

Filter Concepts

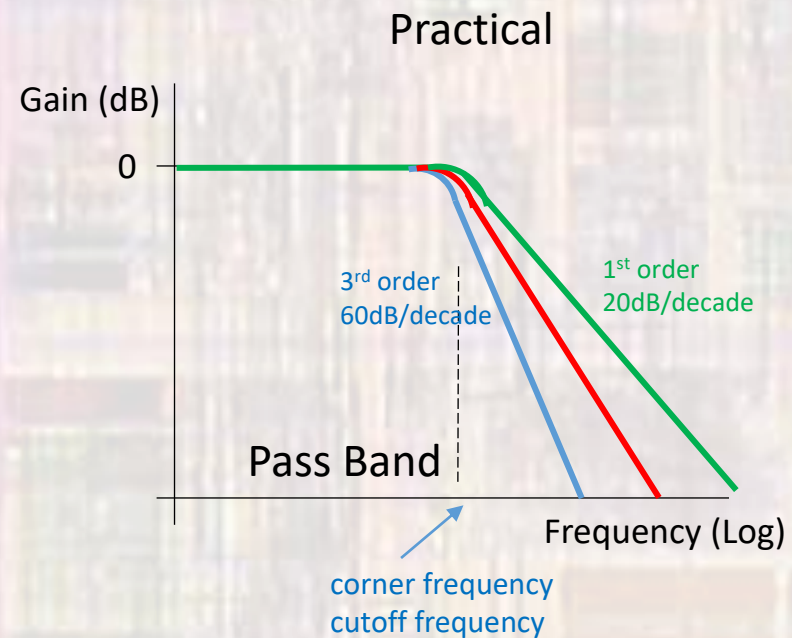
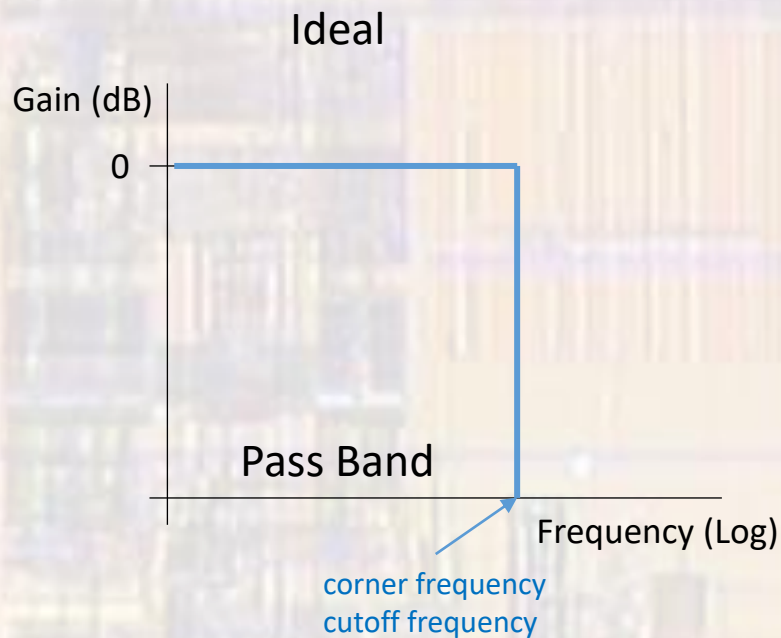
Last updated 1/11/24

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

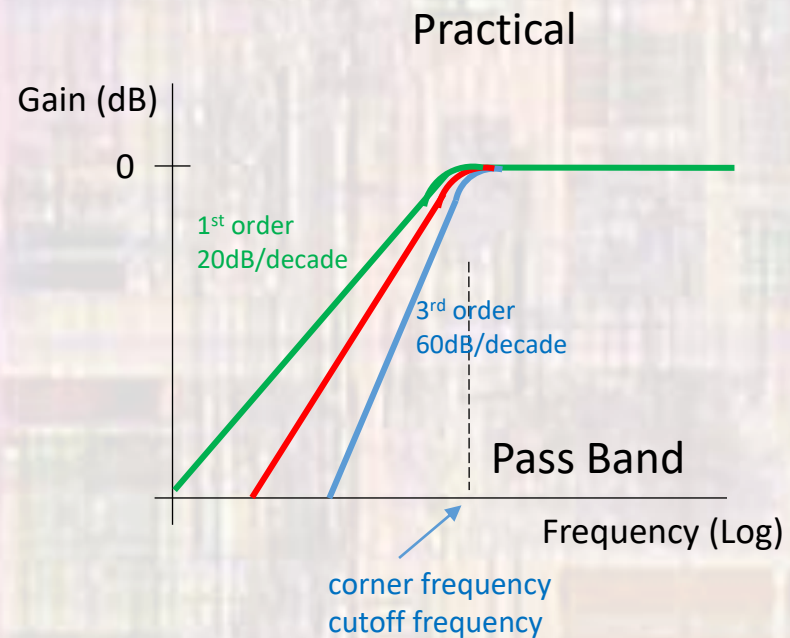
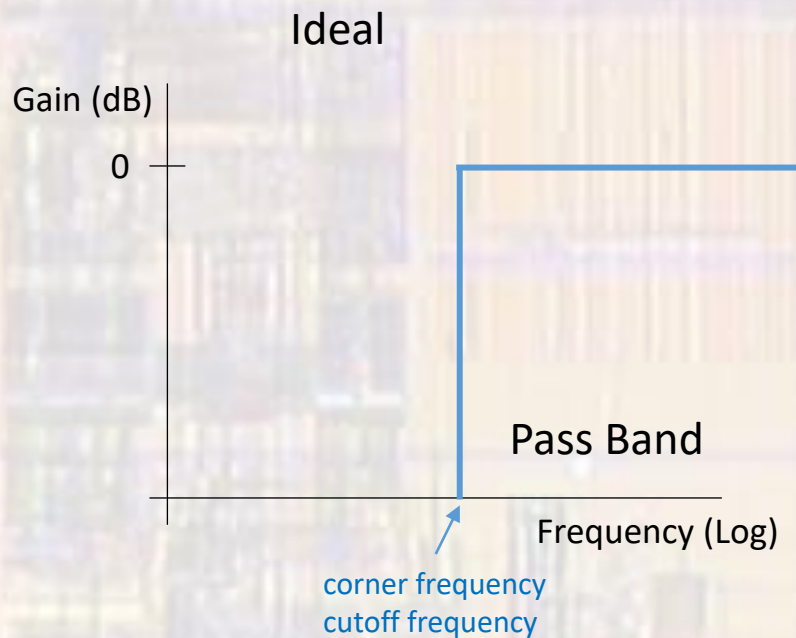
Filter Concepts

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



Filter Concepts

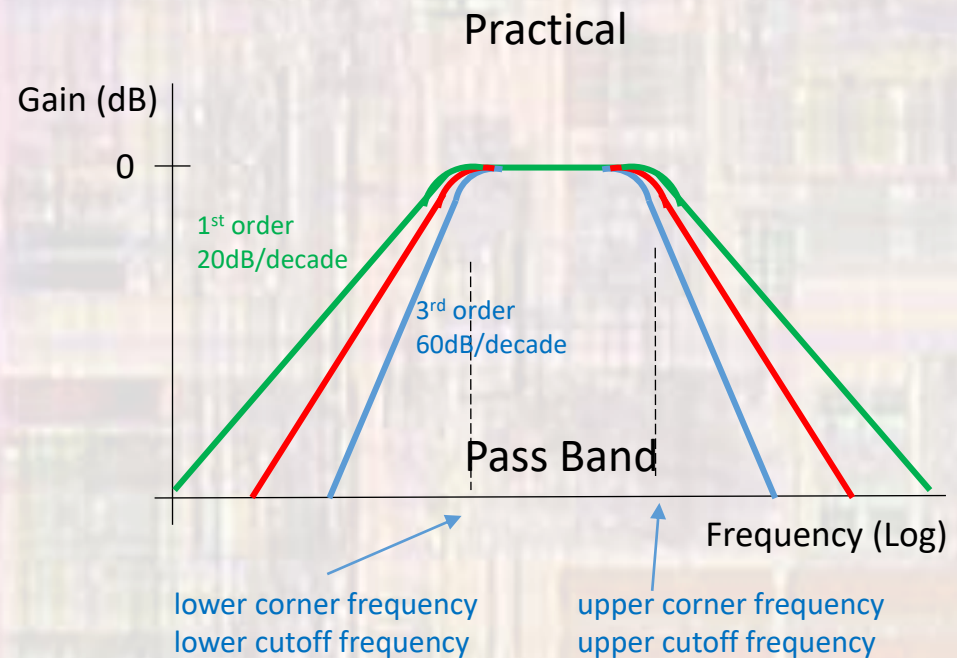
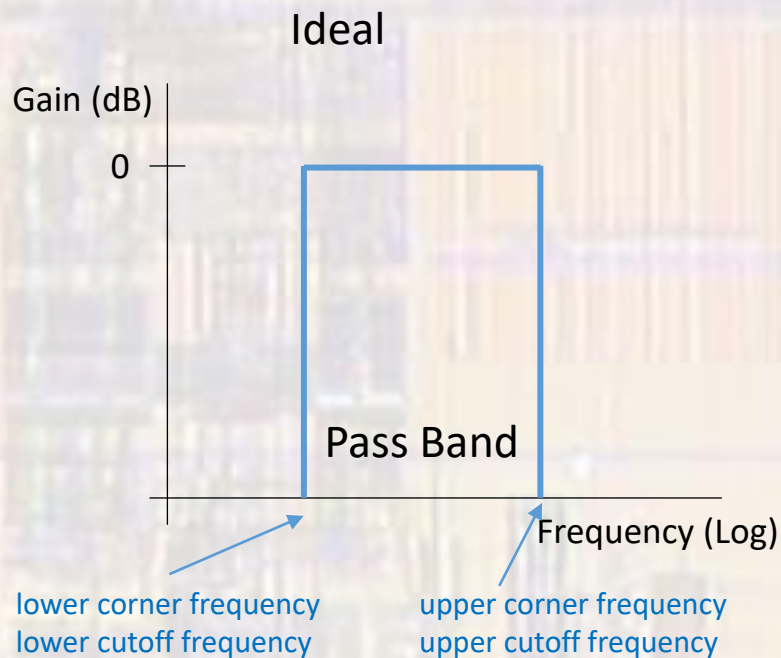
- High Pass Filter
 - Allows high frequency signals to pass, attenuates low frequency signals
 - Corner frequency defined as passband gain – 3dB



Filter Concepts

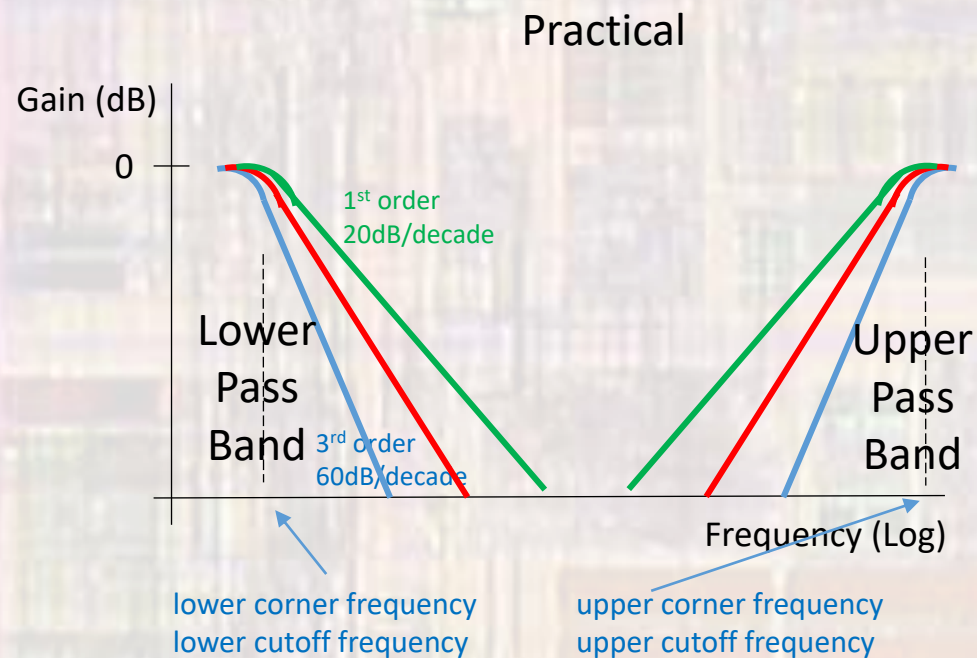
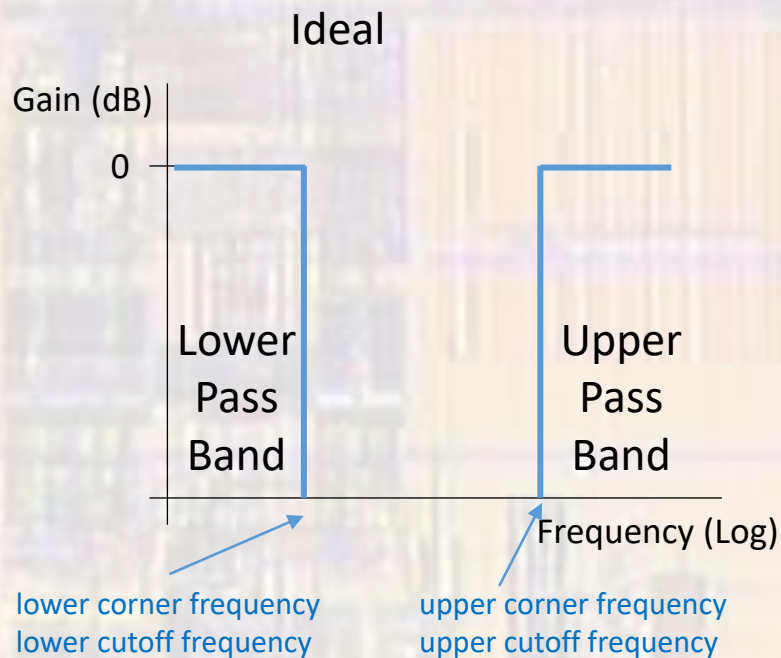
- Band Pass Filter

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



Filter Concepts

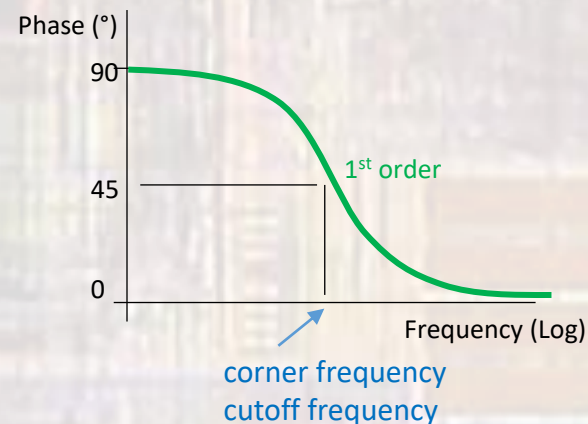
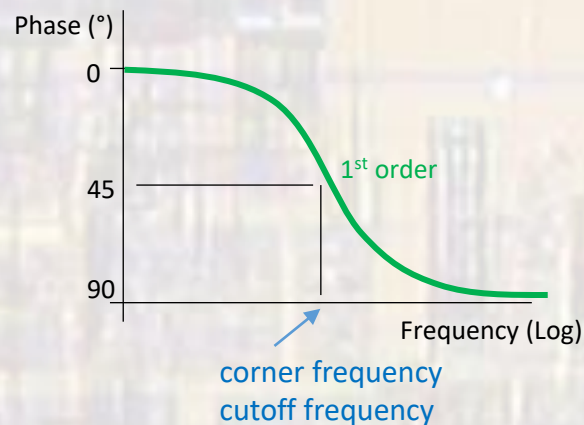
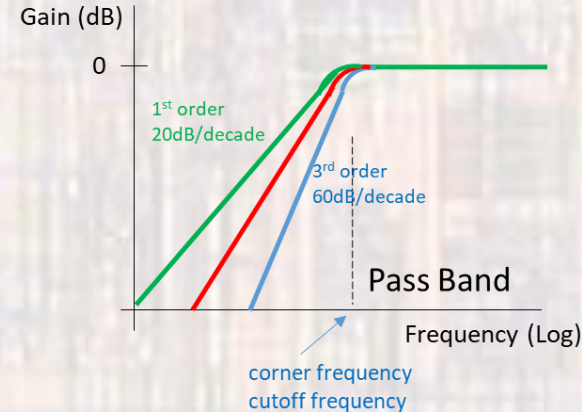
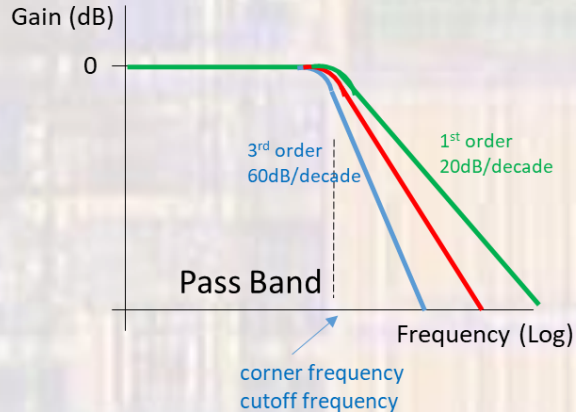
- Band Stop Filter (notch, band reject)
 - Allows high and low frequency signals to pass, attenuates mid frequency signals
 - Corner frequency defined as passband gain – 3dB



Filter Concepts

- Phase Shift

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



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