Filter Concepts

Last updated 4/26/22

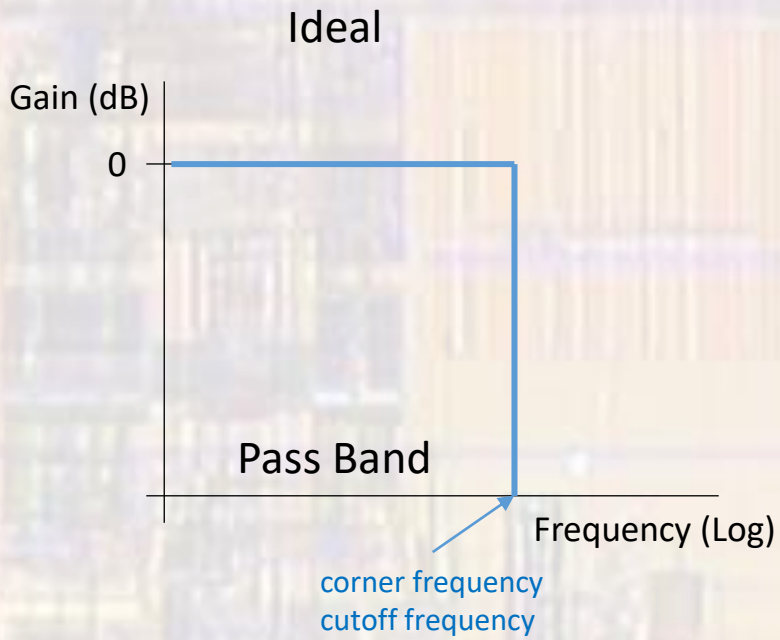
Filter Concepts

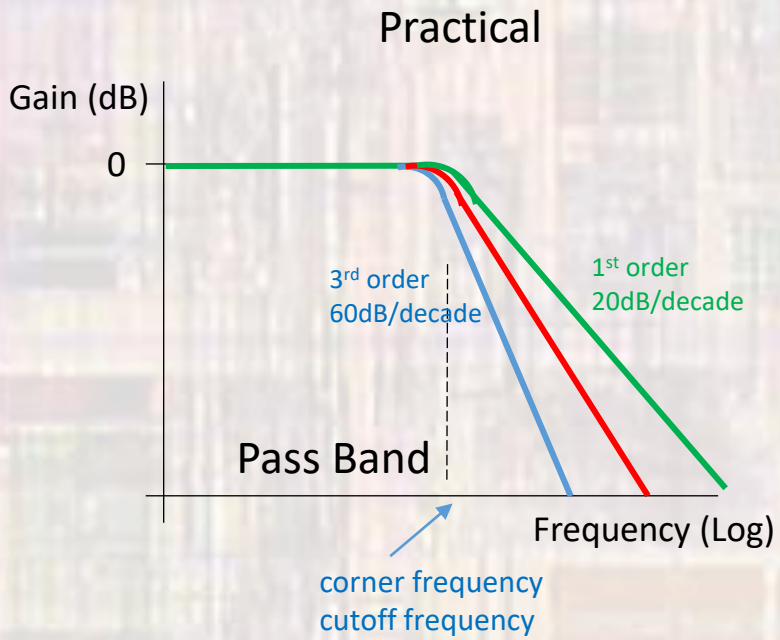
- Filter (electronics)
  - A filter is a circuit capable of passing certain signal frequencies while attenuating others
  - Some filters amplify the passed signal frequencies

    - Audio filters
    - Anti-alias filters
    - Signal selection filters
    - Noise reduction filters

Filter Concepts

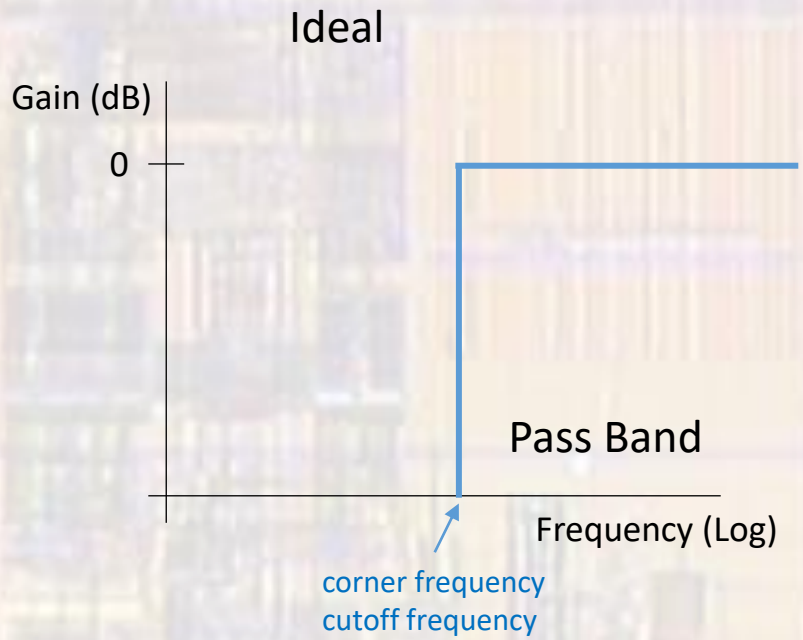
- Low Pass Filter
  - Allows low frequency signals to pass, attenuates high frequency signals
    - Corner frequency defined as passband gain – 3dB

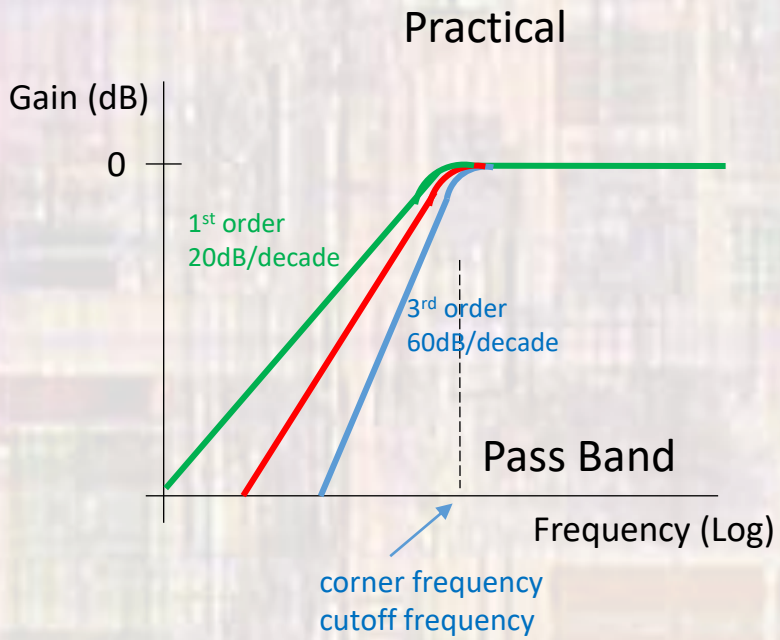




Filter Concepts

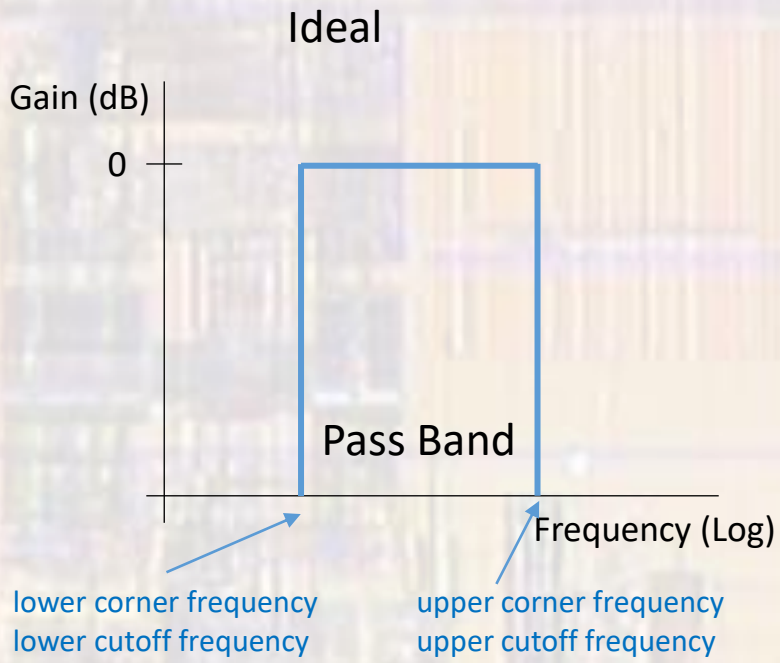
- High Pass Filter
  - Allows high frequency signals to pass, attenuates low frequency signals
    - Corner frequency defined as passband gain – 3dB

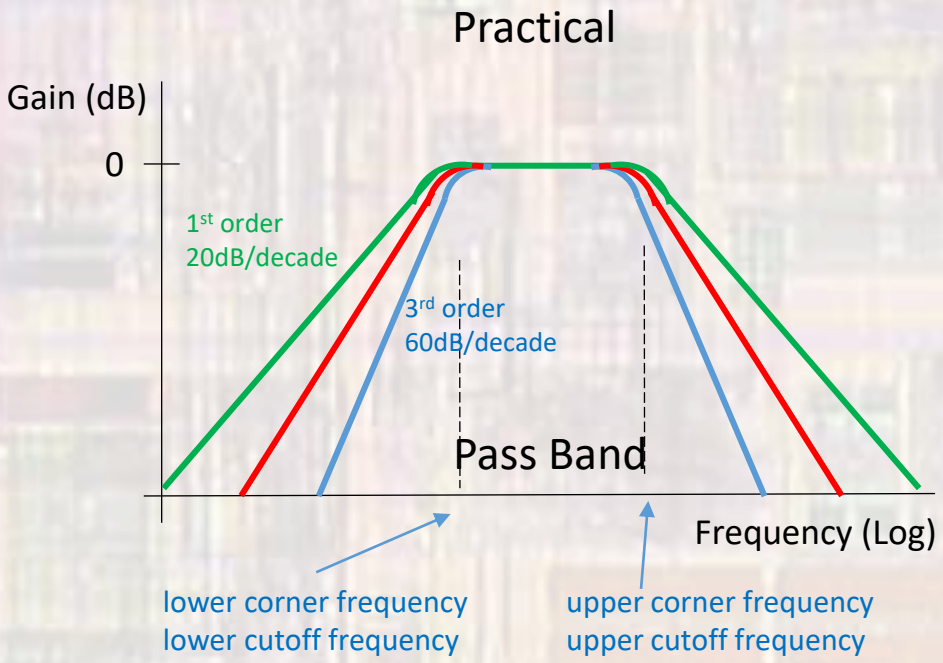




Filter Concepts

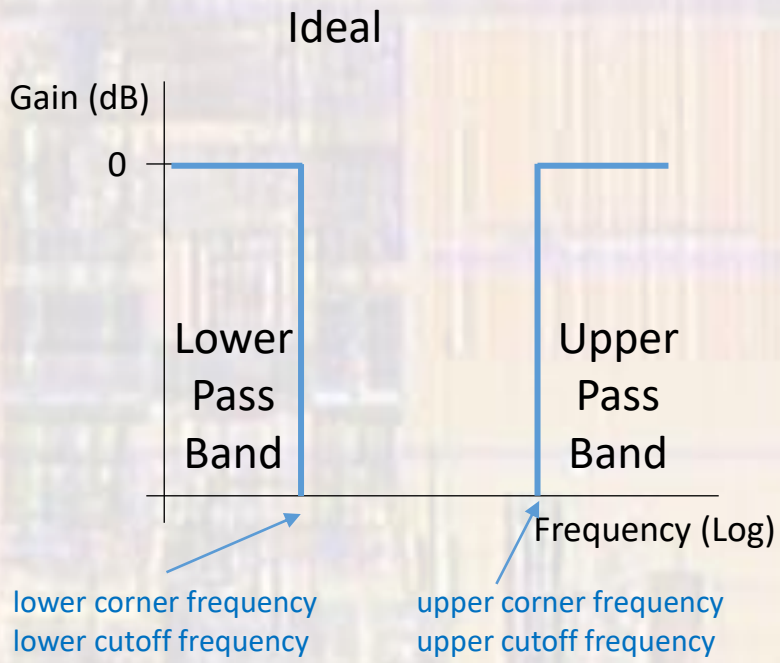
- Band Pass Filter
  - Allows mid frequency signals to pass, attenuates low and high frequency signals
    - Corner frequency defined as passband gain – 3dB

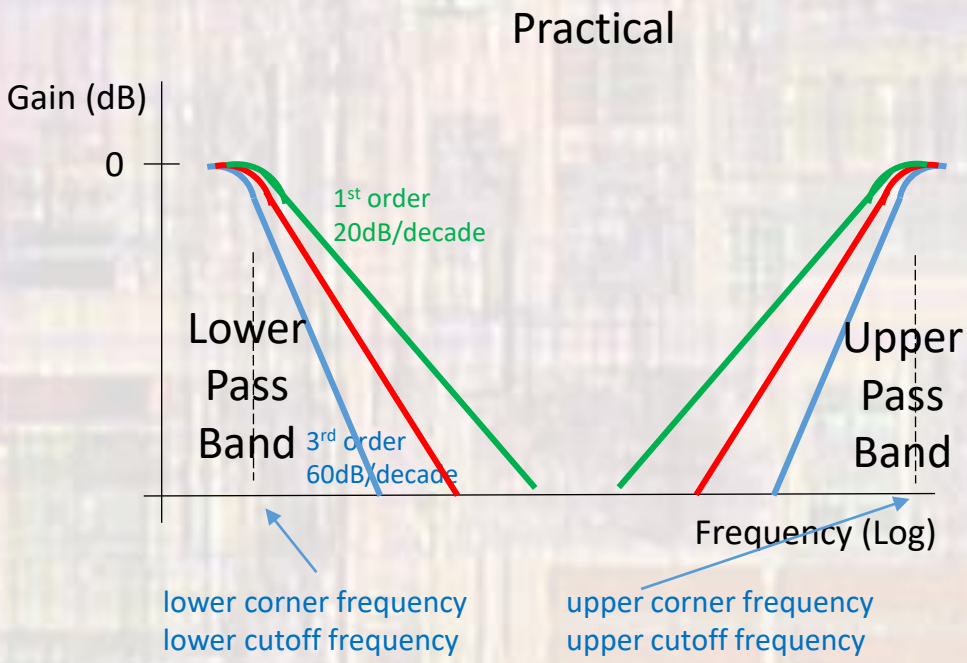




Filter Concepts

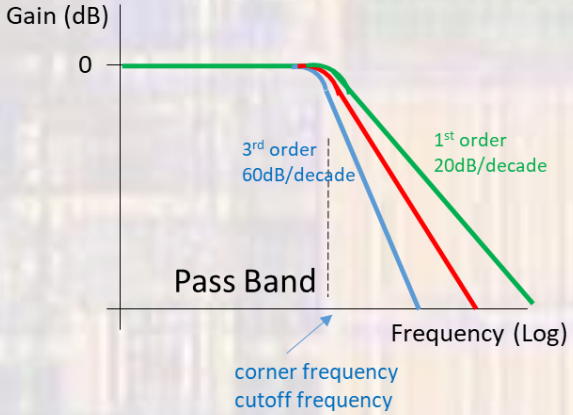
- Band Stop Filter (notch, band reject)
  - Allows high and low frequency signals to pass, attenuates mid frequency signals
    - Corner frequency defined as passband gain – 3dB

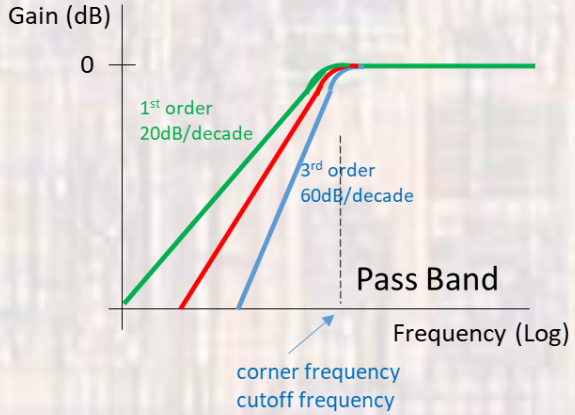


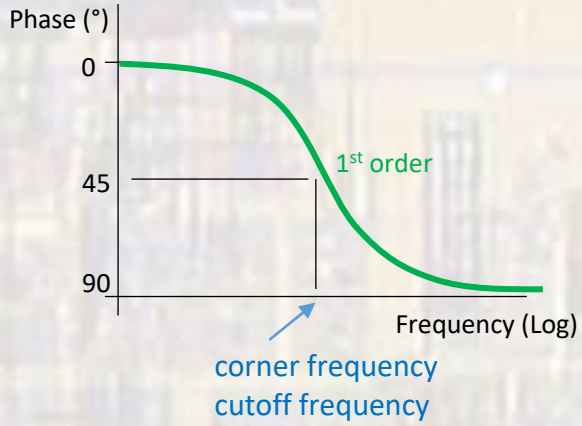


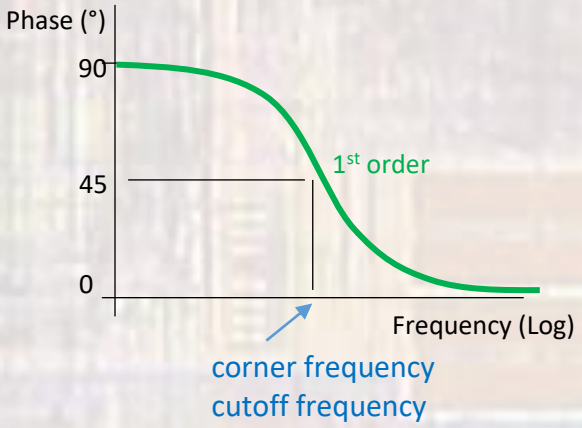
Filter Concepts

- Phase Shift
  - Each type of filter also causes a phase shift in the signal as it passes through









Filter Concepts

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