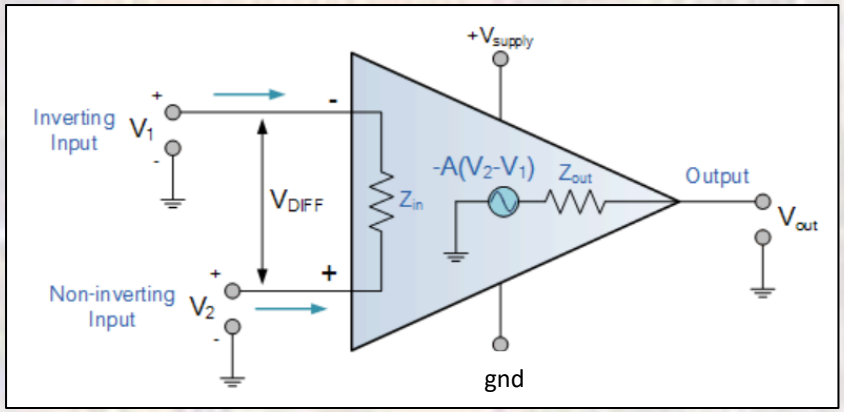
OpAmp Basics

Last updated 6/24/21

OpAmp Basics

- OpAmp Characteristics
  - 2 analog inputs
  - 1 analog output
  - High gain amplifier
    - Typical Open-Loop DC gain of 10,000 to 100,000
    - $V_{OUT} = -G(V_+ - V_-)$



OpAmp Basics

- OpAmp Characteristics
  - High input impedance – do not load the src
  - Low output impedance – drive loads easily
  - Input offset – fixed error in $V_{diff} = V_{+} - V_{-} + V_{input\text{-}offset}$
    - Typically in the mV range
  - Gain-Bandwidth Product – how far out in frequency the amplifier operates linearly – (when in a fixed gain configuration)
    - 1MHz G-BW
      - At a gain of 1 – operates out to 1MHz
      - At a gain of 10 – operates out to 100KHz
      - At a gain of 100 – operates out to 10KHz
      - …