

# CURRENT SHUNT FEEDBACK AMPLIFIER

## THEORY:

Current shunt feedback amplifier is one of the feedback topology in which the output circuit is parallel with the feedback network i.e. sampling network, while the mixer used is series mixing which means that the input circuit and the feedback network are in series. In this circuit, the emitter terminal of transistor Q2 is coupled to base of transistor Q1 through feedback resistor  $R_F$ . The output voltage  $V_o$  and input voltage  $V_i$  are out of phase by  $180^\circ$  due to transistor action and also because of emitter follower the output and the feedback circuit are in phase, thus providing a total phase shift of  $180^\circ$ . Hence, the circuit shows the characteristics of negative feedback. The output voltage and input voltage versus frequency plots have been produced based on the circuit simulation.

## SCHEMATIC DIAGRAM:

The circuit schematic of current shunt feedback amplifier using eSim is shown below:

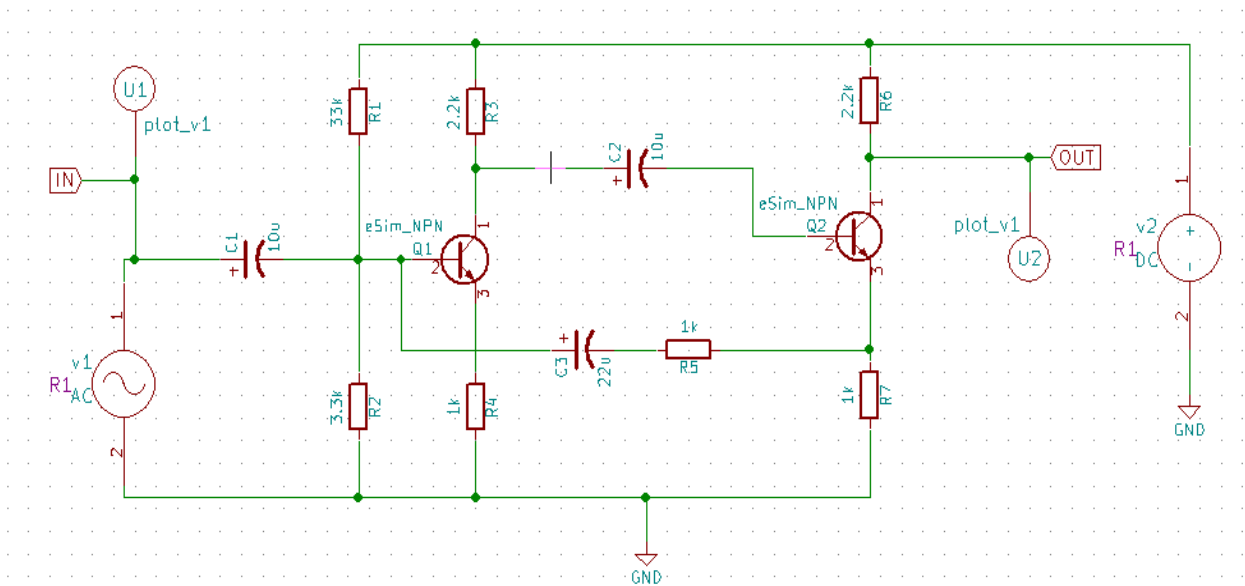


Figure 1: Current Shunt Feedback Amplifier

# SIMULATION RESULTS:

## 1. NgSpice Plots:

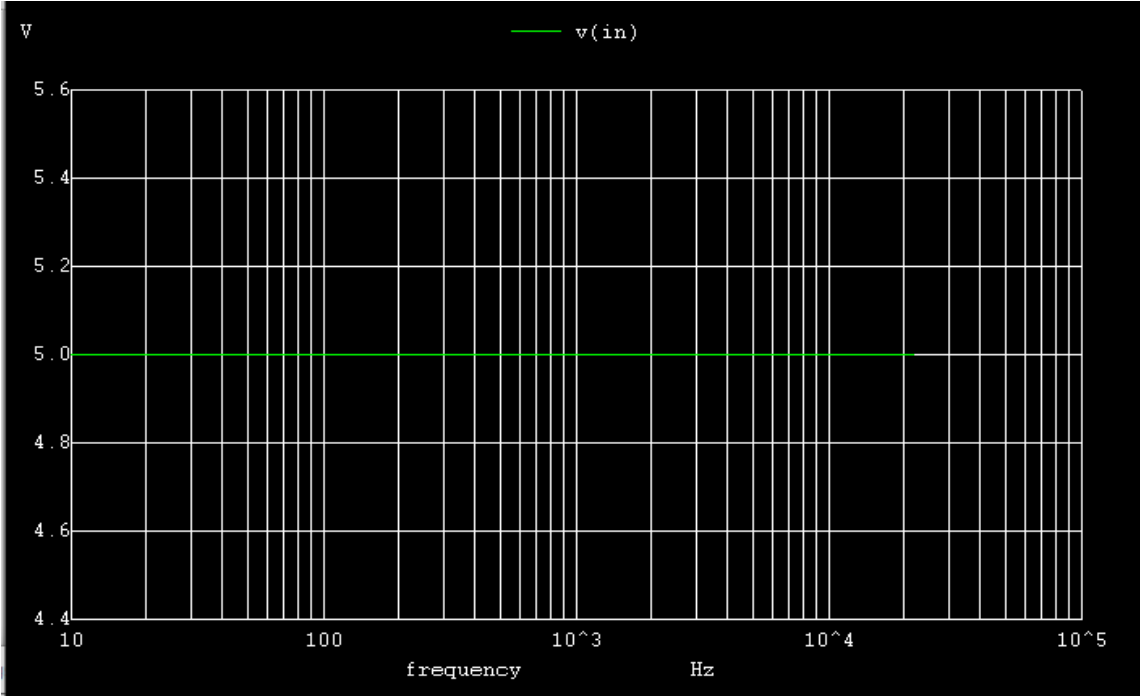


Figure 2: NgSpice Input Voltage Plot.

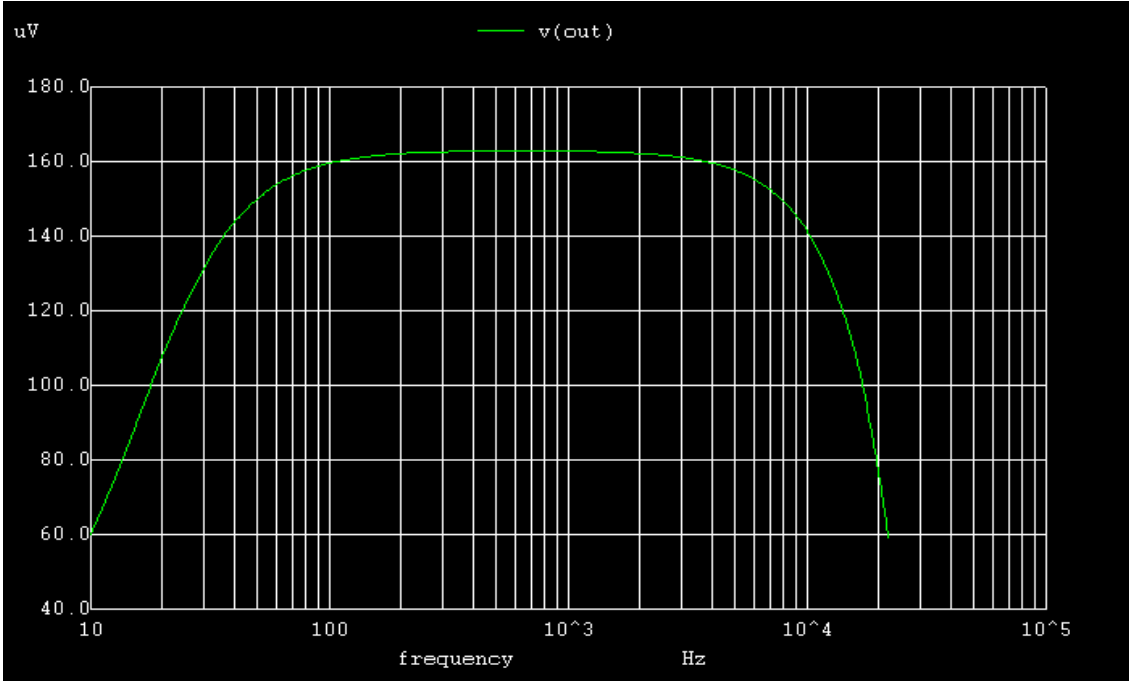


Figure 3: NgSpice Output Voltage Plot.

## 2. Python Plots:

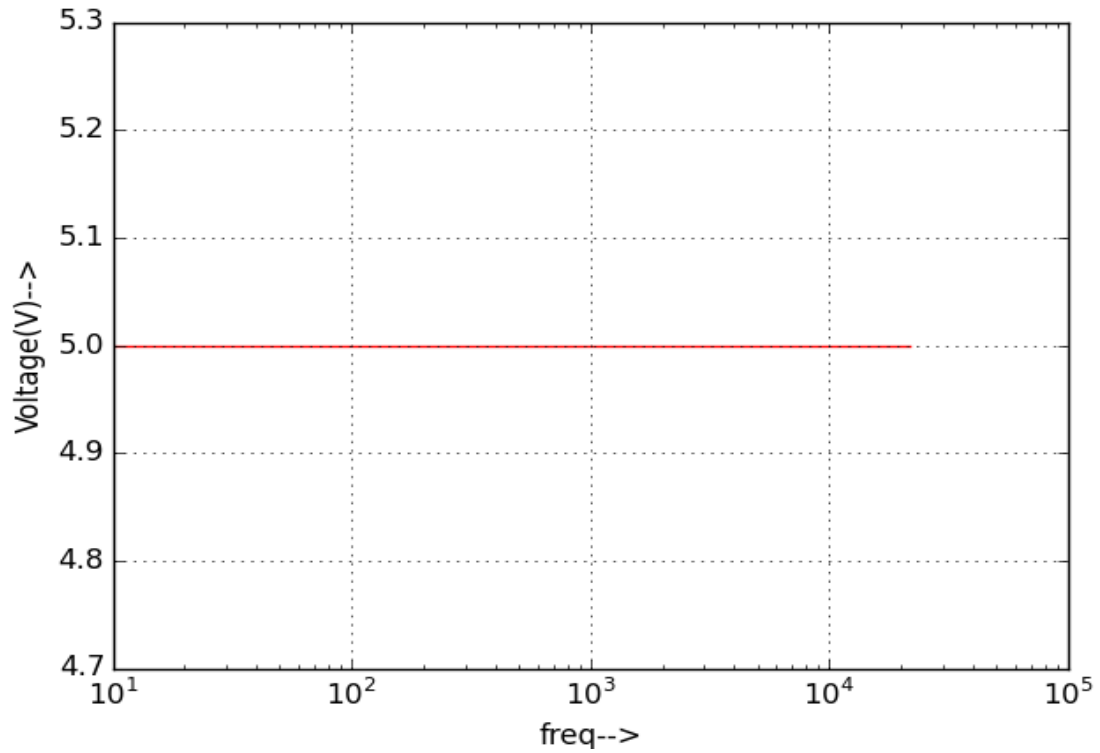


Figure 4: Python plot for Input Voltage.

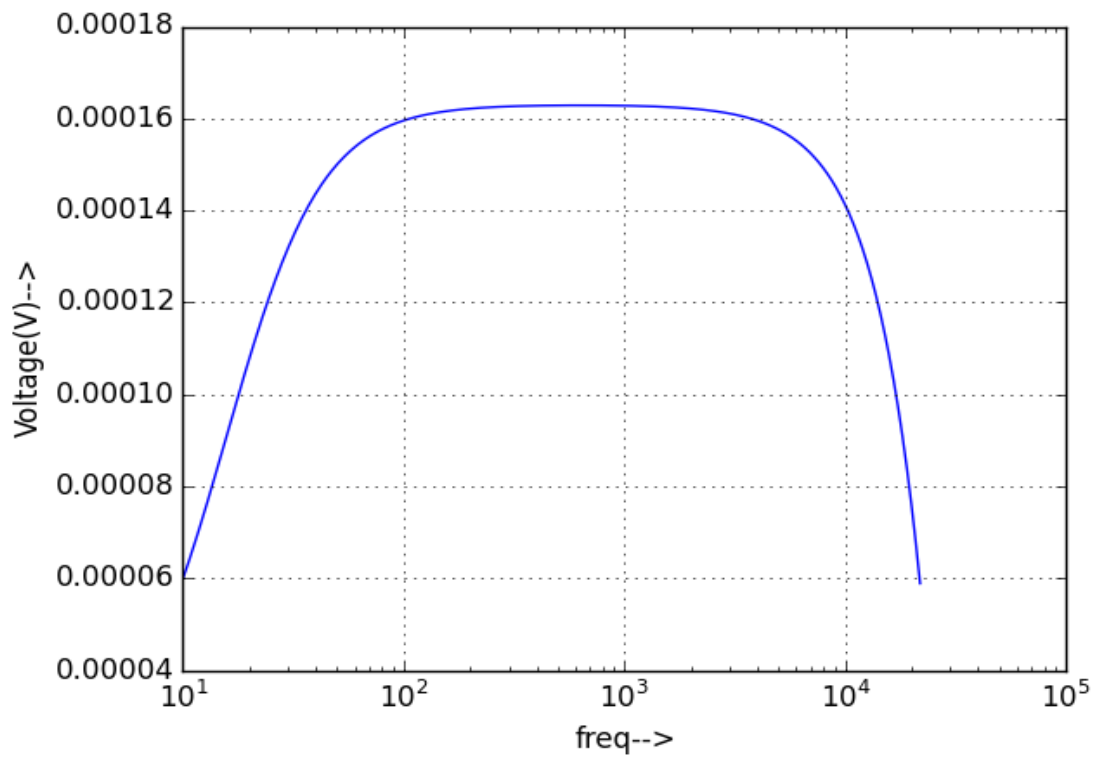


Figure 5: Python plot for Output Voltage.

## **CONCLUSION:**

Thus, the current shunt feedback amplifier with the help of transistors has been studied and performed the circuit simulation using eSim. The input and output analysis has been obtained using NgSpice and Python plots.

## **REFERENCES:**

1. <https://www.scribd.com/document/404184787/eca-lab-min-pdf>
2. Electronics Principles by Dr. Sanjay Sharma.