

$$\mathbf{G} = \frac{-k \left(\frac{\omega}{\omega_0} \right)^2}{1 + \frac{j}{Q} \frac{\omega}{\omega_0} - \left(\frac{\omega}{\omega_0} \right)^2} = \frac{-k \left(\frac{f}{f_0} \right)^2}{1 + \frac{j}{Q} \frac{f}{f_0} - \left(\frac{f}{f_0} \right)^2}$$