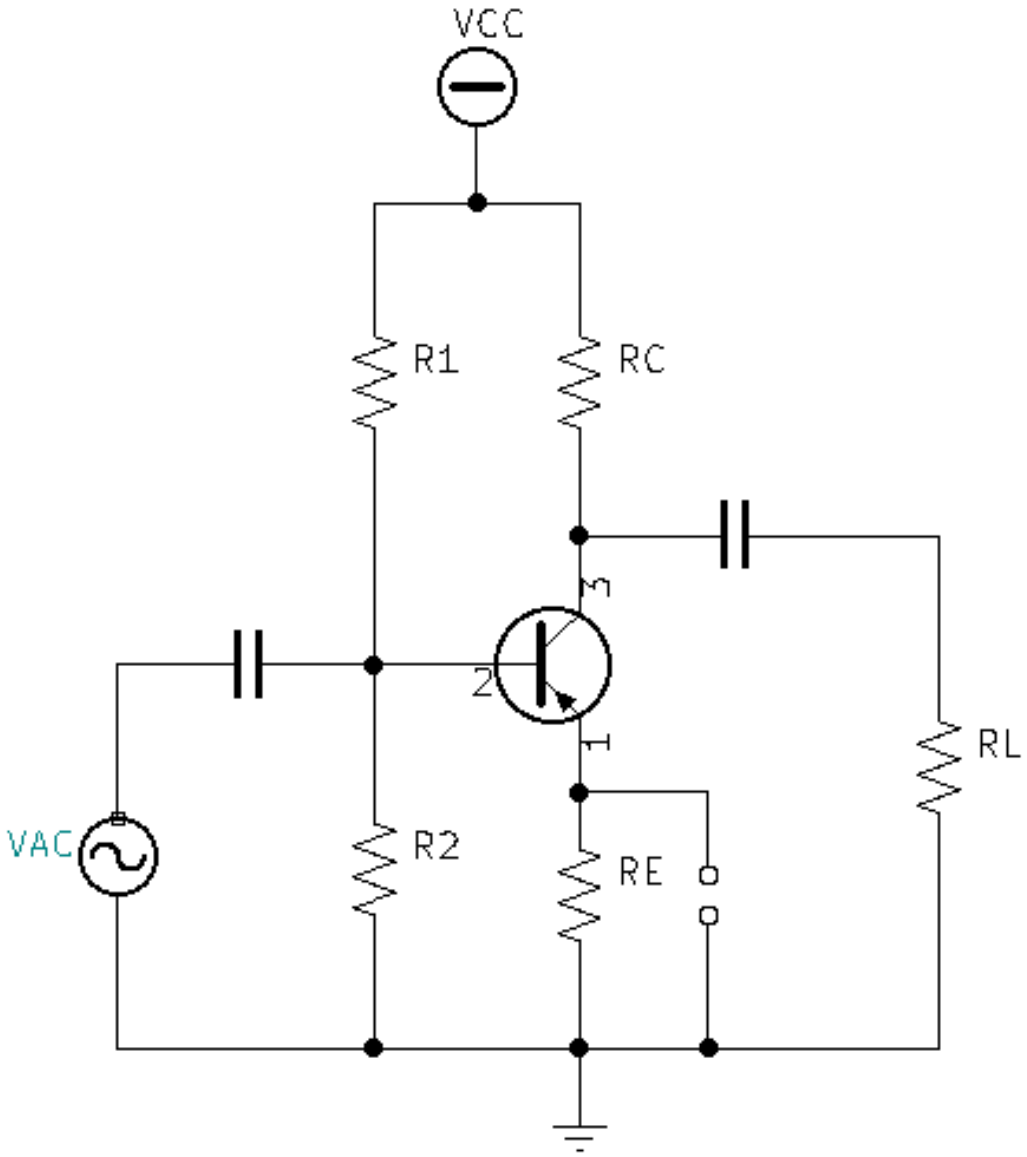
Emitter Peaking:



- Calculate and or Measure your existing fch.
- Determine your predicted $new\ fch$ will be if emitter peaking is added:
  - If $-3dB$ is elevated to $0dB$, then the existing $-6dB$ will become the new $-3dB$
  - Find the $-6dB$ frequency f at the existing fch

- $-6dB = 20log\frac{1}{\sqrt{1+(\frac{f}{fch})^2}}$
- $\frac{-6}{20} = log\frac{1}{\sqrt{1+(\frac{f}{fch})^2}}$
- $\frac{-6}{20} = log\frac{1}{\sqrt{1+(\frac{f}{fch})^2}}$
- $1 \times 10^{\frac{-6}{20}} = \frac{1}{\sqrt{1+(\frac{f}{fch})^2}}$
- $\sqrt{1+(\frac{f}{fch})^2} = \frac{1}{1\times10^{\frac{-6}{20}}}$
- $1+(\frac{f}{fch})^2 = (\frac{1}{1\times10^{\frac{-6}{20}}})^2$
- $(\frac{f}{fch})^2 = \left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1$
- $\frac{f}{fch} = \sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}$
- $new\ fch_{emitter\ peaking} = fch\sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}$
- $Improvement\ Factor\ (k) = \frac{new\ fch_{emitter\ peaking}}{fch} = \frac{fch\sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}}{fch}$
- $Improvement\ Factor\ (k) = \frac{fch}{fch} \times \frac{\sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}}{1}$
- $Improvement\ Factor\ (k) = \frac{\sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}}{1}$
- $Improvement\ Factor\ (k) = \sqrt{\left(\frac{1}{1\times10^{\frac{-6}{20}}}\right)^2 - 1}$
- $\boldsymbol{Improvement\ Factor\ (k) = 1.72658}$

- Determine the Emitter Peaking Capacitor value:
    - In-order to achieve a 3dB boost and an $Improvement\ Factor\ (k) = 1.72658$ using Emitter Peaking we need find an Emitter Peaking Capacitor that will be resonant with RE at the original or old fch.
    - Find Emitter Peaking Capacitor:
        - $Xc_{EP} = RE,\ at\ resonance\ fr$
        - $Xc_{EP} = \frac{1}{2\pi fc}$
        - $RE = \frac{1}{2\pi f_r C_{EP}}$
        - $C_{EP} = \frac{1}{2\pi f_r RE}$
        - $\boldsymbol{C_{EP} = \frac{1}{2\pi(old\ fch)RE}}$