

K-Yama's Audio, ASD, and ADHD LAB

As a "developmental disorder, ASD, ADHD party" and audio review with coffee in a rural area of the central highlands
I write about what I feel and what I want to say.

"Douk Audio U3" Custom Guide Vol.2 -About Custom Practice and Signal Flow (Half-Preference) -

January 10th, 2023

[Attention]

The content of this article is an act that is not covered by the manufacturer's warranty. In addition, electronic components may explode or break if they are treated with polarity, etc., and there is also a risk of electric shock because high-voltage electricity flows inside the housing. If you are going to do a custom, please do so at your own risk.

Good evening, this is K-Yama.

"Douk Audio U3", a self-proclaimed Class A Headphone Amplifier that I uploaded to this blog the other day, but I finally entered the 6th unit with what I bought the other day

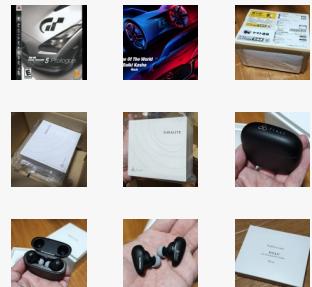


The remaining five units are soberly ruined the land part of the condenser and transistor, and strange things are led ... various harmful effects of custom have come out.

* For basic information on custom of "Douk Audio U3", "Douk Audio U3", which is a cheap "self-proclaimed class A headphone amplifier" of 3800yen, please see [the previous article](#).

So, this is the sixth car ... I tried to reflect the experience of playing with the past five cars in various ways, and the result of trying to follow the board pattern (at an amateur level). The op amp was made MUSES 8920 of New Japan Radio (now called Nissinbo Micro-Diverses) with the best sense of elongation in the high range.

Gallery



<< January 2023 >>

Day	Moon	Fire	Water	Tree	Gold	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28.
29	30	31				

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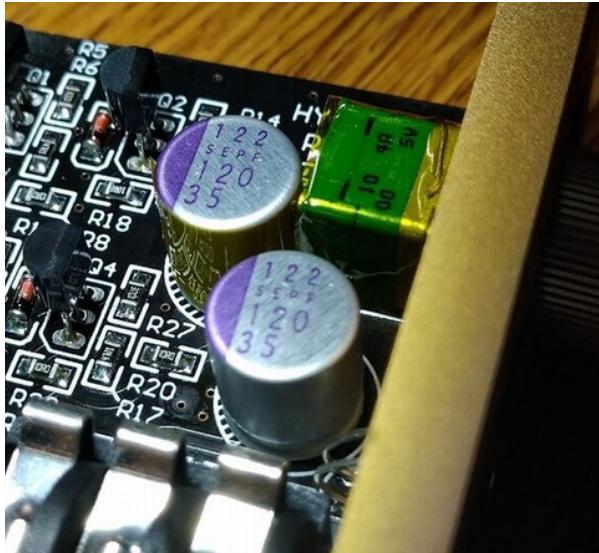
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2D beautiful girl illustration can be "art" ... What I felt through IGX2025 local participation



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Category

livedoor [Blog](#)

Well, the first thing I want you to pay attention to is the capacitor surrounded by the red frame in the figure below.



The condenser here is actually a very important one...If you follow it with a tester, it is this condenser that the electricity that comes from the power supply is the first to reach from the black power connector on the upper left through the red push switch on the lower left.

Actually, the fifth amplifier was done something when custom-made, or now the power supply itself is in a state where the power supply itself does not fit ...



It seems to be a part called "Schottky diode" here, but there was electricity from the power supply on the side of this - this - there was no electricity from the power supply on the + side

(normally, electricity of less than 50 to 70V is flowing). At this time, electricity was only coming to the condenser surrounded by red in the figure above, so I think that you can understand the importance of that condenser from this.



It is a condenser here, but I tried to use a little rare thing. It is "OS-CON in the SANYO era" that was in a dead stock state in a local electronic component store (although it is about an hour away from high speed). "OS-CON" is a special existence among solid electrolytic capacitors, and Panasonic is currently making it, but it was made by SANYO, which was acquired by Panasonic. Since it is said that the frequency response and noise reduction effect are high, the power supply's electricity was selected as the first capacitor to reach. Since the power supply voltage is from 5V to 20V, I made it a 20V 120μF product that can withstand the voltage of MAX and has a certain capacity. By the way, the same condenser is placed next to the right side, but it is not particularly deep meaning just by aligning it because it was originally installed with the same voltage and capacity as the red frame condenser.



Next is here, but it is the next stage after the OS-CON mentioned above ... The purpose is unknown, but this is also a drawer with a condenser of a local electronic component store, and I found a capacitor of the standard product of ELNA, which is famous for audio capacitors, so I tried using it.



If you look closely, you can see the word "ELNA".



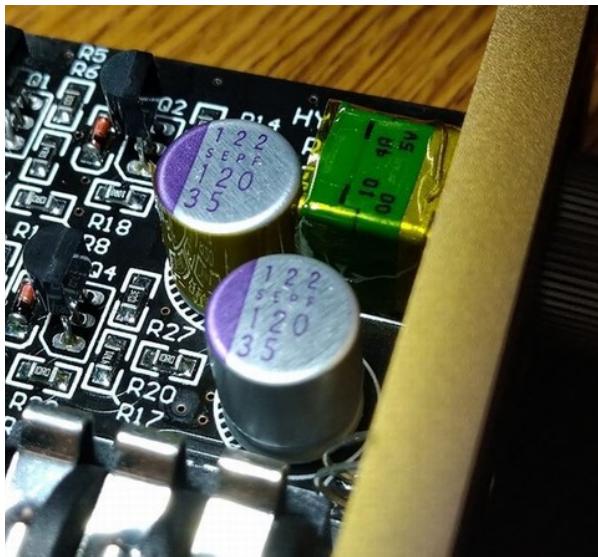
Next, there are three here ... I have not explored the application here yet, but all of them have a voltage of about 25V, and the condenser housing uses the largest one installed in this amplifier, so I decided to use "audio condenser" because it is considered to be somewhat important. Nichicon's bipolar transistor MUSE ES. I think it's good for Muse KZ, too.



※The green housing color is characteristic.



Finally here ... here ... as a result of following the tester, it was confirmed that the signal "coming to the end" of the signal amplified through various circuits and the terminal of the headphone jack was also confirmed, so it will be the final condenser for the headphone to drive the headphone.



This is a selection of the current OS-CON 35V 120 μ F product I bought in Akizuki. There is a reason why I allowed a little bit of a withstand voltage ...



The other day, I bought a small oscilloscope on Amazon. So when the volume of the amplifier was set to MAX and the 100Hz sign wave of -3db was out, the value of "Vpp" was more than 20V ... Moreover, it is written on the product page of that "self-proclaimed class A headphone amplifier" because it is in the state of "-3db"

"The amplifier circuit can always operate at a high voltage of 26V" seems to be somewhat correct (there are capacitors that actually have a voltage of 25 to 26V) It seems that 26V is really out as the maximum value of the MAX. Therefore, we focused on the withstand voltage rather than the capacity. This is also the final stage, so it is OS-CON with the meaning of noise reduction again.



After that The default volume was a strange click feeling and difficult to handle, and because it was originally designed to drive headphones with high impedance, the volume was too large for earphones with low impedance and BA type with high sensitivity, so I changed the default B curve (45° linear) $10k\Omega$ to A curve product $100k\Omega$, which is said to be suitable for audio. It is a double volume of ALPS company made in Japan (because it is stereo that it is a two-volume). Since this double volume of ALPS company is a D-type shaft with a shaft of $6mm\varnothing$, the volume knob (tsumm) originally used for this headphone amplifier cannot be used. A separate volume knob corresponding to the D shaft is required.



Well, from here, I would like to talk about the circuit structure of this portable amplifier that I tried to make with some expectation as a result of following with a tester.

The electricity that came from the power supply...



First of all, it was as mentioned above that it was going through this condenser, and it seemed that the electricity passing through this condenser was likely to be running the amplification circuit with the feeling that electricity was likely to be supplied to the condenser other than the two capacitors near the volume on the right side ... On the other hand, when the flow of the audio signal coming in from the RCA terminal on the back is quite much, it seems to be like this (click to enlarge).



1The signal that came from the RCA pin is first entered into the third pin of the double volume (confirmed by the tester) and goes out to the second pin (for this reason you can adjust the volume around the clockwise)

The signal that came out of the 22nd pin is probably amplified through the transistor through the op amp (not yet slightly overtaken)

After two condensers near the three volumes, the headphones and earphones are driven after electricity is stored.

By the way, when soldering to the board, the double volume also solder the pin, but if the above reasoning is correct, it seems that it is probably not used practically, so it seems to work even if it is not.

As a result of following with a tester, it seems to be like going through the operation amp first, and then passing through the transistor ... By the way, the transistor ...



It was found that the transistor was replaced before, but it seems that Lch is in charge of Lch on the top of the two places enclosed in the red frame, and Rch on the bottom side is in charge of Rch (click to enlarge recommended). First, through the NPN transistor on the left side of the red frame, it passes through the PNP transistor on the right side of the red frame, and the electrical signal is stored in a condenser near the volume. I think that there is no doubt that the conduction was confirmed by the emitter terminal of the PNP transistor and the condenser-terminal near the volume.

By the way, this transistor is also changed to a low noise product this time.



Both are handled by Akizuki Electronics, and the NPN transistor is "2N3904" PNP transistor "2N3906". With this transistor, the default wear and the pin assignment are the same, so you can install them in the same direction.

...I practiced the custom so far for about half a day, and I almost no longer felt white noise not only in DD earphones but also BA type earphones. Some of the headphone amplifiers I have assembled in the past had extremely white noise with the BA type, but it seems that this custom was able to solve that part well. The lower the noise floor, the clearer the sound you can enjoy, so if you are interested, why not try it? It's quite haunting.

Comments 8 things

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拍手 7

Other articles without category

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Comments

1. 周がの

★★★★★

NEC's d882p is suspicious, but is it possible to clarify?

January 28, 2023 22:48

↪ ❤ 1

2. K-Yama

>>1

Thanks for the comment.

It seems that you have already bought the real thing that you know that NECd882p is installed.

January 29th, 2023 at 01:30 AM

Unfortunately, the circuit around it has not been clarified yet ...Since the knowledge of the total knowledge of the Youtube video and the tester is completely humanities human beings of the degree of knowledge that I see and guess the tester by watching the video, so the knowledge of the parts listed is really minimal feeling.



0

3. 周がの

January 29th, 2023 02:31

>>2

Is the NEC base connected to the capacitor in front of OPAMP? I judged it as a capacitor used for the switch to run the circuit inside and changed it to wima, but it was no problem.



1

6. K-Yama

January 29, 2023 20:42 AM

>>3

Now I'm going to break it up and follow the board pattern...

d882p horizontal NPN transistor emitter → NEC d882p collector → OPAMP left neighbor condenser → Lch, NPN transistor collector for Rch

When the condenser on the left side of the op amp supplies electricity to the Lch and Rch transistors for voice, I felt that the selection of capacitors here would be important.



0

7. K-Yama

January 29th, 2023 20:45

>>3

Sorry, but more strictly...

d882p horizontal NPN transistor emitter → NEC d882p collector → NEC d882p Emitters → OPAMP left-side condenser + side → Lch, NPN transistor collector for Rch

It is.



0

4. 周がの

January 29, 2023 02:33

What we do not know now is a 25V capacitor under 15V, which is a mystery whether this is used as a power source.



0

5. K-Yama

January 29, 2023 20:09

>>4

"25V capacitor under 15V" is the part of the green Nichicon MUSE that is lined up in the lower part in the photo above ...?

I use the largest capacitor in that amplifier, so I somehow understand that it seems to play an important role, but I do not know the application ... Regardless of the power supply, the capacitor just before the headphone terminal (OS-CON on the right side in the above photo) I thought that it might be symmetrically arranged for Lch and Rch ...



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8. K-Yama

January 29, 2023 at 21:33

>>4

連投すみません。基板パターンなどを見てテスターで追っていったら、電源からの流れが何となく見えてきたので先ほど記事を投稿しました。こちらをご覧いただけたら幸いです。

http://blog.livedoor.jp/yama_audiolab_0910e/archives/18852685.html



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名前



記事の評価



顔 星 情報を記憶

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