
Subject: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Norris Wilson](#) on Tue, 29 Nov 2005 02:11:48 GMT

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Hi,I would like to ask what is your favorite 12B4 with balanced sound characteristics to be used in line stage?ThanksNorris Wilson

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Damir](#) on Tue, 29 Nov 2005 17:31:47 GMT

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I wish I could help, but I have just one pair of "Sylvania" 12B4A...But, I have to ask - what operating point you plan to use, and way of biasing? I mean - with similar OP (100V/15mA) like with 5687 version, bias is about -12...13V with 12B4A.

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Norris Wilson](#) on Tue, 29 Nov 2005 21:36:57 GMT

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Sorry Damir,I have not gotten that far along yet. The real answer is, that I do not have a clue. I was hoping Douglas would be able to provide all of the necessary technical parameters.I am at the point of trying to figure out how much gain I will need. To include the sound character that I hope to accomplish overall.I would like to be capable of driving a three-way active system with an impedance of around 50k and input sensitivity of 750mA.Any suggestions?I always try to reach for the golden ring before I have worked out all the details. I do know that less is best when it comes to gain structure and components used in the signal path, everything has its own character to add to the mix. I see that Douglas has mentioned he is getting around 6db of gain in the Guinever when using the 12B4.ThanksNorris Wilson

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [PakProtector](#) on Tue, 29 Nov 2005 22:55:57 GMT

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Gain, can't remember if it is 10 or 20 times the base-Ten log of the voltage ratio. A 12B4 will give a gain of 6 or so with a CCS load. I have had good luck with 12B4 and noise or microphony. I think that RCA were the most microphonic, and the others about equally risky of being noisy. Most were

hard run power supply tubes, so don't take too much stock in that. If you meant a 750 mV sensitivity, you won't need much gain I think. On the power TX design, you want enough turns on the primary to yield a flux density below the knee of the B-H loop. Keep the flux density low and the core loss will be lower. More turns does mean more copper length and thus resistance. There is nothing really magical about TX design. Nothing really complicated either. The output voltage will then be determined by the turns ratio primary to secondary. There is a bit more, and I'll help you find the answers. Not even output TX design is too complicated for a public forum....)cheers, Douglas

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Manualblock](#) on Wed, 30 Nov 2005 01:14:34 GMT

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I have a nice white-paper on transformer design written by R.G. Keen where he describes all of the important parameters involved in judging the quality of the trans/how they are constructed/how to test and quantify them and how to reverse engineer them. It is very easy to follow yet it is not so simple that you get bored reading it. I would enjoy discussing the art of trans design if anyone was interested. For instance how important is it to keep the leakage inductance as low as possible?

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [PakProtector](#) on Wed, 30 Nov 2005 01:18:35 GMT

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Hey-Hey!!!, Any chance you'd send me a copy? Now are we considering audio outputs, or power Iron for the Leakage L question? cheers, Douglas

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Damir](#) on Wed, 30 Nov 2005 11:50:15 GMT

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As Doug said, 6 times (15,5 dB) amplification would be more than enough with most of the input sources. Input of $750/6=125\text{mV}$ = full output needed (750mV). On the original schematic, you can change the tube to 12B4A and put 6 LEDs for bias in series (original=two LEDs), for the new OP, about 100V/20mA/-11V. Or you can try the resistor of $11/0,02 \sim 560$ Ohms. For CCS current adjustments, see the link. You can find various ideas about "Guinevere", PCBs, etc. in the archive.

<http://audioroundtable.com/Tubes/messages/929.html>

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Manualblock](#) on Wed, 30 Nov 2005 12:43:27 GMT

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Yes; I would be more than happy to; just e-mail it to your e-mail address?Audio outputs.

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [PakProtector](#) on Wed, 30 Nov 2005 19:08:12 GMT

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Yes, just send to my email. pentode at netscape dot com. Seems to me leakage L is important for at least two reasons. One is frequency response. Leakage L looks like a series L with the primary L/reflected load parallel combo. The other is for transient voltage tolerance. Leakage L is going to offer an independent L to create a high voltage transient if current is interrupted. cheers, Douglas

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Norris Wilson](#) on Thu, 01 Dec 2005 03:06:46 GMT

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Thanks Damir for the 12B4 information. I have been trying to track down some of the DN2540N5 depletion mode transistors, but have been stiking out. I have found a few larger electronic firms such as Mouser, that will be happy to sell me 50 at a time. None of the firms where I have looked, stock this model of transistor. I am not sure I would need 50 of these. Does anyone have a decent supplier where I can buy a smaller lot of 10 or less of the DN2540N5 transistors? Douglas did mention a TO-92 variant that would work, DN3545N3. But, I would rather have the TO-22 that appears to be a little more robust and has more heat sink realestate. Also, I would love to hear about others experiences in building a power supply for the Guinevere? I am under the impression that the 12B4 has a slight problem of being susceptible to noise from the power supply. At least this is what I have read on a few other forums, or believe this is what they meant. Does the CCS reduce this susceptibility to noise? Thanks Norris Wilson

Subject: possible source for DN2540N5 transistors

Posted by [MQracing](#) on Thu, 01 Dec 2005 03:43:10 GMT

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Hi Norris: I got a bunch from Kevin at K&K audio (the US lundahl importers). Give kevin a shout or email him. If you get stuck and just need a few I may have some I could part with. msl

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [Manualblock](#) on Thu, 01 Dec 2005 11:39:21 GMT

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Nice. Thats a good explanation and I will file it with my rules of construction notebook.I have printed out another copy of the trasnsformer article. It's 8 pages and I can snail mail it to you if you want. Let me know.

Subject: another source...

Posted by [PakProtector](#) on Thu, 01 Dec 2005 16:30:46 GMT

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Hey-Hey!!!,I am getting low on them myself. I would split an order of 50 with you, or add a few folks and we can split up an order of 100. They are quite useful. I think K&K sells them for ~\$3.50 each, which is a reasonable One or Two-up on a low volume item.cheers,Douglas

Subject: availability of DN2540N5

Posted by [MQracing](#) on Thu, 01 Dec 2005 18:24:00 GMT

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Hi Norris:I was on the horn with Kevin this morning to follow up and see if he still had this part number in stock and he said you had emailed him and that he does have stock on this part number... so... then I spent some mullah with Kevin purchasing a seiden 23 position switch that we're going to use in a preamp that Kevin and I have been designing together. can I send ya the bill :=))cheers and best of,msl

Subject: Re: Need favorite 12B4 for Guinevere line stage recommendations?

Posted by [PakProtector](#) on Thu, 01 Dec 2005 20:47:53 GMT

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that would be great. send me your email again, as I buried it somewhere I can't find right now. I'll send you the mailing address, along with my thanks for sharing information. I can scan it to pdf and return it to you if you wish.cheers,Douglas

Subject: Power supply isolation
Posted by [PakProtector](#) on Thu, 01 Dec 2005 20:57:39 GMT
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Hey-Hey!!!,The active load does isolate the amplifier stge from the PS. Some have suggested a minimum reactance(both C and L). Like a few uF of capacitance, and that's all...I have personally liked the result of a good L-C stage. 20 Hy and 100 uF of motor run style Oilers. WHEN used as a mu follower, the PS is again included in the PS, but still to a large degree isolated...so a High performance PS is still a good idea, and contributes in a positive way to the sound.On the detail construction of the CCS, there is some benefit to building with a few batteries and the R-C filter on the gate. ONe needs to protect the +/- 20 volt gate-source voltage maximum with a cathode-cathode Zener clamp. The batteries will prefer a low leakage version BZX79C18 would be my preference, though BZX55C18 is not far behind...:)cheers,Douglas

Subject: No bills, Please!
Posted by [Norris Wilson](#) on Thu, 01 Dec 2005 23:40:07 GMT
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Hi Michael,Thanks for checking with Kevin about the transistors. I am going to order some from him tomorrow.What type of line stage are you in the process of building, details?Curious minds want to know.ThanksNorris Wilson

Subject: Re: No bills, Please!
Posted by [MQracing](#) on Fri, 02 Dec 2005 02:18:03 GMT
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Hi Norris:you wrote::::Thanks for checking with Kevin about the transistors.I am going to order some from him tomorrow.::::Glad I could assist. Kevin's a good guy and I've enjoyed working with him on some of our new products.::::What type of line stage are you in the process of building, details?Curious minds want to know:::;.awe... it's a bit premature for us to release many specific design details at this juncture. Here are some of the directions and details of what we are developing... all of the following subject to the rigors of an ongoing R&D program...It's a line level only preamp with a commercially unique circuit architecture. It uses two tubes. It has a rectifier tube. Has independent power supplies for each channel. It employs 3 pieces of signal carrying iron per unit. The output impedance is less than 100 ohms with a correspondingly large current drive capacity. It has a transformer buffered input stage. It can accomadate bal signal transmission (i.e., xlr). It can also accomadate single ended signal transmissions (i.e., rca). It employs authentic Peerless (tm) iron in critical component areas. A means is provided for attenuation of the input signal. It will accomadate multiple input sources and most likely have monitoring capabilities. Multiple core materials (mu metal and nano crystalline c-cores) are planned as customer specified options. Power supply filter features a very large >100 henry

custom made by MagneQuest choke for each channel. Though my description is somewhat vague... I hope it gives you some idea of where we might be headed with this preamp. As your aware... since we are a magnetics producer (including the Peerless (tm) and MagneQuest (tm) brand names) our preamp is rich in iron. But iron smartly deployed if I may be so immodest.As an earnest stab at the state of the art... this preamp is not going to be cheap which only reflects our commitment to build the best we can... i.e., we are not interested in desgining and building to an arbitrary price point derived by a marketing study. Our preamp (code named "Abbie") will only be available as a finished product. It is one of three finished products that we currently have under development. We anticipate availability late in the first quarter of 2006. Our other two undertakings are a transformer based passive preamp (much, much less mullah)and a dedicated stand alone moving coil step up transformer.in the meantime... get your irons hot and build that Guinevere... hope you have some fun and experience some rewarding tunes with your new self-built preamp.cheers,msl

Subject: Re: No bills, Please!
Posted by [Norris Wilson](#) on Fri, 02 Dec 2005 02:54:46 GMT
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Thanks Michael for the preview description of your new joint venture with Kevin. This line stage sounds like it will be one fine piece of iron rich realestate.I hope you will keep us abreast as the developement comes along.Your short discription is detailed enough to realise that this line stage will be diverse and elegant.I am looking forward to seeing the finished product.Keep up the good work. And I will keep the solder going while I learn and enjoy this hobby.Norris Wilson

Subject: You and Kevin,working together, that's neat.
Posted by [2wo](#) on Sat, 03 Dec 2005 02:10:56 GMT
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I would have thought you would be 'fierce Competitors' rather than 'Co-conspirators'...John

Subject: Re: You and Kevin,working together, that's neat.
Posted by [MQracing](#) on Sat, 03 Dec 2005 15:03:46 GMT
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Hi 2wo, Norris, and others.Funny observation. Made me chuckle for a moment. But, actually, there is a fair amount of co-operation and friendliness amongst the more mature players\producers\participants in tube audio.Just on our forthcoming projects alone we have

worked with a host of companies, designers, consultants and etc. From Gordon Rankin (who gave me the initial good direction to go in preamp wise) to Steve Eddy of Q-audio, to Kevin Carter of K&K audio, to Bottlehead, to Paul Joppa, to VoltSec, Richard from Leeds Electronics, and others who I am probably going to miss naming. This can be a really fun industry to work in. The mature folks realize that killing each other benefits no one... not themselves, not other producers, not the consumer. are we all partisans of our own products, market niches, and favor our own "approaches"... of course... but the neat guys in the industry none-the-less co-operate with others and then everyone ultimately benefits. And, Kevin in particular is one of my fave people to talk to, gossip, and just shoot the poop. cheers, msl

Subject: heh-heh-heh...

Posted by [PakProtector](#) on Sat, 03 Dec 2005 15:59:43 GMT

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quoted:::the neat guys in the industry none-the-less co-operate with others and then everyone ultimately benefits. So here is to everyone benefitting from pleasant and honest cooperation between the neat guys. Since the published list is quite short and centered about a well-defined way of doing things and co-operating, I should remind everybody that there are other ways. Many other ways. For instance, as the list of 'neat guys' was quite short of TX winders, Jack Elliano and Heyboer TX, along with a whole host of others are out there. So, 'scuse me, my Citation II and Heath W6 are calling me! cheers, Douglas

Subject: Re: heh-heh-heh...

Posted by [MQracing](#) on Sat, 03 Dec 2005 16:36:15 GMT

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pakman wrote:::Since the published list is quite short...:::apologies for the brevity... the danger in extending thanks, gratuities, and recognition by name is that, invariably, you always forget to name someone and often times multiples of others who have contributed or etc...for instance I could also mention Jeff Lessard of Pantheon-Audio, Terry Cain, Michael Pischetto of Progressive Engineering turntables (who has done all of our CAD drawings), Jeffrey Jacson of Experience Music, the good Dowdy Llama (Jim Dowdy) who has provided much inspiration...and, still, invariably... even an extension of the list is bound to fail by leaving off someone else...I don't keep a written list or anything... so it depends on the state of my memory.... and at my age the memory bank is shrinking. the point being addressed is that 2wo mused and was (apparently) gleeful that someone like Kevin (who imports Lundahls and has some say in the product line development) and I... who some might on the surface view as likely to be "fierce competitors" can in fact form very productive "co-operative" relationships built on trust, respect, and good will. And I am all for that when and where it is warranted. 2wo's post made me smile and I thought it very polite and kind... so I just wanted to tell him that this really can be a fun industry to participate in... and that creativity is the by-product of much co-opertive effort... and cheers to all the neat folks in the tube

world.cheerios,msl

Subject: Re: heh-heh-heh...

Posted by [Manualblock](#) on Sat, 03 Dec 2005 19:36:51 GMT

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Isn't that the explanation why all of the used car dealerships are on the same block? Makes sense to me; if you don't have it he might.
