EEE104
Circuit Analysis I

Ankara University

Faculty of Engineering

Electrical and Electronics Engineering Department

Operational Amplifier
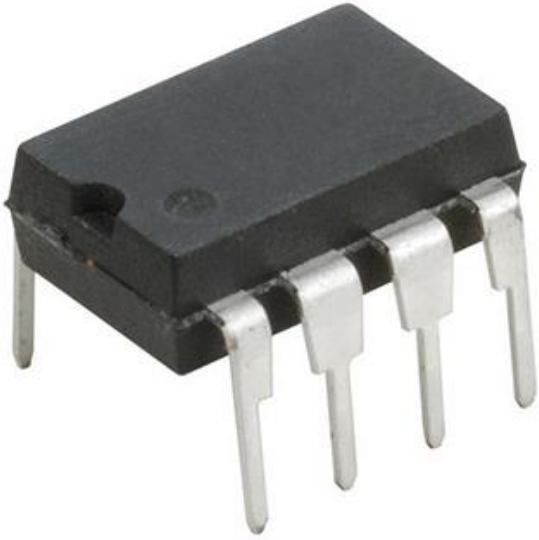
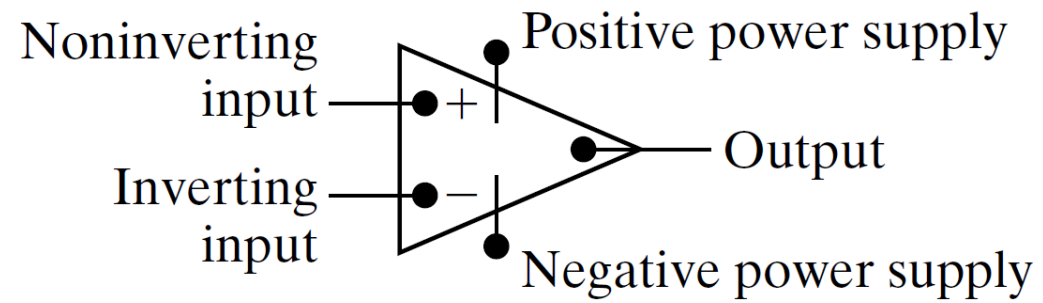EEE104 Circuit Analysis I

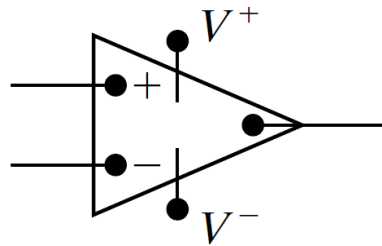Lecture 7

Agenda

- Operational Amplifier (OPAMP)

- Operational Amplifier

• Operational Amplifier

Noninverting input — +

Inverting input — −

Positive power supply

Output

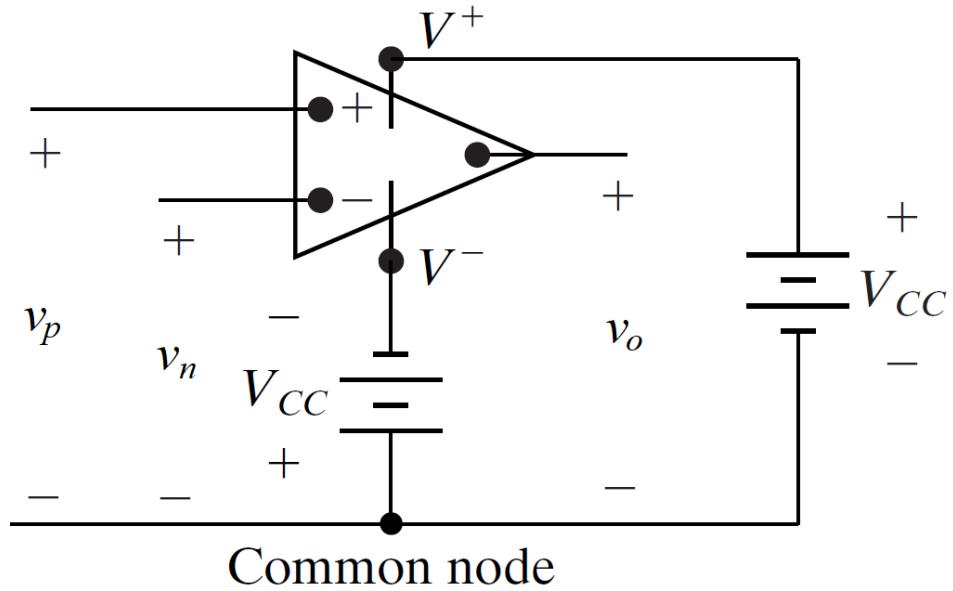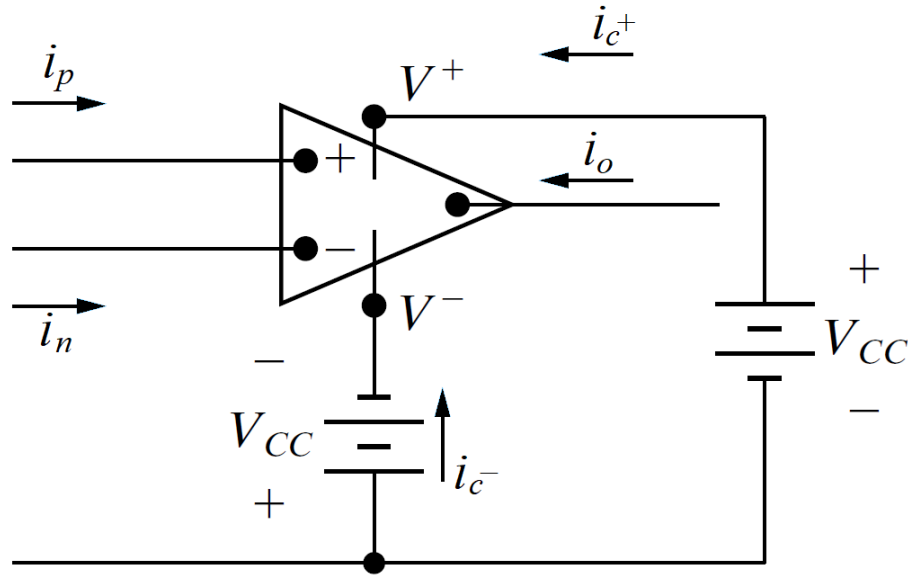Negative power supply

- Operational Amplifier

Simplified circuit model

- Operational Amplifier

Terminal voltage variables

• Operational Amplifier

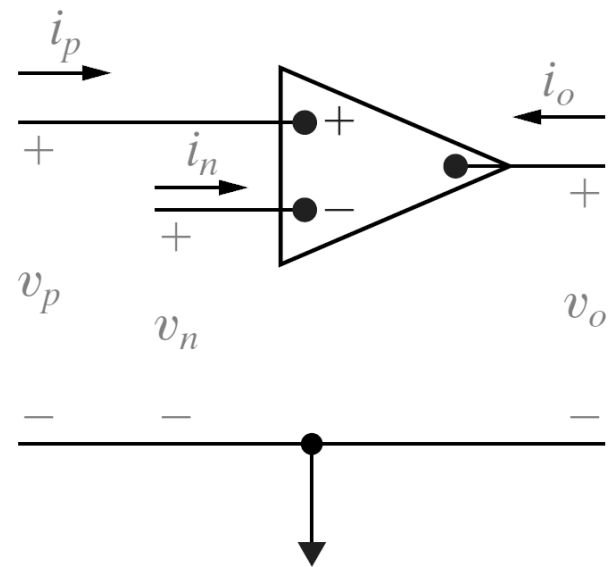## Terminal Current Variables

- Operational Amplifier

  Input voltage constraint for ideal opamp:
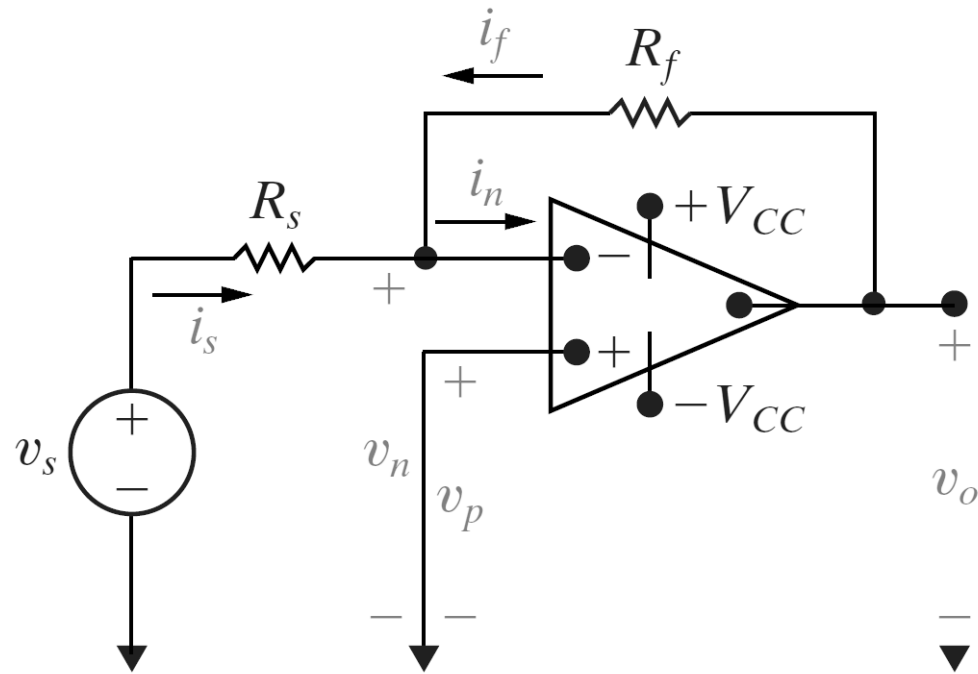
  $v_p = v_n$

  Input current constraint for ideal opamp:
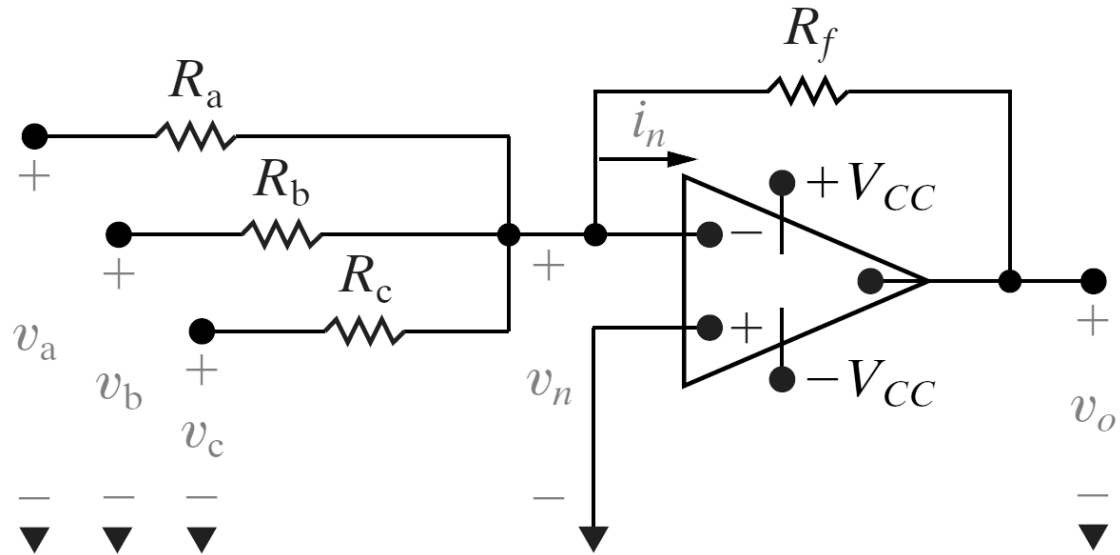
  $i_p = i_n = 0$

• Operational Amplifier

Opamp without power supply terminals
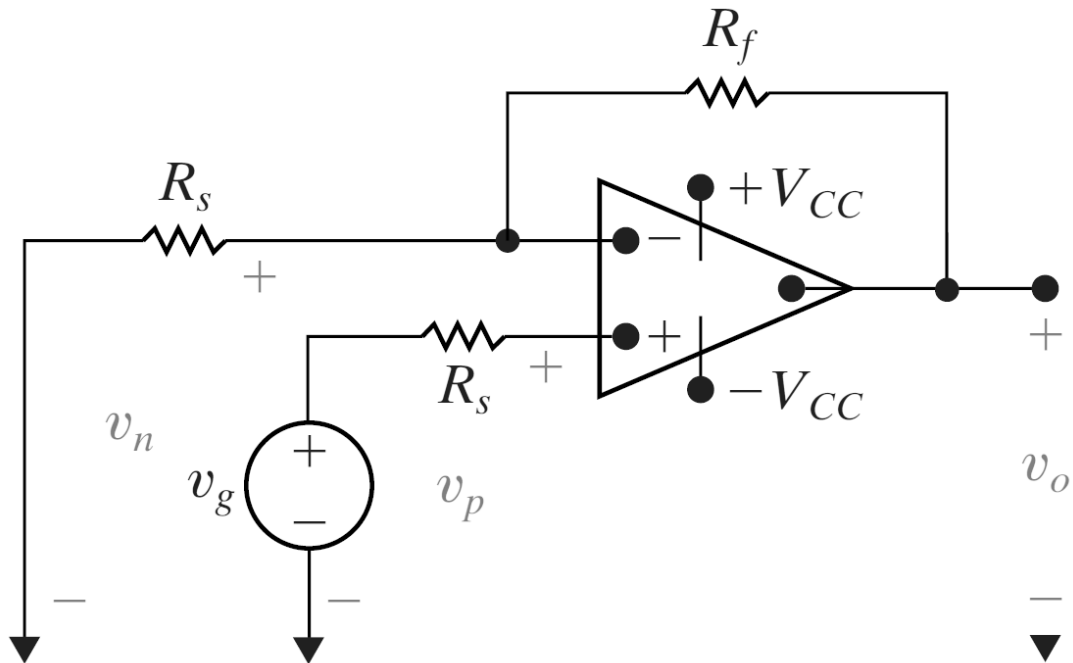
• Inverting Amplifier

• Summing Amplifier

- Noninverting Amplifier

Reference

- Electric Circuits, Tenth Edition, James W. Nilsson, Susan A. Riedel Pearson, 2015