at ~1A, maybe less. Or start at a .25 slo-blo and work your way up. If I forgot anything, ask 'em if you got 'em. regards, Douglas

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Subject: Re: Here's Guinevere/BOM

Posted by [Wayne Parham](#) on Tue, 04 Jan 2005 22:17:42 GMT

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Great job! Thanks for the list, that helps a bunch.

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Subject: Options...

Posted by [PakProtector](#) on Wed, 05 Jan 2005 01:38:40 GMT

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Hey-Hey!!!, there are of course a few things which can be changed... First is the plate loads. Leave some room to convert to cascode circuit. You'll need one more gate-stopper and MOSFET. The heat-sink will get put on the new one, so a bit of flexibility in the layout will probably be useful. One sounds good. Cascode is bloody fantastic. Build with one first, and keep in mind there is some pedal left when you feel the need. Any rectifier with less than 2A of heater current can be used. 6AX5 and 6BY5, and smaller the 6X5 are octal options. I just got my new PS choke in the mail from Heyboer, a 30Hy monster, at about 3x the current capacity of the small hammond and a quarter of the DCR for the new linestage design... At ~\$80 it is a fair fraction of the entire cost of this project, so perhaps later. HTS 8039 if you feel the need. If the 5687 has too much gain, 12B4 is a good sub. Two of them are required, and heater load is comparable to a 5687. You'll need a third 9-pin socket... or keep the 5687 and get an output TX. So many cool options... regards, Douglas

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Subject: Re: Options...

Posted by [Wayne Parham](#) on Wed, 05 Jan 2005 05:57:38 GMT

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Hi Douglas, That's cool. I'll probably do a version with power supply sans silicon and increase the cap size 2X. I'll also use a fixed resistor instead of the MOSFET. I'm thinking about doing a building block approach where I can jumper in a CCS in place of the fixed resistor. That way I can hear the differences in different configurations, resistor, choke and various forms of active constant current sources. 'Spose the power supply could be modular too, just put a decoupling cap directly across the B+ side of the tube's plate load and ground. Wayne

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Subject: Re: Options...

Posted by [PakProtector](#) on Wed, 05 Jan 2005 12:53:37 GMT

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For that approach, you'll need a higher voltage TX. The higher voltage will also raise the minimum current requirement( so-called 'critical current' ) to achieve choke-input regulation. You might also want to add another stage of filtering to get rid of the last volt or two of ripple. That's a nice little side-effect of the active load: high PS isolation and high zero-signal current w/o resorting to low value plate loads and high B+. Applying Ohm's law, getting a 100V drop at 10 mA is only going to allow a 10k plate load. This will create some audible, but perhaps not detrimental effects. regards. Douglas...to the soldering bench Batman!

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Subject: Re: Options...

Posted by [Damir](#) on Wed, 05 Jan 2005 13:10:02 GMT

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For "passive" experiments, adding C in front of the L (CLC supply) would "rise" B+ at about 300V...

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Subject: Re: Here's Guinevere/BOM

Posted by [Manualblock](#) on Fri, 07 Jan 2005 03:14:56 GMT

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Thanks T; Haven't had lots of luck with parts ordering of late but... here we go!

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Subject: yell if you want other options...  
Posted by [PakProtector](#) on Sat, 08 Jan 2005 21:02:34 GMT  
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I won't be too far away.regards,Douglas

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Subject: Re: yell if you want other options...  
Posted by [Wayne Parham](#) on Sun, 09 Jan 2005 09:56:42 GMT  
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Hi Douglas,Are you planning to build one of these, by any chance? My plate is pretty full right now, and while I plan to build one, it might be a little while. I'd sure like to see an actual model built and tested. Subjective listening impressions welcome; O-Scope measurements might be cool too.Thanks again for all you've done for this project and for this forum.Wayne

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Subject: predictions and more options  
Posted by [PakProtector](#) on Sun, 09 Jan 2005 13:33:34 GMT  
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Hey-Hey!!!,I have built three like it already. The first was SS rectified and had cheap-o coupling caps. It sounded really good. I built two after that with increasing complexity( like you'd expect anything else, right? ).I have another in process which I mentioned as having a schematic in hand for. Just got the big PS choke from Heyboer, and the active load valves from Radio Electric Supply and a bunch of other stuff cleaned up from my slavage box. Top plate on Monday...This gives me a reasonable assurance that it will sound excellent. L-C filter and tube rectifier( either hybrid Graetz-bridge or perhaps get two of the 230V Hammonds and pure valve rectifier...), are definatly an improvement on the all 1N4007 C-R-C-R-C I used at first. One could try the Cree Schottky types. 1A/600V are ~\$1 from Tubebuilder in Maryland and are zero recovery time. I tried them in a full bridge amplifier circuit, and found an improvement over Fairchild's Stealth types. The most important modification will be cascoding the active load circuit. One more gate-stopper and one more 2540 and it is done. The 'top' mosfet is the one which will need the heatsink, so leave room to add another, or swap it.If you decide on resistive loads, you'll need a second filter stage. move the big oiler to the output end and put a 450vdc 'lytic in its place.regards,Douglas

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Subject: Re: predictions and more options  
Posted by [Wayne Parham](#) on Sun, 09 Jan 2005 14:11:13 GMT  
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You've really got my mouth watering with this project, Douglas. Now I just need to make some time...

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Subject: diet Dr. Pepper please  
Posted by [PakProtector](#) on Fri, 14 Jan 2005 16:59:37 GMT  
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beer does strange things to me. and allows me to do even stranger ones...The thanks are appreciated though.regards,Douglas

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Subject: Re: diet Dr. Pepper please  
Posted by [colinhester](#) on Fri, 14 Jan 2005 17:35:25 GMT  
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Diet Dr. Pepper it is, and lots of it.....Colin

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Subject: heretic....  
Posted by [PakProtector](#) on Wed, 19 Jan 2005 21:22:56 GMT  
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just spend a bit more on a Swiss Army Knife sort of PT with multiple taps and stay pure choke input. ought to burn you at the stake for suggesting such a thing. Class A stake with a-a/4 impedance.....regards,Douglas

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Subject: I know you`d like it...  
Posted by [Damir](#) on Thu, 20 Jan 2005 21:25:25 GMT  
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Actually, in SE amp (1) I slowly build (long breadboarding phase), I use toroidal PTs (2), "ordinary" 5V4G rectifiers (3) CLC filter (4) with MKP first cap, but electrolytic second (5), actually, 2x270uF (6), 130 Ohms 10H choke (7), even add 10 Ohms resistors between the secondary and the rectifier (8), maybe I'll bypass electrolytics with MKP closer to the 300B (9)... Huh, I really tried, but can't do 10 Mortal Sins in Audio...sorry.In my defense, I use small 35VA transformer for the

heater (6,3V) and filaments (2 x 5V) and separate 300VA transformer with HV 2X360V + 2 x 5V for the rectifiers. Few swithes, and I have standby function like this: main switch on - small trafo is "on" through power resistor (~0,8 Uh on the load), then standby switch "on", and both transformers are "on" - IDH rectifiers provide ~30 sec. more "slow start". In standby, HV is "off" and heaters/filaments are heated with 0,8Uh...

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