

JADRI5 - YUSUF AMIR

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ELECC/ELECT

This is a low pass filter. A typical low pass filter is formed when the output of an RC circuit is taken off the capacitor.

The transfer function is

$$H(\omega) = \frac{V_2}{V_1} = \frac{1}{R + j\omega C}$$

$$H(\omega) = \frac{1}{1 + j\omega RC}$$

Note that $H(\omega) = 1$, $H(\infty) = 0$

The half power frequency which is equivalent to the corner frequency on the Bode plot but in the context of filter is usually known as cut-off frequency ω_c , is obtained by setting the magnitude of $A(\omega)$ equal to $1/\sqrt{2}$ thus

$$|H(\omega)| = \frac{1}{\sqrt{1 + \omega_c^2 R^2 C^2}} = \frac{1}{\sqrt{2}}$$

$$\omega_c = \frac{1}{RC}$$