
Subject: Re: Solid State vs. Vacuum Amps
Posted by [positron](#) on Mon, 28 Dec 2020 02:11:51 GMT
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Off the top of my head, there are inherent differences between SS and Tube amplifiers due to the amplifying devices themselves. This may seem inconsequential, but I thought it would be beneficial for some.

1. Capacitance within the amplifying device. Vacuum tubes have a vacuum as a dielectric between the elements, hence virtually no DA or ESR/DA characteristics. SS devices, of course, have solid, semi conductor material with high DA and ESR/DF characteristics.
2. Miller Capacitance. The plate to no. 1 grid forms a capacitance, and that capacitance times the $\sim$ gain of the stage is called the Miller Capacitance, which the preceding stage "sees".
3. The internal junction capacitance in a FET varies with voltages across the junctions until $\sim$ 25 volts and higher. Thus the Miller Capacitance varies as the signal varies in amplitude. Fortunately, the Miller Capacitance is low in some phase splitters and in output stages operated as source followers.
4. The power supply is quite different between Tube and SS. Where as vacuum tubes usually use a combination of chokes and small/medium size filter capacitors, SS generally uses vastly larger filter capacitors. The article "Picking Capacitors", by Walter Jung/Richard Marsh, shows that capacitors can have resonance in low khz. (See Below Attachment.)
In typical SS amplifiers, capacitances of 5 fold or more are often used.

This generally has a negative effect on sonics even though a typical sine wave may show low HD distortion. High DA and ESR/DF won't show up on a distortion analyzer.

Hope this helps in general understanding.

pos

File Attachments

1) [Capacitor Resonance Picking_Capacitors_1 pdf.png](#),
downloaded 431 times
