
UM-SJTU JOINT INSTITUTE
ELECTRONIC CIRCUITS SUMMER
(ECE3110J)

LAB2 REPORT

COMMON-EMITTER AMPLIFIER OF BJT

INSTRUCTED BY

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1 Exercise 2.1.1

In this experiment I first assume the value of R_C is $150\ \Omega$. Then the simulation circuit will be like this.

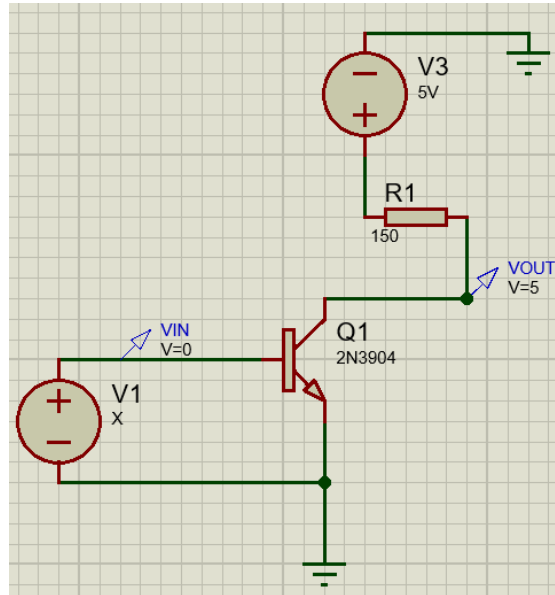


Figure 1: Simulation Circuit of 2.1.1

By performing the DC sweep, we get the following result:

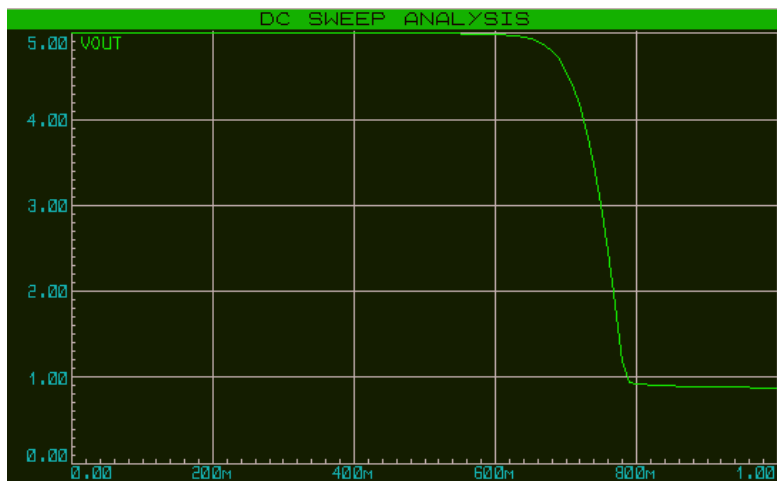


Figure 2: DC Sweep Result of 2.1.1

From the figure, we get that the slope is around 30.

2 Exercise 2.1.2

The simulation circuit will be like this.

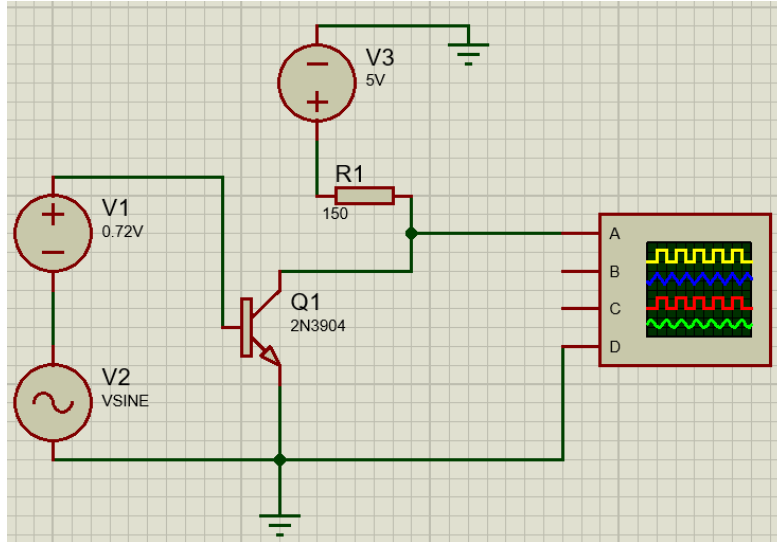


Figure 3: Simulation Circuit of 2.1.2

From the simulation results we can get that $v_{out}=270\text{mV}$. Since it is close to $0.01 \times A_v$, we can conclude that $v_{out} = 0.01 \times A_v$.

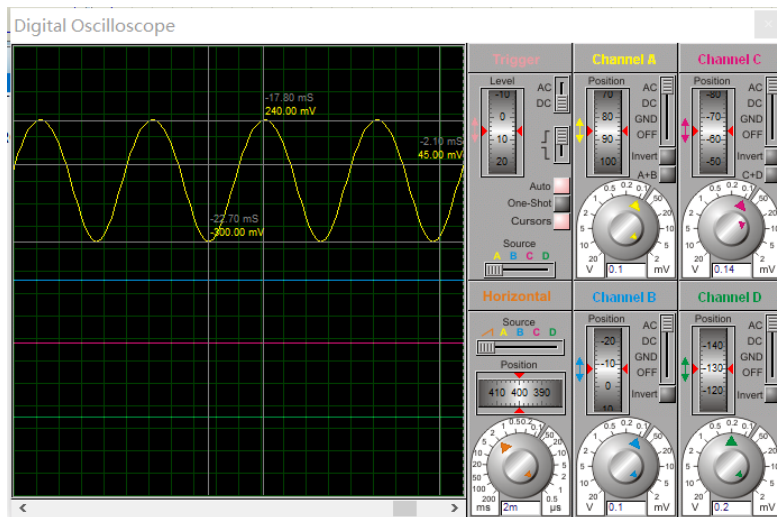


Figure 4: Simulation1 Results of 2.1.2

The result in lab has too much noise due to the equipment.

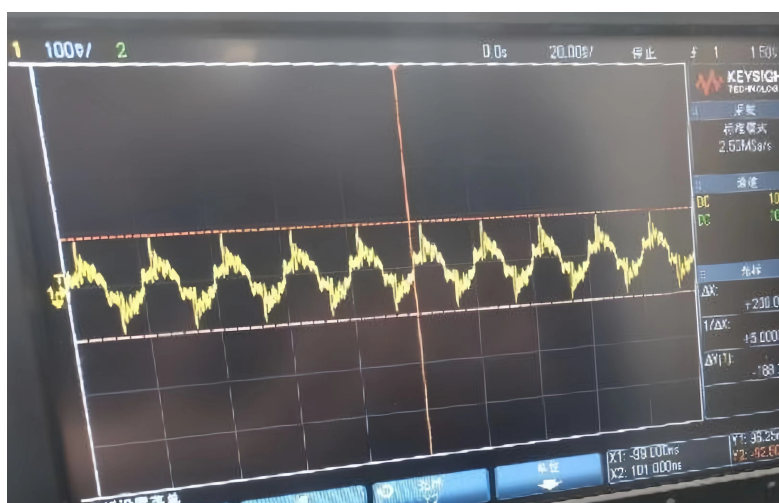


Figure 5: Simulation Results of 2.1.2

3 Exercise 2.1.3

The simulation circuit will be like this.

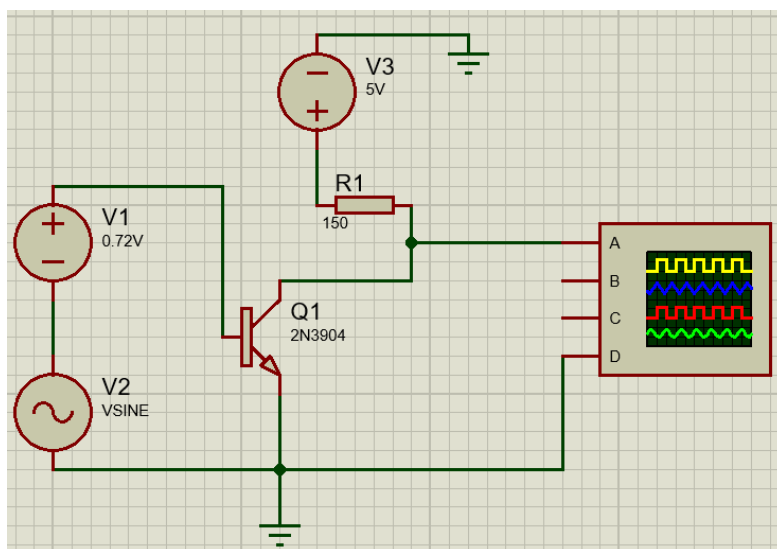


Figure 6: Simulation Circuit of 2.1.3

From the simulation results we can get that $v_{out}=102.5\text{mV}$. Since it is not close to $0.01 \times A_v$, we can't conclude that $v_{out} = 0.01 \times A_v$. The reason may be that under high frequency, the capacitance of BJT will have some influences.

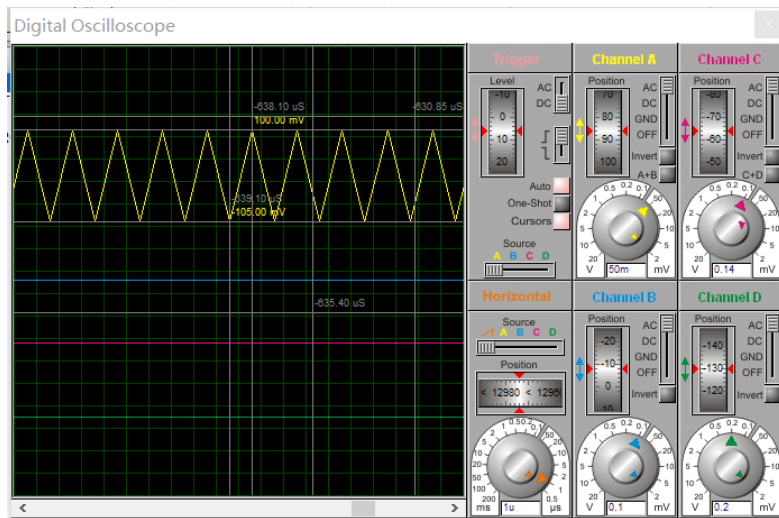


Figure 7: Simulation Result of 2.1.3

The result in lab has too much noise due to the equipment.



Figure 8: Simulation Results of 2.1.3