PRACTICAL CASCODE AMPLIFIER

1. THEORY :

A Cascode amplifier consists of a CE amplifier followed by a CB amplifier. The CE amplifier is directly coupled to the CB amplifier. Hence a Cascode amplifier is defined as a direct coupled CE-CB amplifier. The CE amplifier drives a CB amplifier for both DC and AC inputs. A practical Cascode amplifier circuit consists of resistors R4 and R5 forming a voltage divider biasing network for the FET Q2. R3 is the drain resistor for Q2 and it limits the drain current. R2 is the source resistor of Q1 and C1 is its by-pass capacitor. R1 ensures zero voltage at the gate of Q1 during zero signal condition.

The Cascode connection is especially useful in wideband amplifier design as well as the design of high-frequency tuned amplifier stages. The improvement in high-frequency performance is due to the impedance mismatch between the output of the common emitter stage and the input of the common base stage. Another important characteristics of the Cascode connection is the higher isolation between its input and output than for a single common emitter stage, because the reverse transmission across the compound device stage is much smaller than for the common emitter stage.

2. SCHEMATIC DIAGRAM:

The schematic diagram of Cascode amplifier circuit in eSim is as follows,
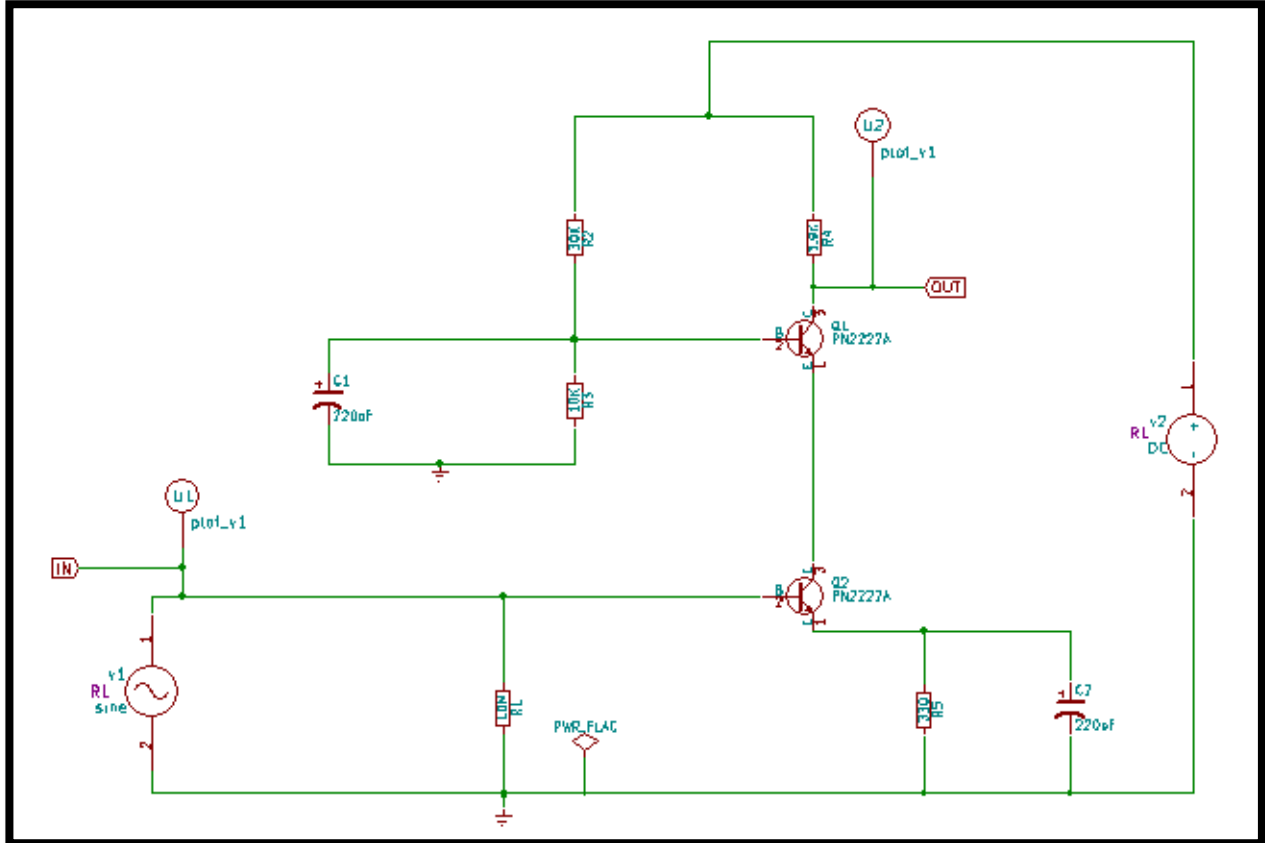

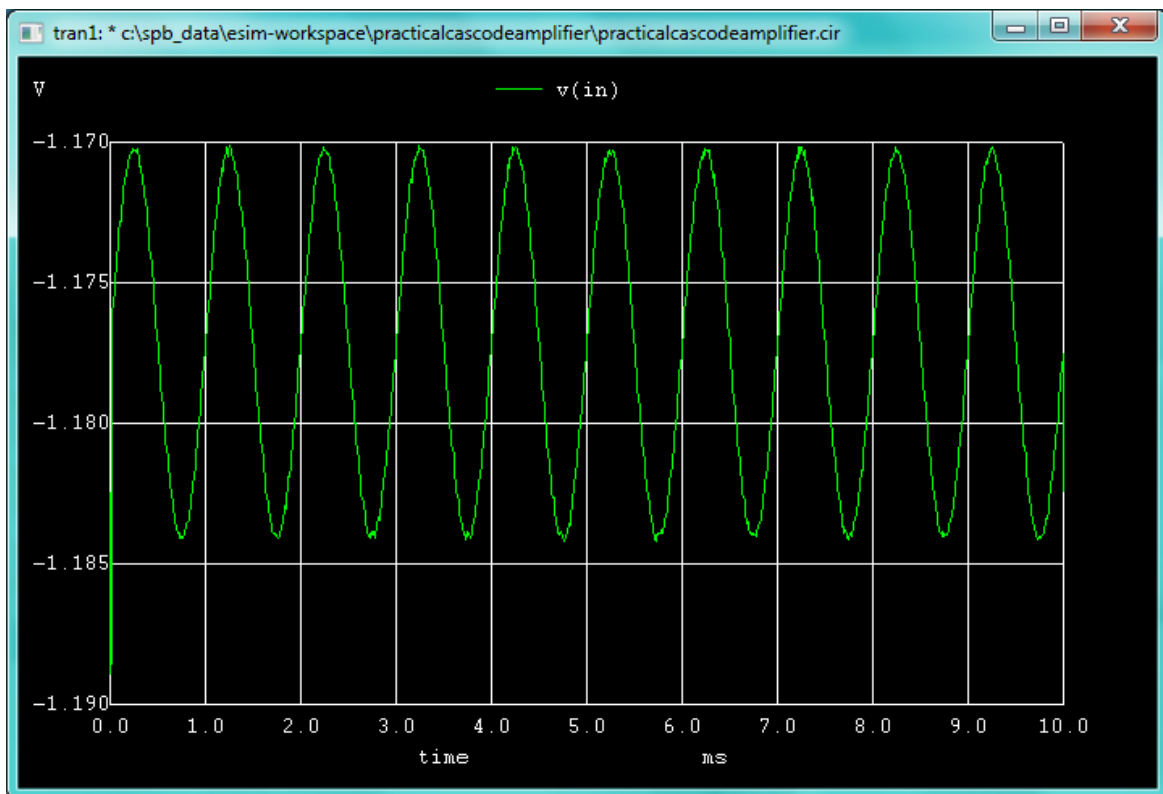**Figure 1:** Schematic Diagram of Cascode amplifier circuit.

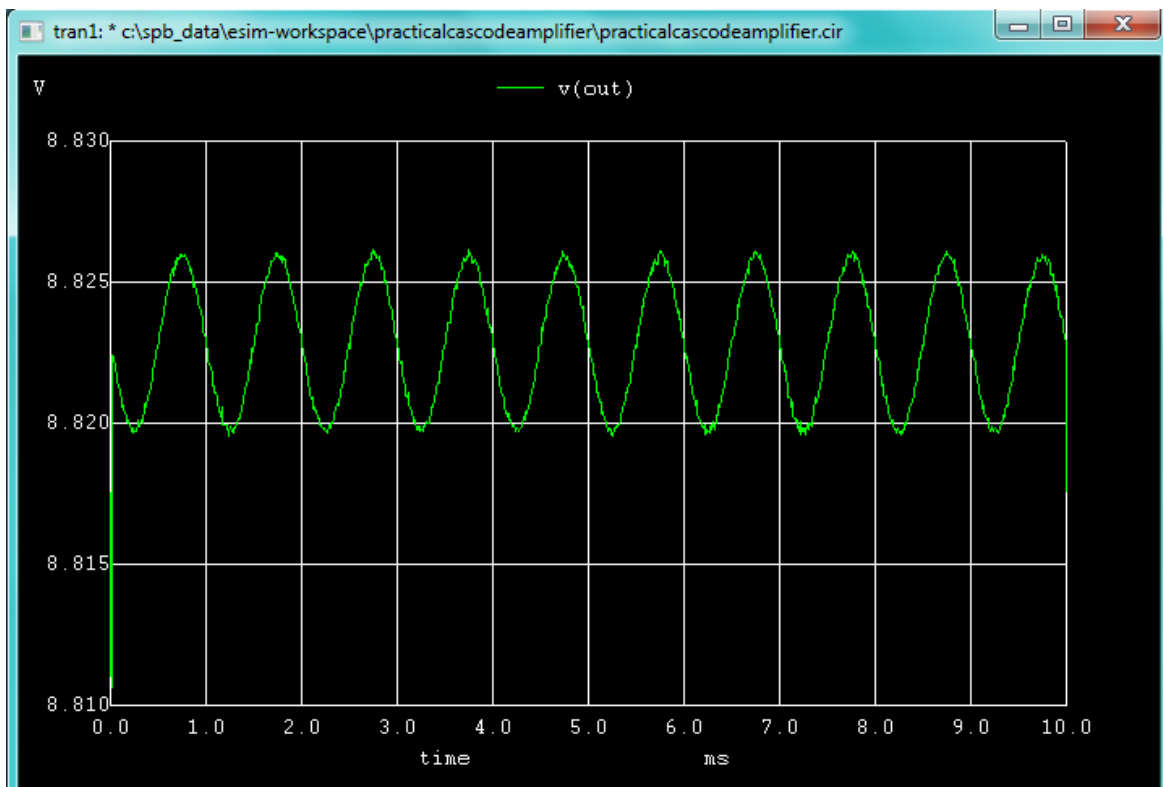## 3. SIMULATION RESULTS:

Figure 2: Ngspice Input Plot

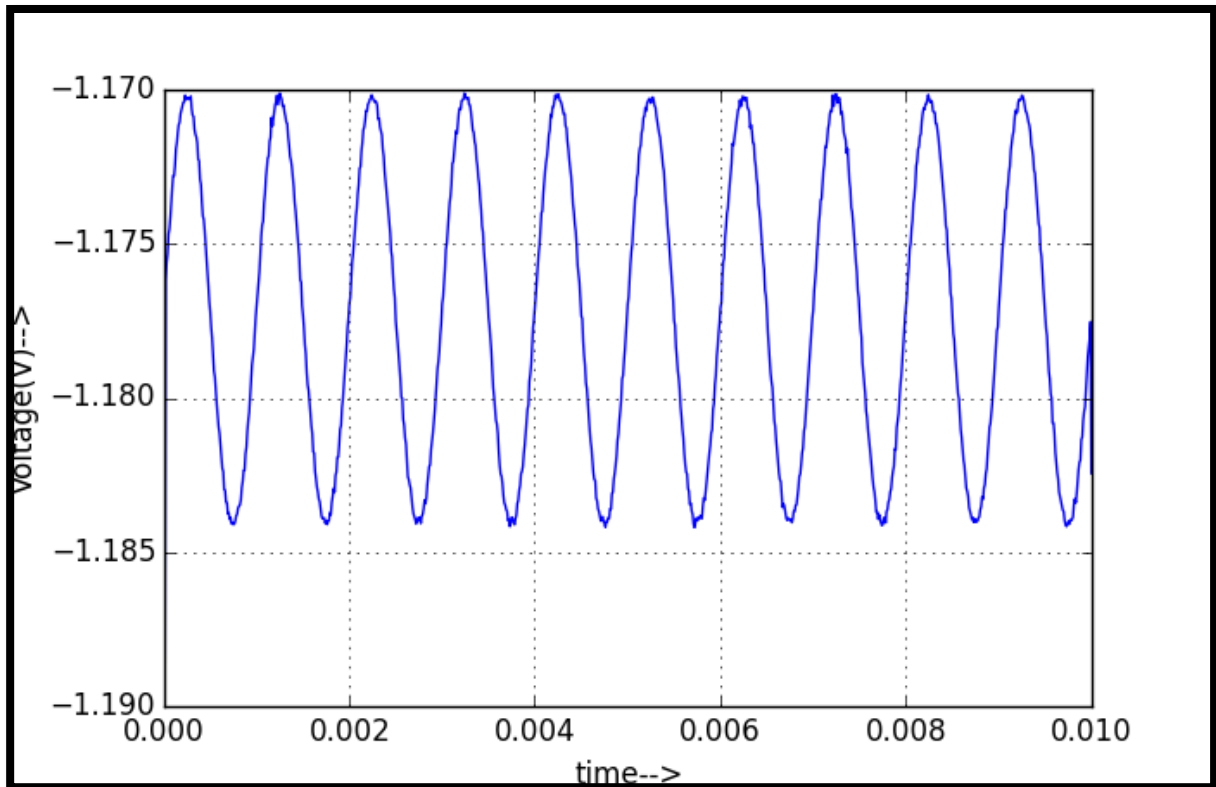**Figure 3:** Ngspice Output Plot
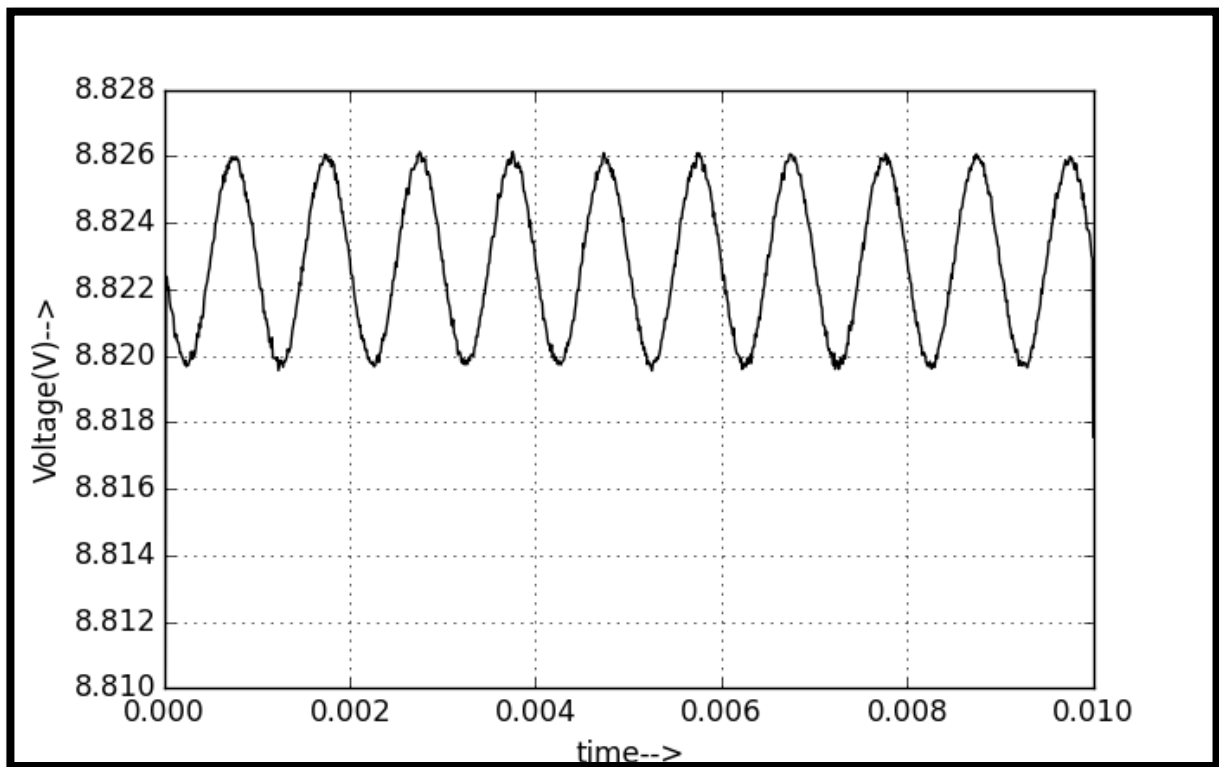
Figure 3: Python Input Plot

Figure 3: Python Output Plot

4. CONCLUSION:

       Thus we have studied Cascode amplifier circuit using eSim and got the appropriate wave forms.

5. REFERENCE:

http://www.circuitstoday.com/cascode-amplifier

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