

low noise amplifier for high impedance source

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Hello everyone,

I am a student who has been working on a low noise preamplifier for a high impedance current source. I have put the model of the detection circuit here:

<http://img146.imageshack.us/img146/9748/detectmodelid8.jpg>

Its a differential ac current source with an intrinsic capacitance ~ 20pF on each side. I use 1M ohm resistors to bias my input JFETs.

The bandwidth i need is only from 10 Khz to couple of MHz.

In my learning process, i have realized few things such as selecting JFETs as my input transistors for low leakage hence low input current noise. Maximise the value of input resistor without disturbing the bias of the input JFETs. However i still have couple of unanswered questions:

1. How does the C_{in} of the JFETs effect the signal to noise. do i have to match the input capacitance of the JFETs to the source capacitance for minimum noise? How about if i put multiple JFETs in parallel to reduce input voltage noise – do i have to revise my JFETs selection in terms of input capacitance?
2. While evaluating the performance of the designed amplifier can i neglect the equivalent input current noise, as i am using the JFETs?
3. Are there any good review articles or texts for low noise preamplifier design (for capacitive sensors).

Please help!

thanks

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