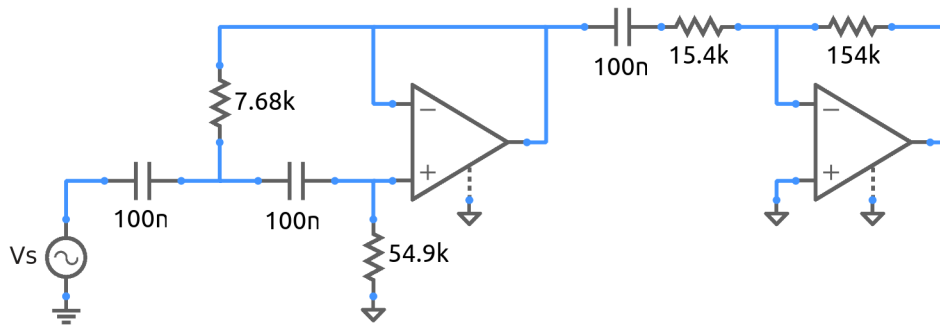


ee101_op_filter_7.sqproj



Ref: S. Franco: Design with Op Amps and analog integrated circuits

A third-order Chebyshev high-pass filter with $f_c = 100$ Hz and high-frequency gain of 20 dB is shown in the figure [1].

Exercise Set

1. Plot the magnitude frequency response (log-log plot), and verify that the circuit is functioning as a 3rd-order high-pass filter.
2. At high frequencies, each capacitor can be replaced with a short circuit. Redraw the circuit in this condition, and verify that the gain is 20 dB.
3. Considering the filter to be made up of two stages, derive an expression for $H(s)$ of the filter. Show that it has the same form as that required for a third-order Chebyshev high-pass filter.

Reference

1. S. Franco, *Design with Operation Amplifiers and Analog Integrated Circuits*, McGraw-Hill, 1998.