

## wien\_osc\_1.sqproj

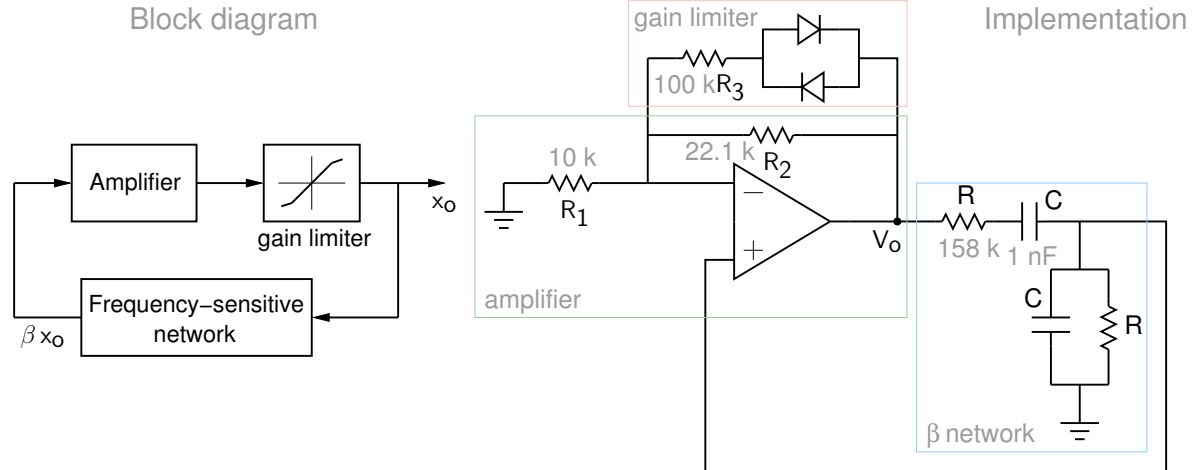


Figure 1: Wien bridge oscillator circuit.

Fig. 1 shows the Wien bridge oscillator. The circuit oscillates at frequency  $f = \frac{1}{2\pi RC}$  if the gain provided by the amplifier (implemented here with a non-inverting Op-Amp amplifier configuration) is equal to 3 (see ee101/ee101\_osc\_1.sqproj). In practice, a gain limiting block is also required to limit the amplitude of the oscillations.

### Exercise Set

1. Simulate the circuit and verify that the frequency of oscillation is what you would expect from the Barkhausen criterion.
2. Increase the capacitances in the  $\beta$  network by a factor of 2 and see its effect on the frequency of oscillation.

### References

1. S. Franco, *Design with Operation Amplifiers and Analog Integrated Circuits*, McGraw-Hill, 1998.
2. J. Millman and A. Grabel, *Microelectronics*, McGraw-Hill, 1988.
3. A. S. Sedra, K. C. Smith, and A. .N. Chandorkar, *Microelectronic Circuits*, Oxford University Press, 2004.