1. Radio Communication

Filters enable radio receivers to only "see" the desired signal while rejecting all other signals (assuming the other signals have different frequency content).

1. DC power supplies

Filters are used to eliminate undesired high frequencies (i.e., noise) that are present on AC input lines. Additionally, filters are used on a power supply's output to reduce ripple.

1. Audio electronics

A crossover network is a network of filters used to channel low-frequency audio to woofers, mid-range frequencies to midrange speakers, and high-frequency sounds to tweeters.

1. Used in Audio Applications for Equalization purposes.
2. Used in Receivers such as Super-heterodyne etc for efficient reception of the baseband signals.
3. Designing a Low-Pass Filter with 0.005Ω resistor and 0.01F capacitor

A 100V Amplitude was selected with a frequency of 1Hz for the Sine Wave Source.

1. Determining the Cut-off frequency

The cut-off frequency is calculated by F= ½\*(pi\*R\*C)

When R= 0.005Ω and C= 0.01F

F= 0.5\*pi\*0.005\*0.01=3189.099 Hz****

1. Design Output

The transfer function equation for the circuit is given as

(1/RC)/(S + 1/RC)

When R= 0.005Ω and C= 0.01F

Transfer Fcn = (1/0.005\*0.01)/ (S + (0.005\*0.01))= (20000)/(s+ 20000)



1. If two signals of 5 KΩ and 2 KΩ are pass through the filter at different intervals. Discuss your observation

When the signal of 5 KΩ is passed through the filter, the following result isobtained:

The transfer function equation for the circuit is given as

(1/RC)/ (S + 1/RC)

When R= 5000Ω and C= 0.01F

Transfer Fcn= (1/5000\*0.01)/ (S + (5000\*0.01)) = (0.02)/ (s+ 0.02)

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Observation**:** The signal is attenuated to 3.869 ohms

When the signal of 2K ohms is passed through the filter the following are obtainedresults**:** The transfer function equation for the circuit is given as

(1/RC)/ (S + 1/RC)

When R= 2000Ω and C= 0.01F

Transfer Fcn= (1/2000\*0.01)/ (S + (2000\*0.01)) = (0.05)/ (s+ 0.05)

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Observation**:** The signal is attenuated to 9.266 ohms