

Title of the experiment:

Two stage amplifiers using mosfet(cascade configuration) in eSim.

Theory: The circuit shown in Fig 1 is a cascade of a common-source amplifier followed by a source-follower amplifier. The common-source amplifier provides a small-signal voltage gain and the source follower has a low output impedance and provides the required output current. The overall effect of the cascade configuration is to provide both high voltage and current gain, as well as low output impedance.

Schematic Diagram:

The circuit schematic of the common-source in cascade with source-follower in eSim is as shown below:

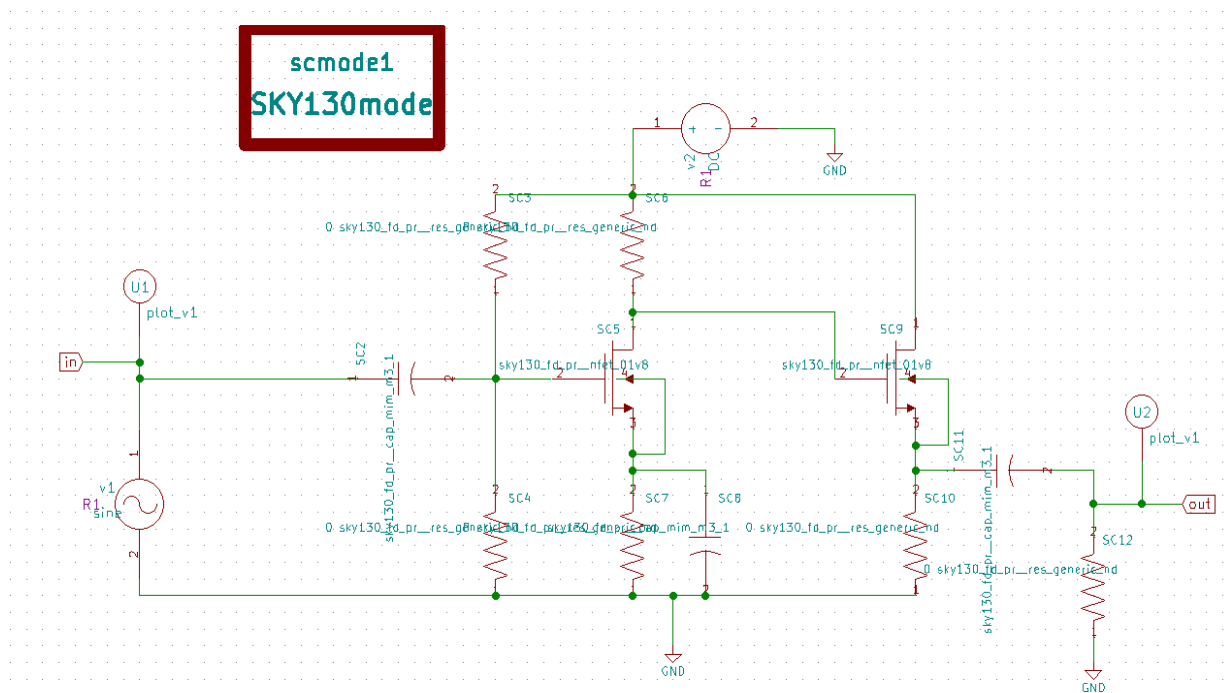


Figure 1: Two stage amplifier using Mosfet

Simulation Results:

Ngspice Plots

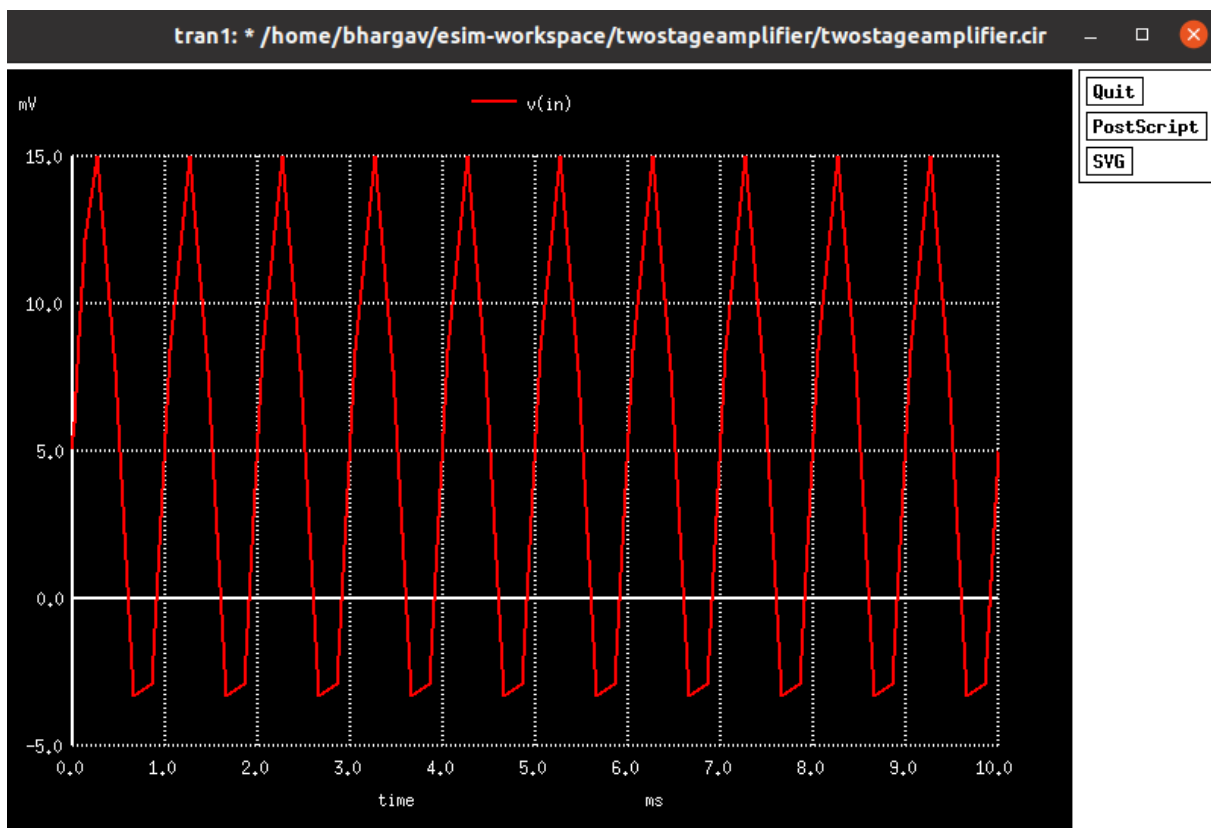


Figure 2: Ngspice Input Plot

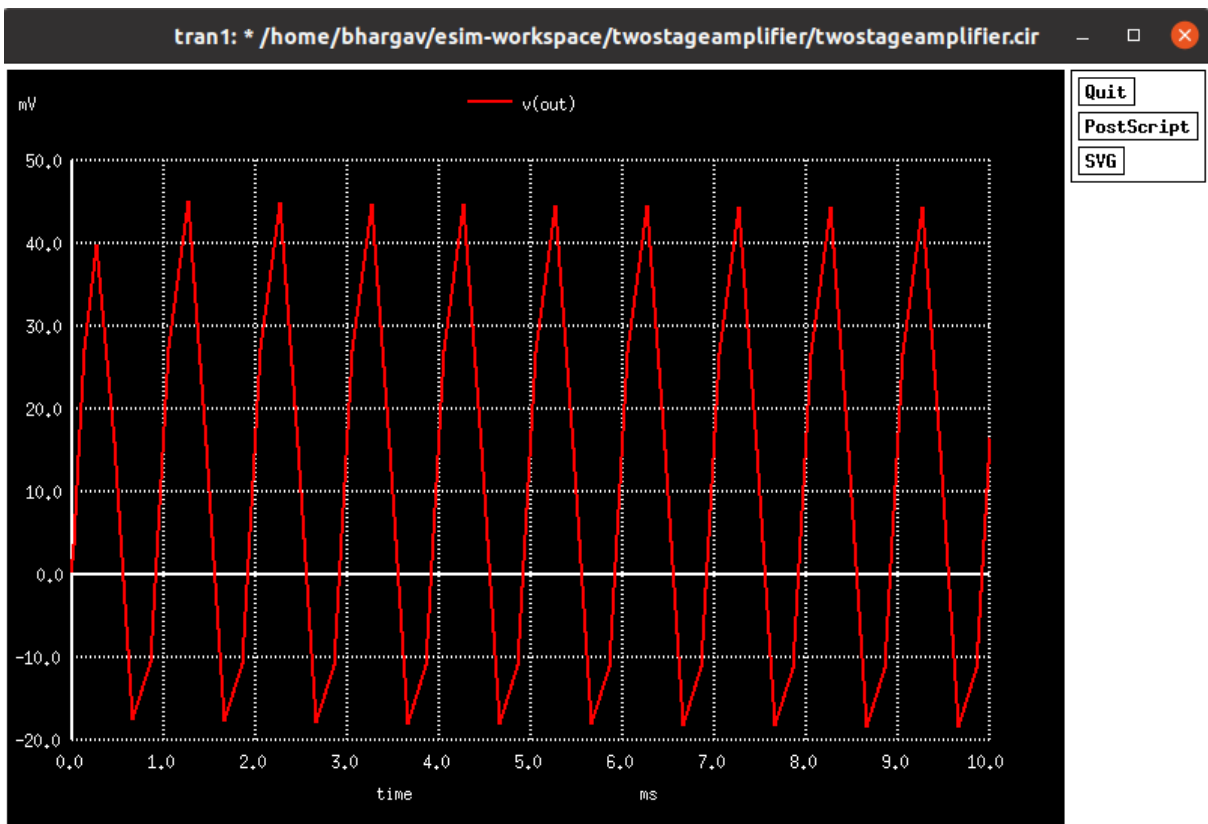


Figure 3: Ngspice Output Plot

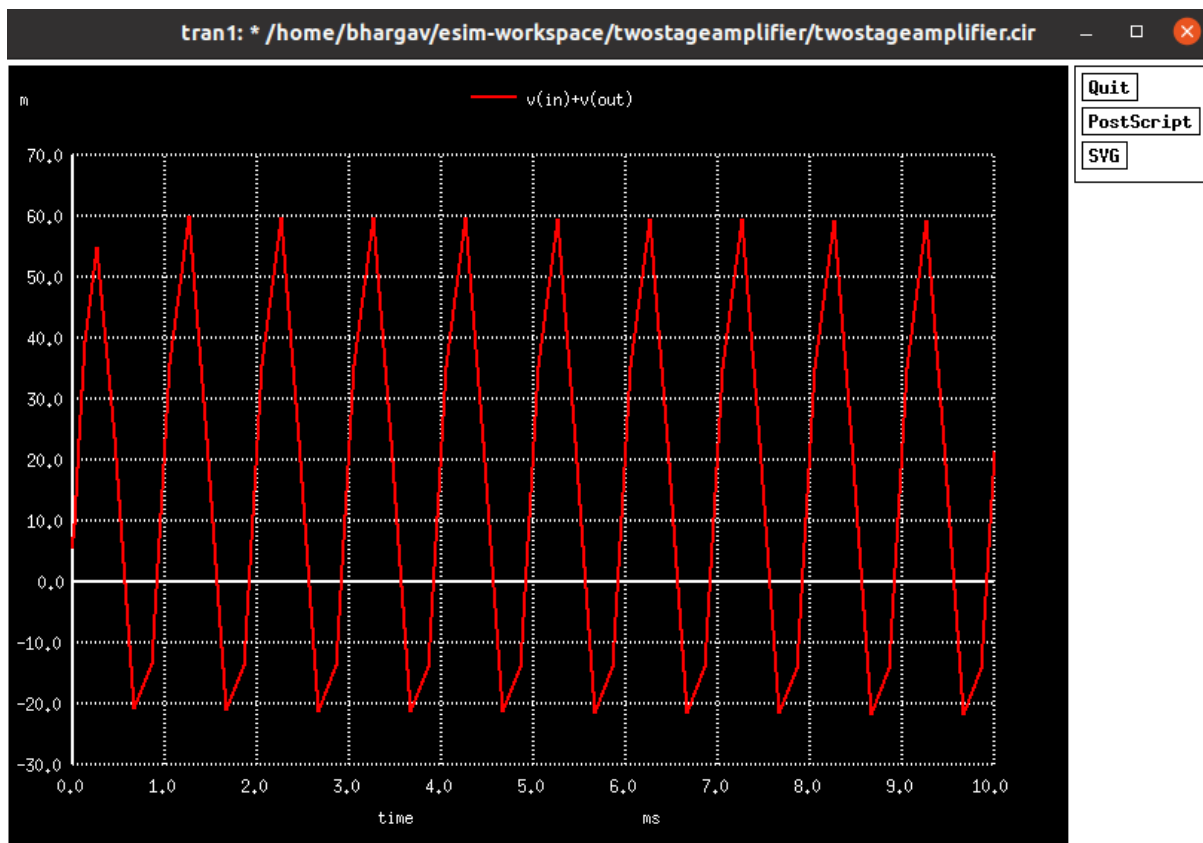


Figure 4: Ngspice Input+Output Plot

Conclusion: Thus, we have studied two stage amplifiers using mosfet(cascade configuration) on eSim and we get appropriate wave form.

References: Electronic circuits analysis and design by Donal A Neamen (Page No.176, Fig 3.56) (3rd Edition).