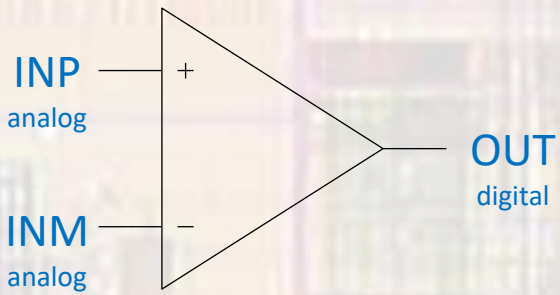
Comparator Basics

Last updated 6/23/21

Comparator Basics

- Comparator Characteristics
  - 2 analog inputs
  - 1 digital output
  - Saturating high gain amplifier
    - Output = '0' if $V_{INP} < V_{INM}$
    - Output = '1' if $V_{INP} > V_{INM}$
  - Kind of like a 1 bit ADC with INM as the reference and INP as the input



Comparator Basics

- Comparator Characteristics
  - Designed to allow very fast transitions
    - Special output circuitry – makes it different than an OpAmp
  - Some designs include hysteresis
    - Does not switch exactly when $V_{INP} = V_{INM}$
      - Requires the plus input to be a little above the minus input when switching from 0 → 1
      - Requires the plus input to a little below the minus input when switching from 1 → 0
    - Stops the output from flipping back and forth when INP is very close to INM