

Stufe 1:

$$a_D := 1 \text{ dB} \quad a_s := 40 \text{ dB} \quad f_{pb} := 10000 \quad \omega_D := 2 \cdot \pi \cdot f_{pb}$$

$$\Omega_p := 1.3074 \quad \Omega_z := 6.1109 \quad Q_p := 0.5540$$

$$\omega_p := \Omega_p \cdot \omega_D = 82146.365 \text{ Hz}$$

$$A_1 := 10^{\frac{15}{20}} = 5.623 \quad A_{oo} := 10^{\frac{-a_s}{20}} = 0.01$$

$$C_2 := 100 \cdot 10^{-12} \text{ F}$$

$$C_6 := 1 \cdot 10^{-9} \text{ F}$$

$$k_C := \frac{C_6}{C_2} \rightarrow 10$$

$$k_5 := A_1 - 1 = 4.623$$

$$k_1 := \frac{k_C}{k_5 \cdot Q_p^2} = 7.047$$

$$R := \frac{Q_p}{\omega_p \cdot k_C \cdot C_2} = 6744.06$$

$$R := 6.8 \cdot 10^3$$

$$R_1 := k_1 \cdot R = 47921.088$$

$$R_1 := 47 \cdot 10^3$$

$$R_5 := k_5 \cdot R = 31439.21$$

$$R_5 := \frac{100 \cdot 10^3 \cdot 47 \cdot 10^3}{100 \cdot 10^3 + 47 \cdot 10^3} = 31972.789$$

Stufe 2:

$$a_D := 1 \text{ dB} \quad a_s := 40 \text{ dB} \quad f_{pb} := 10000 \quad \omega_D := 2 \cdot \pi \cdot f_{pb}$$

$$\Omega_p := 1.1832 \quad \Omega_z := 2.5312 \quad Q_p := 1.4780$$

$$\omega_p := \Omega_p \cdot \omega_D = 74342.649 \text{ Hz}$$

$$A_2 := 10^{\frac{15}{20}} = 5.623 \quad A_{oo} := 10^{\frac{-a_s}{20}} = 0.01$$

$$C_2 := 100 \cdot 10^{-12} \text{ F}$$

$$C_6 := 1 \cdot 10^{-9} \text{ F}$$

$$k_C := \frac{C_6}{C_2} \rightarrow 10$$

$$k_5 := A_2 - 1 = 4.623$$

$$k_1 := \frac{k_C}{k_5 \cdot Q_p^2} = 0.99$$

$$R := \frac{Q_p}{\omega_p \cdot k_C \cdot C_2} = 19880.917$$

$$R := 20 \cdot 10^3$$

$$R_1 := k_1 \cdot R = 19802.427$$

$$R_1 := 20 \cdot 10^3$$

$$R_5 := k_5 \cdot R = 92468.265$$

$$R_5 := 91 \cdot 10^3$$