

1.) Define cut off frequencies:

$$f_C := 14500000 \quad \text{for 20m Band (14MHz to 14.35MHz)}$$

2.) Define impedances:

$$\begin{aligned} X_{C1} &:= 50 \quad \text{Ohm} & X_{C3} &:= X_{C1} = 50 \quad \text{Ohm} & X_{C2} &:= \frac{X_{C1}}{2} = 25 \quad \text{Ohm} \\ X_{L1} &:= 50 \quad \text{Ohm} & X_{L2} &:= X_{L1} = 50 \quad \text{Ohm} \end{aligned}$$

3.) Calculate inductor value:

$$L_1 := \frac{X_{L1}}{2 \cdot \pi \cdot f_C} = 0.000000549 \quad \text{H} = 549\text{nH}$$

$$L_2 := \frac{X_{L2}}{2 \cdot \pi \cdot f_C} = 0.000000549 \quad \text{H} = 549\text{nH}$$

4.) Define inductor core and turns ($L = L_1 = L_2$):

$$L_1 := 580 \cdot 10^{-9} \quad \text{H} = 580\text{nH} \rightarrow 12\text{T @ T50-6 Core} \rightarrow \text{"toroids.info/T50-6.php"}$$

$$L_2 := 580 \cdot 10^{-9} \quad \text{H} = 580\text{nH} \rightarrow 12\text{T @ T50-6 Core} \rightarrow \text{"toroids.info/T50-6.php"}$$

--> 580nH is chosen after simulation and tests: 12T @ T50-6 Core

5.) Calculate capacitor values:

$$C_1 := \frac{1}{2 \cdot \pi \cdot f_C \cdot X_{C1}} = 0.00000000022 \quad \text{F} = 220\text{pF} \quad C_3 := C_1 = 2.195 \cdot 10^{-10} \quad \text{F} = 220\text{pF}$$

$$C_2 := \frac{1}{2 \cdot \pi \cdot f_C \cdot X_{C2}} = 0.000000000439 \quad \text{F} = 439\text{pF} \rightarrow 220\text{pF} // 220\text{pF} = 440\text{pF}$$

These calculated values are only guidelines!

After simulation and real measurements, I often followed the filter design by W6JL.
The final values are written in the eagle circuit diagram.

You can also simulate some filters in "ELSIE". 5 Order Butterworth Filter with 50R Input Impedance and Capacity input!