Group Name: ISHI-Kai LNA Project: Low noise amplifier(23)

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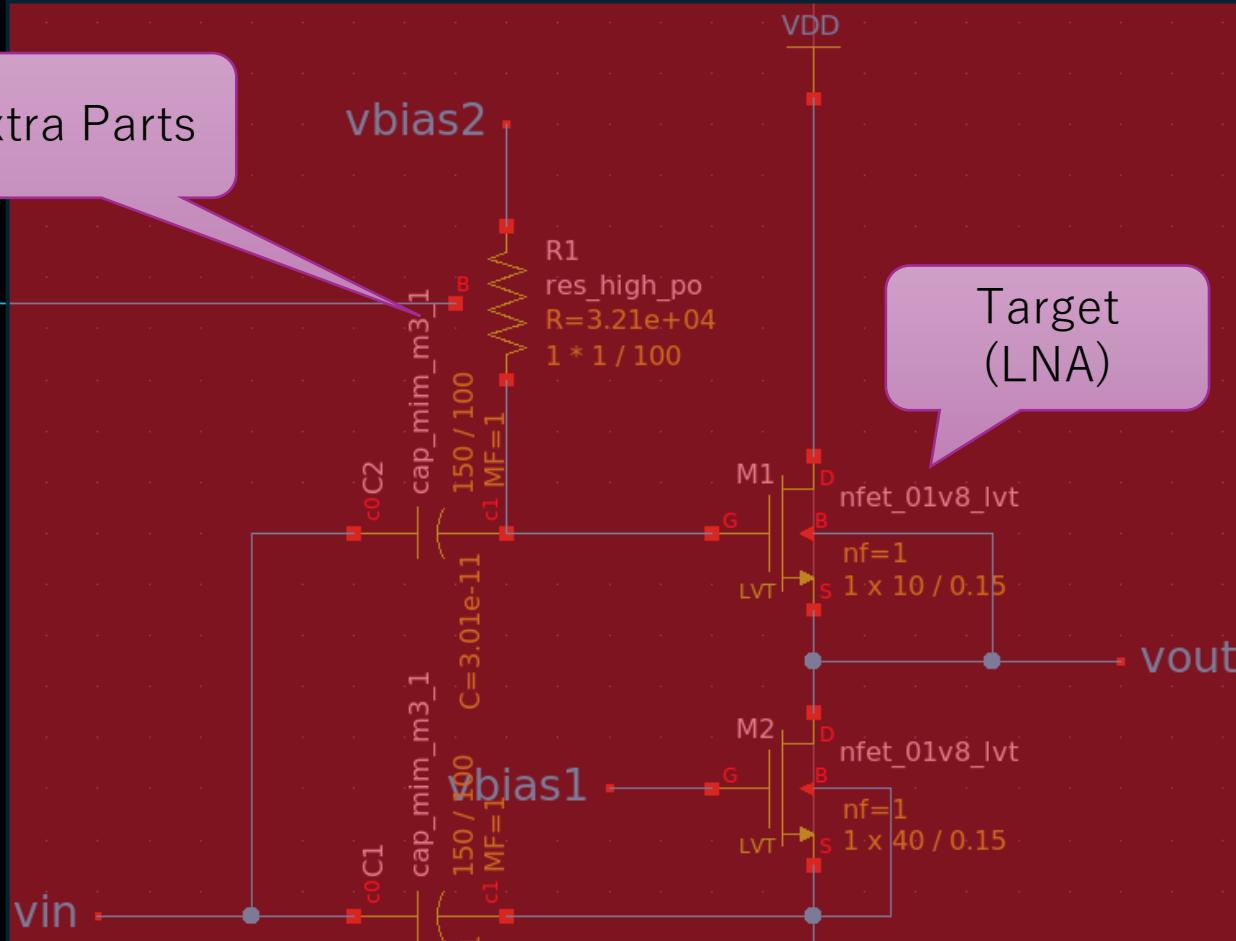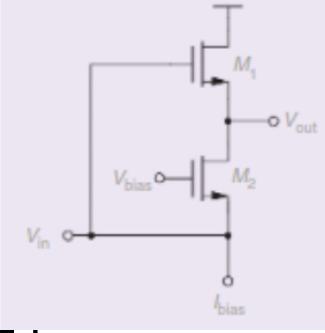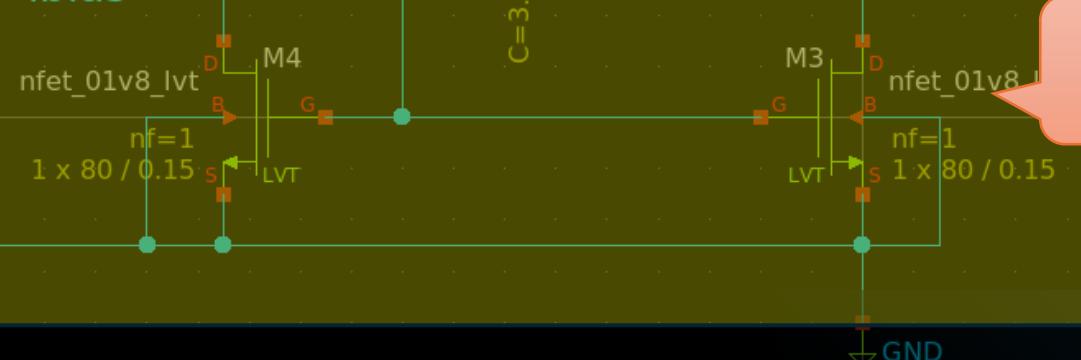
Low noise amplifier(23)

- **Evaluate Metrics**
  - Gain[dB]
    - gm/ID Methodology
  - NF(Noise Figure)[dB]
    - Noise Rate from ngspice's noise command.
  - Target Specification
    - Search "Max Gain(= Gain – NF)"
      - Extra: power consumption
- Fix Metrics
  - Frequency = [TBD]Hz
  - Bandwidth = [TBD]Hz (Full or Narrow)
    - I will decide it by my PC's CPU power.
  - Vbias1,2 = Fix Value
    - vin is the input signal with different biasing
    - C1,C2,R1 = Fix Value
 - Ibias = from Ibias PAD

Test Try: Target Evaluate Metrics
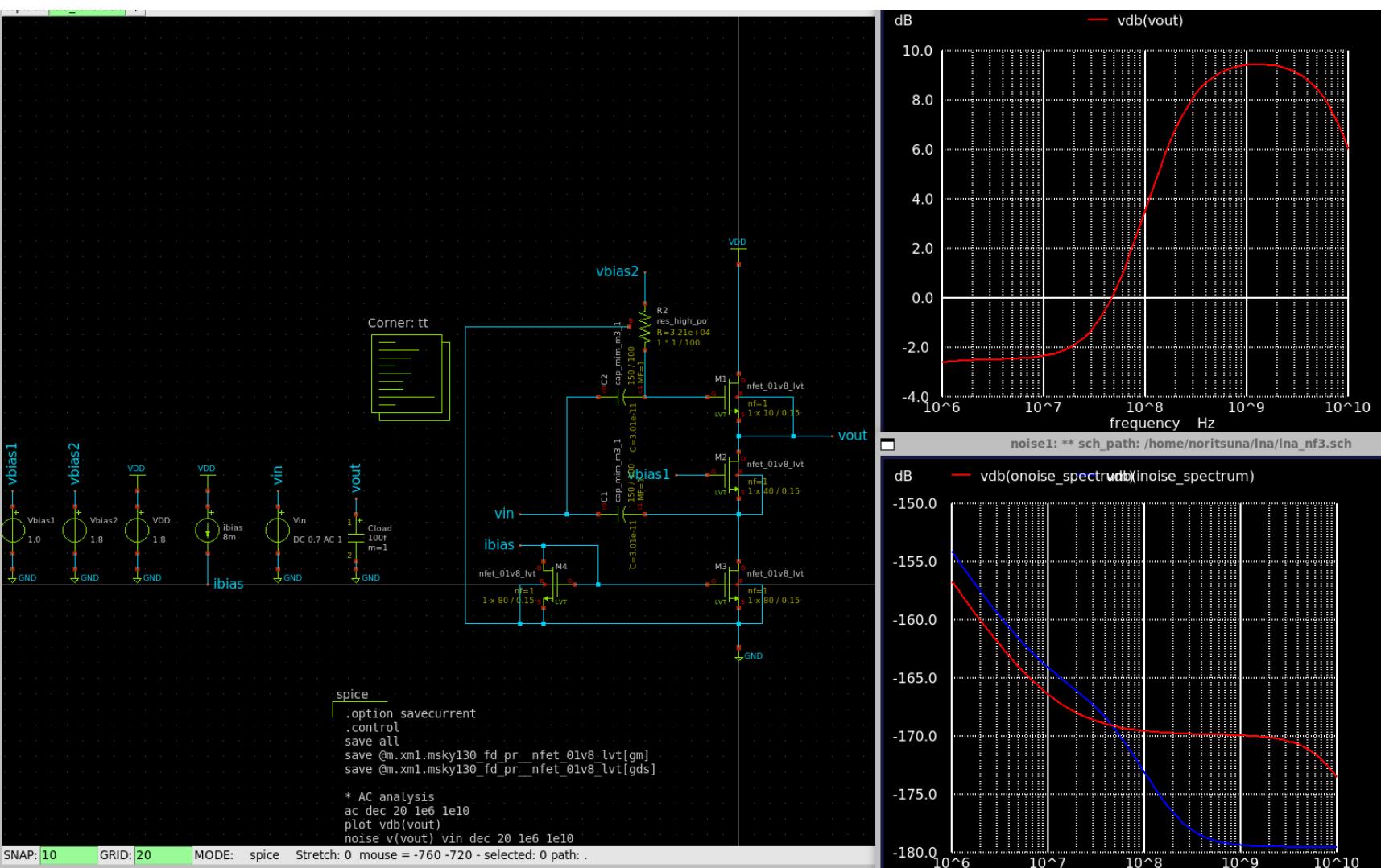
- Evaluate Metrics
  - Gain[dB]
    - 10dB
      - Target Frequency: 2GHz
      - Bandwidth: 100MHz
  - NF[dB]
    - Under: 0.1dB
  - Target Specification
    - 10dB

Plan

1. Setup Environment. ← Finish

2. Run and Read OPAMP tutorial. ← Finish

3. Decide Evaluate Metrics of LNA without bandwidth specification.
    1. I will make a sample LNA circuit and do simulation it.

4. Learn how to use ngspice's noise command.
    1. I never use ngspice's noise command yet.

5. Try to generate LNA by Evaluate Metrics.
    1. Try to make Voltage Reference & Current Source as Fixed Layout, If I have more free time.