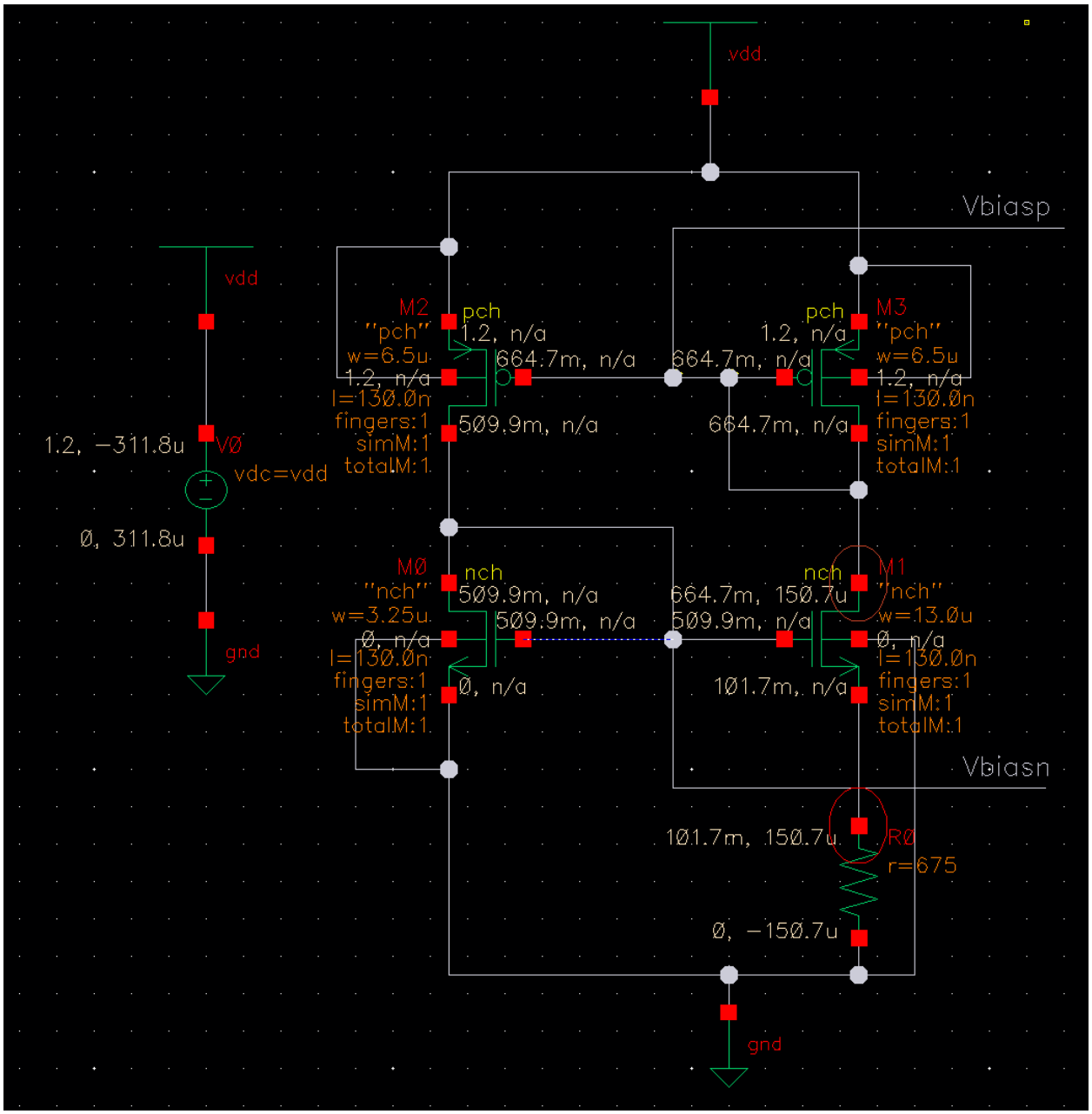
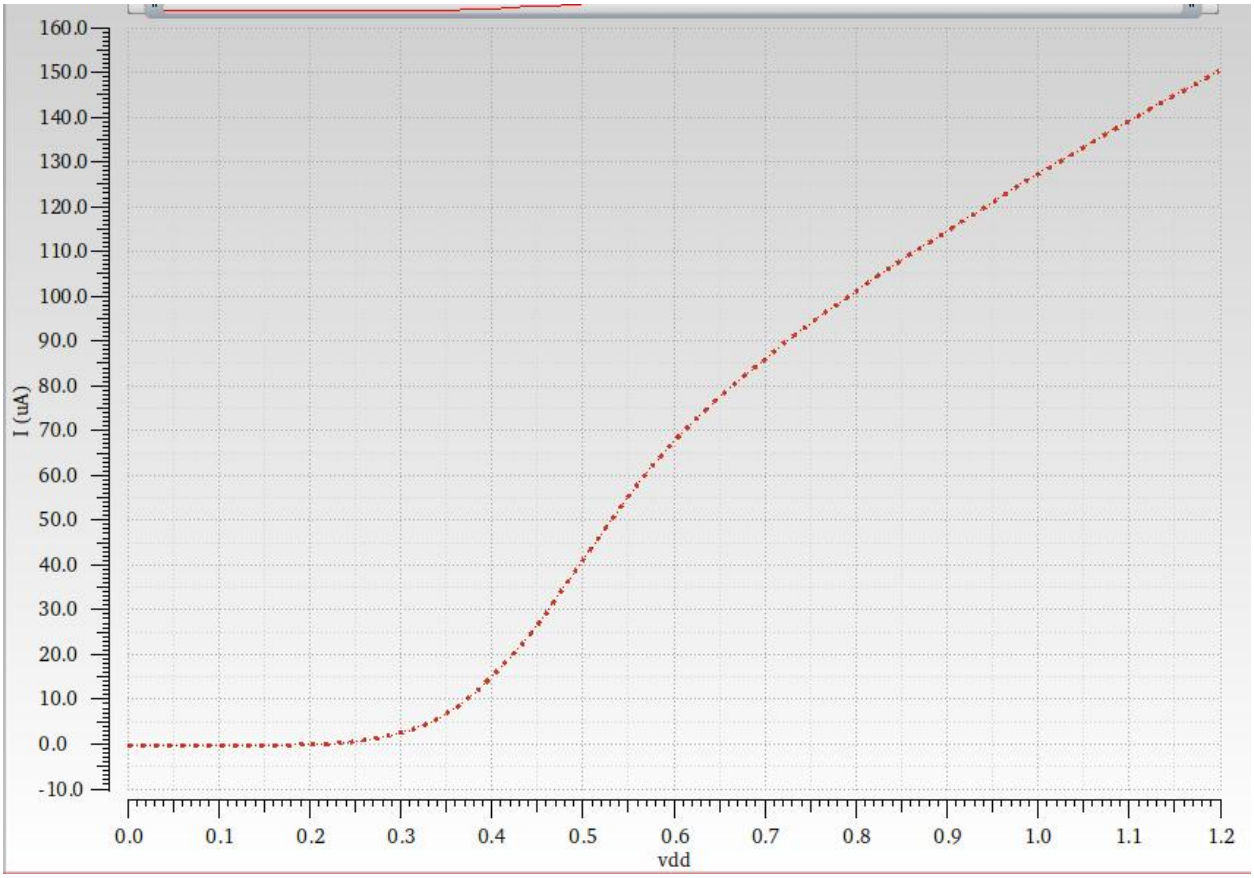
Aireen Amir Jalal- 010989584
Analog IC Design

ELEG 587V Homework #1 (50 pts)

For all problems, you are to choose all the transistor properties that are required to meet the desired specification for the circuit as well as draw the circuit. Please box or underline all answers. Design both circuits within the MUSE 65nm technology within Cadence Virtuoso.

1. Design the simplest Beta-Multiplier circuit (no start-up circuit required) that provides a reference current of 150 µA. Give the resistance and the two bias voltages as your answers.

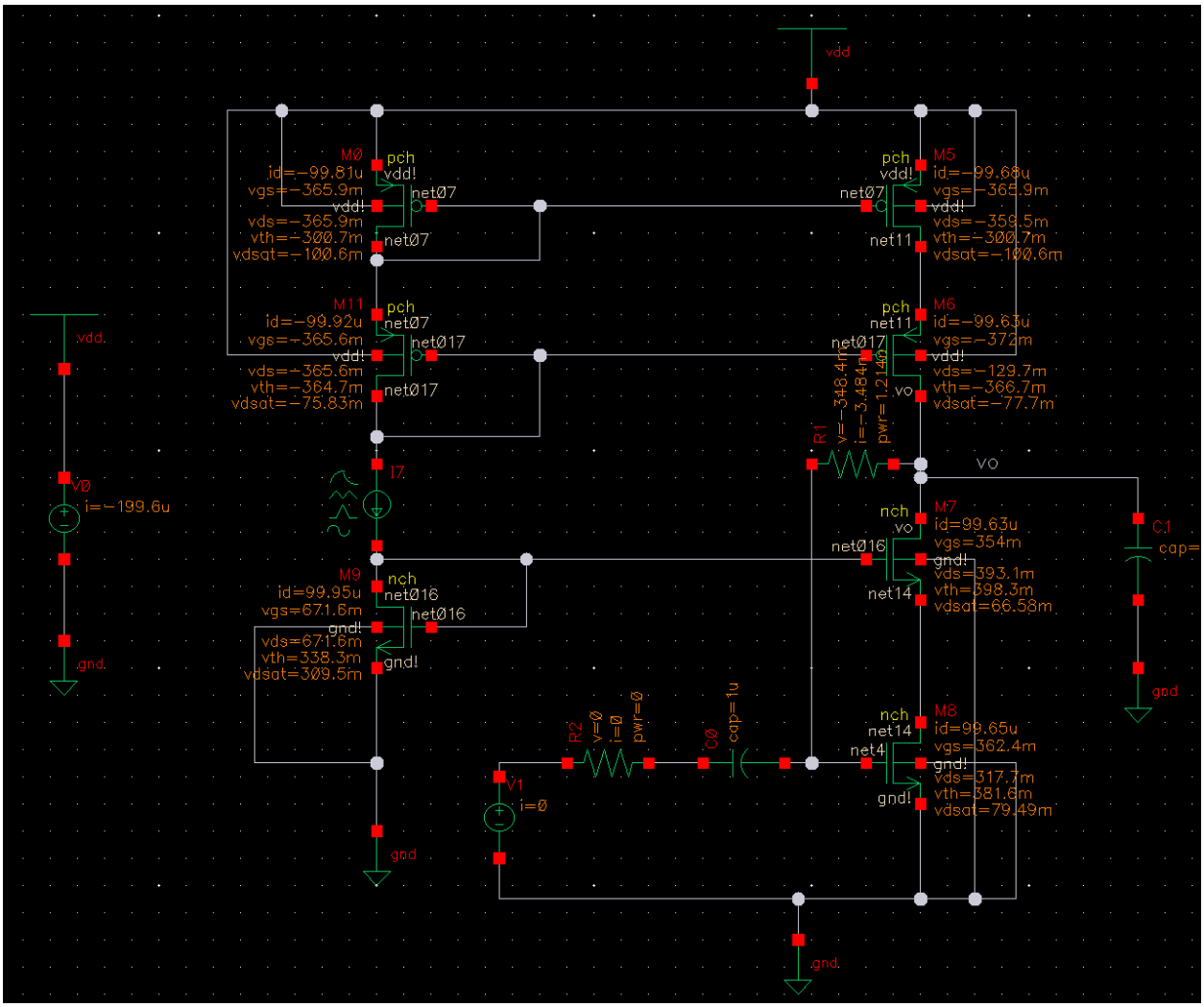




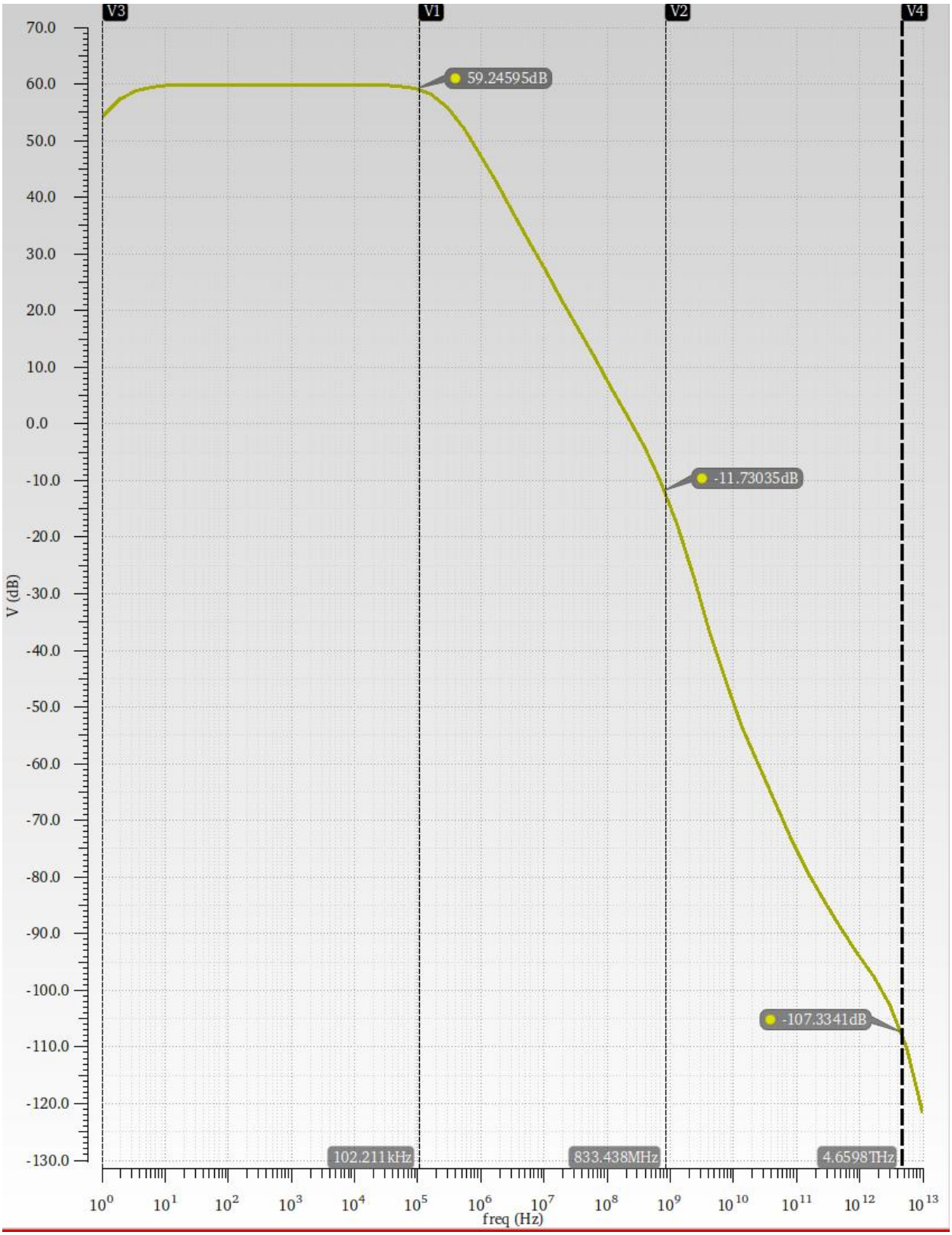
R=675Ohms
Vbiasn= 509.9 mV
Vbiasp= 664.7 mV

2. Design a common-source amplifier with a current source load that provides 100 µA to the amplifier with a voltage gain of 1000. Provide the input and output frequencies as well as the RHP zero frequency

Aireen Amir Jalal- 010989584
Analog IC Design



Aireen Amir Jalal- 010989584
Analog IC Design



From the graph above it can be estimated that

Aireen Amir Jalal- 010989584
Analog IC Design

Fin=f3db=121Khz
Fout=880Mhz
Fz=4.5Thz