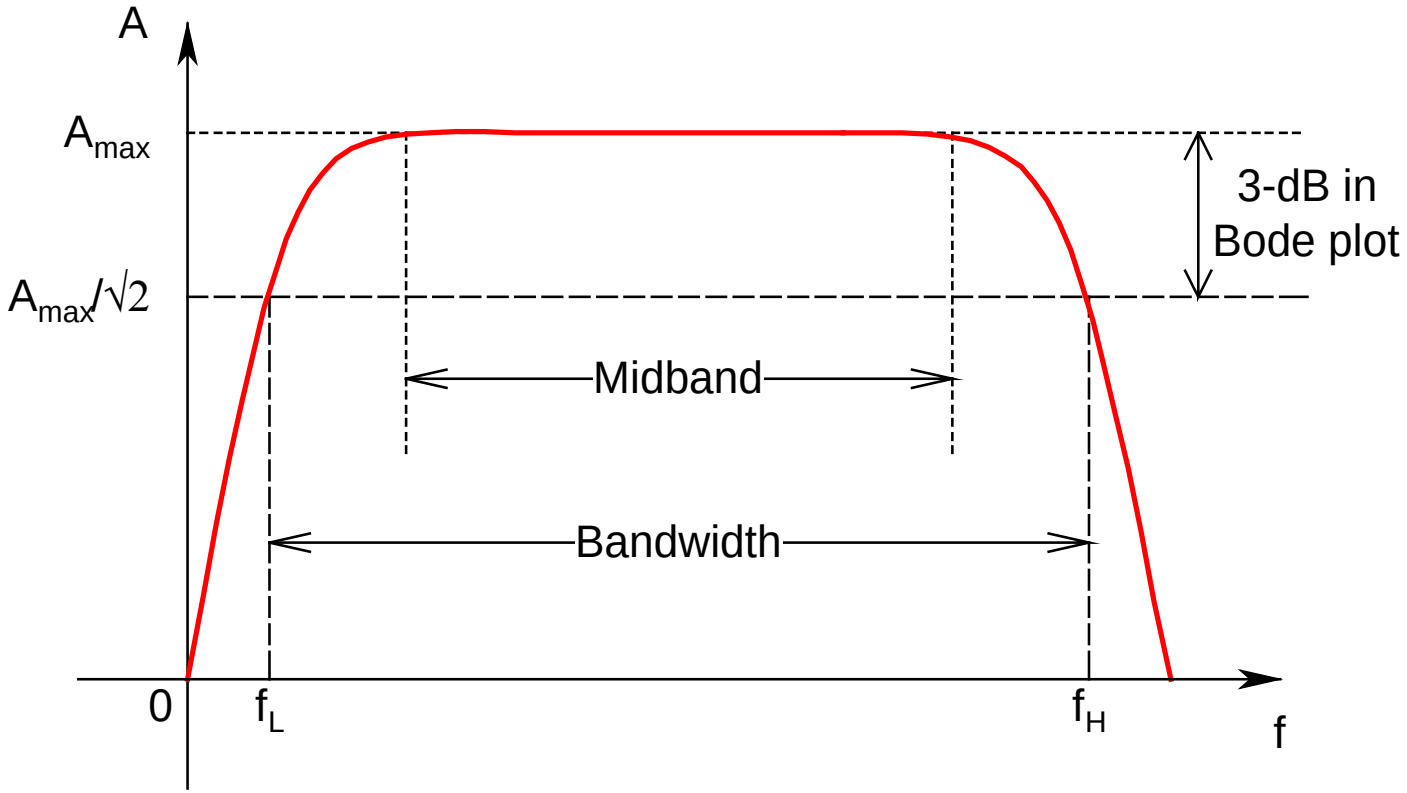
AMPLIFIERS

Outline

- ***Amplification*** of ***ac signals*** (***voltage***, ***current***)
- ***Discrete*** and ***IC***
- ***Single-Stage*** and ***Multi-Stage***
- ***Modular approach***
- Interested in:
  - ***Voltage/Current Gain*** (A_v/A_i)
  - ***Input/Output Resistance*** (R_i/R_0)

Midband Analysis



f_L: Lower Cutoff Frequency

f_H: Upper Cutoff Frequency

Bandwidth = $f_H - f_L$

Single-Stage Topologies

- ***BJT***:
  - ***Common-Emitter*** (CE)
    - ***i/p to B***, ***o/p from C***, ***E common to both i/p and o/p***
  - ***Common-Base*** (CB)
    - ***i/p to E***, ***o/p from C***, ***B common to both i/p and o/p***
  - ***Common-Collector*** (CC)
    - ***i/p to B***, ***o/p from E***, ***C common to both i/p and o/p***
  - ***Common-Emitter (Degeneration)*** [CE(D)]
    - ***Same as CE***, but now with an ***emitter resistance attached***