Circuit Simulation Project

https://esim.fossee.in/circuit-simulation-project

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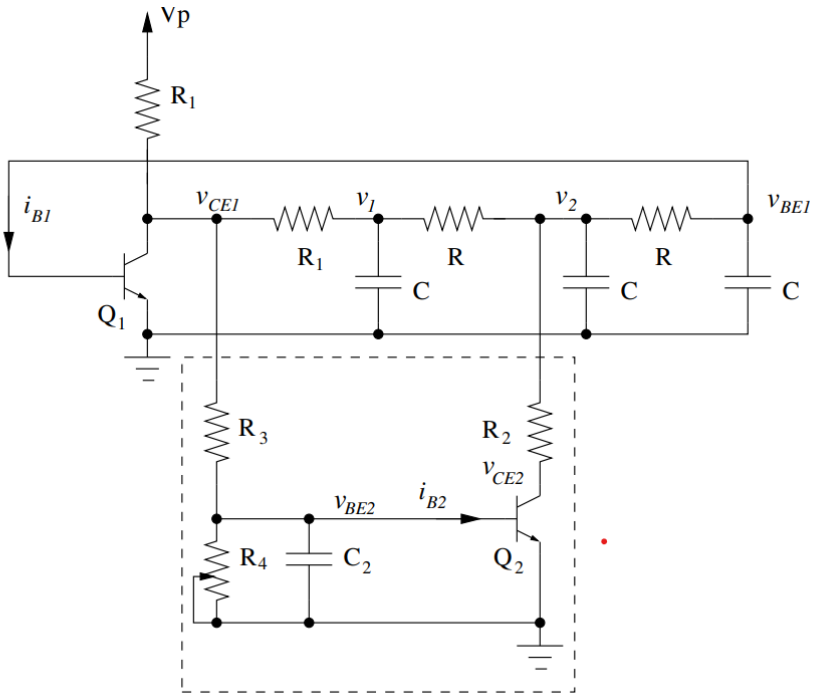
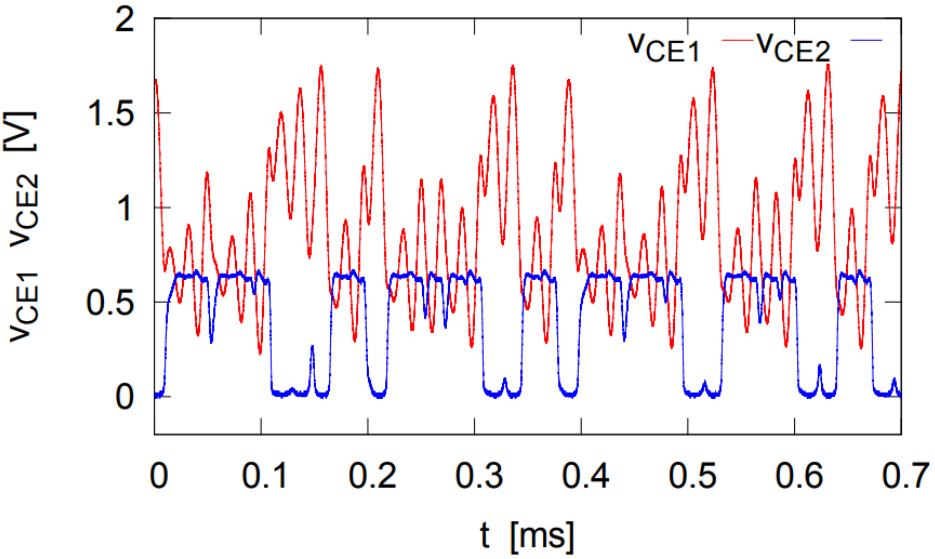
Title of the circuit : Simple Two-Transistor Single-Supply Resistor-Capacitor Chaotic Oscillator

Theory/Description : A **chaotic oscillator** is a nonlinear circuit that generates signals which appear irregular and noise-like, but are actually deterministic and bounded. Unlike conventional oscillators, which produce stable periodic waveforms such as sine or square waves, chaotic oscillators are highly sensitive to initial conditions and produce complex, aperiodic oscillations.The **two-transistor single-supply RC chaotic oscillator** is one of the simplest realizations of a chaotic system using only discrete components. By exploiting the nonlinear characteristics of bipolar junction transistors (BJTs) and the time-dependent charging and discharging of capacitors, the circuit creates feedback loops that prevent the system from settling into periodic behavior. Instead, the interaction of positive feedback, negative feedback, and energy storage elements drives the circuit into a chaotic regime.

Circuit diagram



Results (Input, Output waveforms and/or Multimeter readings) :



Source/Reference(s) :

1.https://www.chaotic-circuits.com/wp-content/uploads/2016/06/Simple-Two-Transistor-Single-Supply-RC-Chaotic-Oscillator.pdf

2.http://researchgate.net/publication/342643115_A_simple_Two-Transistor_Chaos_Generator_Based_On_A_Resistor-Capacitor_Phase_Shift_Oscillator

3.https://issuu.com/doecurriculum/docs/journal_of_science_extension_research_vol_2_2023/s/21047025

4.https://issuu.com/doecurriculum/docs/journal_of_science_extension_research_vol_2_2023/s/21047025