Subject: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by kasperbergholt on Fri, 24 Jan 2025 11:21:21 GMT
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Clever people,

Long time no see, but a question presented itself in regards to tubes for use in a DAC.

And having gotten excellent input & feedback here, I thought I'd give it a shot.

I'm considering buying a DAC that has a 6Z4 rectifier tube along with a 6N11 tube.

The 6N11 appears to be a Chinese version of the 6922, E88CC and 6DJ8 tube family.

Chat-GPT confirms this, but it's not 100% to be trusted. Its analysis is below.

I've done some fact-checking on different sites and it appears to be the general consensus.

But thought I'd get a couple of sets of human eyes on it too before investing in some different tubes to test.

Question: Which tubes are interchangable with the 6N11?

The 6N11 is a Chinese-made dual triode tube commonly used in audio amplifiers and preamplifiers. It is very similar to Western equivalents like the 6922, E88CC, and 6DJ8, but let’s break down the interchangeability carefully.

Direct Replacements for the 6N11: 6922

This is the premium, ruggedized version of the 6DJ8 and is fully interchangeable with the 6N11 in most circuits. It's a popular choice in high-fidelity audio.
E88CC

The European designation for the 6922. A high-reliability version that works perfectly in circuits designed for the 6N11.
6DJ8

A direct substitute for the 6N11 with very similar electrical characteristics. Widely used in audio and available in many variants from different manufacturers.
ECC88

The European equivalent of the 6DJ8, which can also directly replace the 6N11.
7308

A military-grade version of the 6922 with tighter tolerances and longer life. Fully compatible with the 6N11.

Conclusion:

The 6922, E88CC, 6DJ8, and ECC88 are direct replacements for the 6N11, as they share almost identical electrical characteristics and pinouts. For the best results in audio applications, stick to these equivalents, and if you want higher reliability or longevity, consider using premium-grade versions like the 7308 or 6922/E88CC.

The 6N1P and other substitutes may physically fit the socket but are not true replacements due to differences in heater current, voltage limits, and operating characteristics.

Thanks in advance,

Kasper

Subject: Re: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by gofar99 on Wed, 05 Feb 2025 01:55:44 GMT
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Hi, I guess ..what is the question? I personally have better results in my circuits with ECC types unless there is a ruggedized version of it. The rugged / industrial one can be better. For example I use a lot of ECC803 types but in a few of the designs the 7025s are a bit quieter and more consistent. So from your choices I would likely use either the ECC88 or 6922. What you didn't ask is if all the tubes from all manufacturers are equal. The short answer is they will work but not all are going to give you the same sonic performance. If you can find someone with the same unit it would worth asking what if anything they tried and what they liked (and why naturally).

Subject: Re: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by kasperbergholt on Sat, 08 Feb 2025 16:05:44 GMT
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gofar99 wrote on Tue, 04 February 2025 19:55Hi, I guess ..what is the question? I personally have better results in my circuits with ECC types unless there is a ruggedized version of it. The rugged / industrial one can be better. For example I use a lot of ECC803 types but in a few of the designs the 7025s are a bit quieter and more consistent. So from your choices I would likely use either the ECC88 or 6922.

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naturally).
Than you for the reply gofar99 :)

I haven't used any equipment with Russian or Chinese input or rectifier tubes before, so the (most important question) is whether the Chinese 6N11 is 100% interchangable 6922, E88CC and 6DJ8 tubes.

But everything seems to point in that direction.

Some sources state that the Chinese 6Z4 rectifier tube used in the DAC can be swapped with 6X4, EZ90, 6CP5, others that both values and pin layouts are different.

Subject: Re: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by gofar99 on Sun, 09 Feb 2025 02:01:10 GMT
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Hi My RCA book says they (6X4 and 6Z4) have different pin arrangements.

Subject: Re: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by kasperbergholt on Fri, 14 Feb 2025 12:03:05 GMT
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gofar99 wrote on Sat, 08 February 2025 20:01Hi My RCA book says they (6X4 and 6Z4) have different pin arrangements.
Thank you for looking it up :)

Is it the 'RCA Receiving Tube Manual' you have?

Subject: Re: 6N11 vs 6922, E88CC, and 6DJ8 tubes
Posted by positron on Tue, 08 Apr 2025 00:04:21 GMT
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Hi Kasper,

Just a thought, I have been performing some longevity testing of the JJ E88cc tube for longevity by reducing the filament voltage. I wanted to determine what causes deterioration of this particular tube.

One can typically assume a major player might be gas, some to poisoning/impurities of the cathode/sleeve materials, some due to cathode temperature, or a combo of the above.

I found with the JJ brand, it is Mainly due to cathode temperature. After nearly a 1,000 hrs, at 5.8 volts, approximately 9 ma, there has only been a 1-1.5% lowering of cathode current.

(My audio buddy's sp-3 preamp has filament voltage so low that it is difficult to see a red cathode.)

Just a thought, you may already be doing this already.

A little tidbit for newbies about my decades research in the lab.
I hope this will help.

I exclusively use the JJ E88cc small signal tube in all my components due to its incredibly low HD, some 19db less than any other tube (2 volts rms output, -79db without negative feedback) and incredibly accurate/natural sound. This assumes accurate and proper size parts are used.

I once designed a PP circuit achieving 200 volts P-P signal output at 0,05% measured harmonic distortion. (It depends upon the circuit and cathode current used.)

I only wished the JJ would last longer; now it does with 5.8 filament volts.

I have tried many many NOS tube types and this tube was sonically superior across the entire audio band. I have many NOS tubes, but never use them, which are now in the parts box.

Anyway, just some thoughts that might someone out there.

cheers
pos