

When analyzing amplifiers, consider the following “steps”

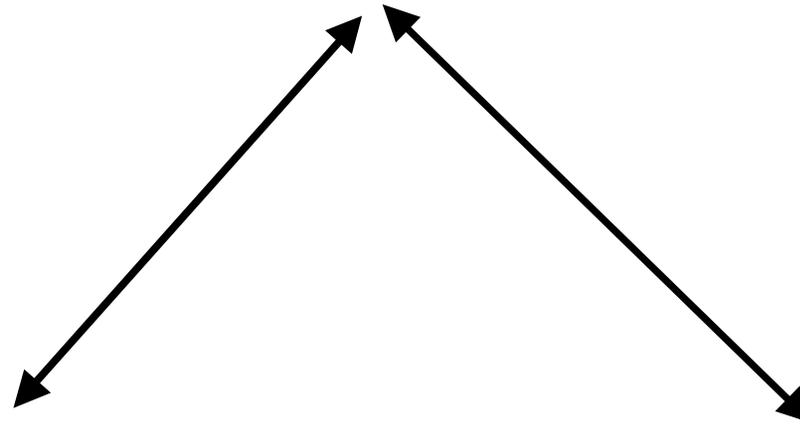
DC Analysis

Biasing

- Design Voltage reference
- Rref,
- Current source
- Current mirrors

Voltage swing

- MOS transistors should stay saturated (i.e. $V_{DS} > V_{GS} - V_{Tn}$, $V_{SD} < V_{SG} + V_{Tp}$),
- BJT transistors should stay in the linear mode ($V_{BE} \sim 0.7$, $V_{CE} > 0.1$).



Small Signal Analysis

- Use it to find 2-port equivalent
- Figure out parasitic capacitors in the small signal circuit
- Figure out R_{in} , R_{out} , r_{oc} , A_v , A_i
- Do frequency response of simple amps.

2-Port Analysis

- Use it to take advantage of pre-calculated properties of CE, CB, CC, CD, CS, CG.
- Use it to create compact representations of each stage, so that you can figure out cascaded, multi-stage amps.
- Use it (with parasitic and load capacitors) to figure out frequency response of complex amps.