

# **RC PHASE SHIFT OSCILLATOR**

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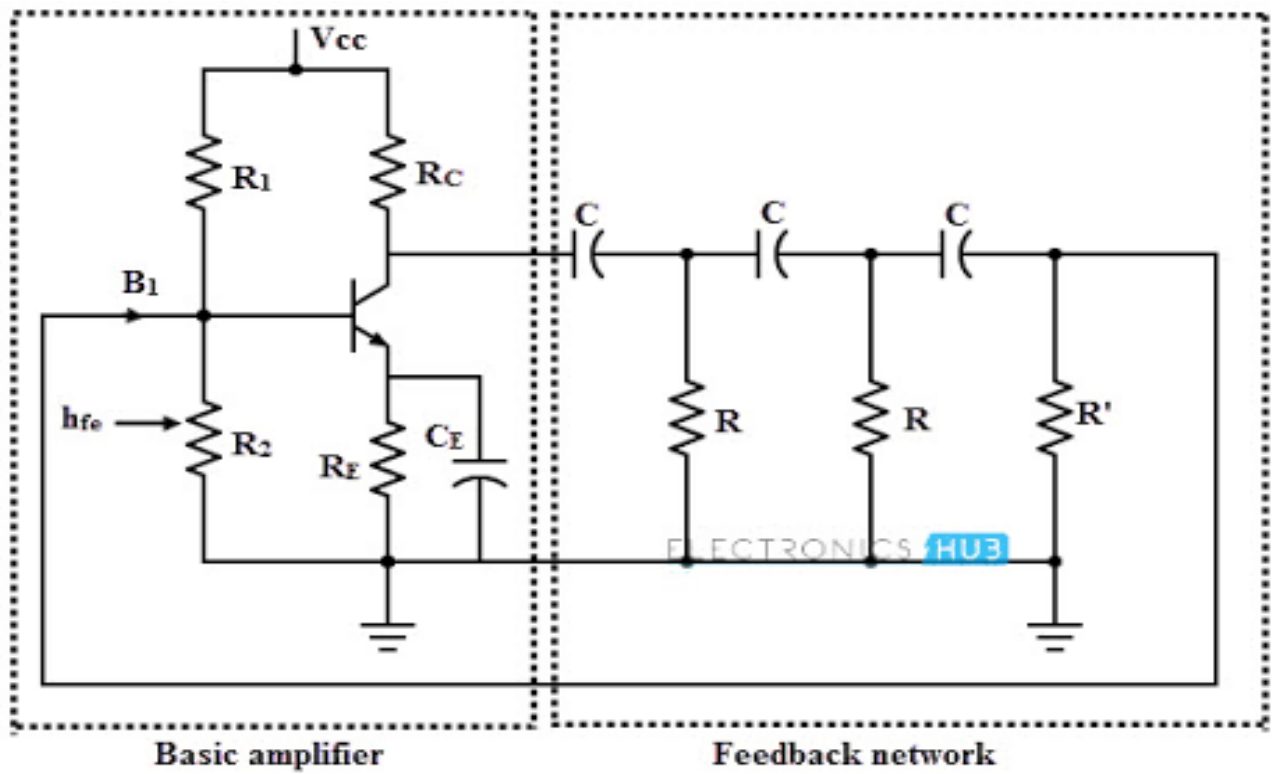
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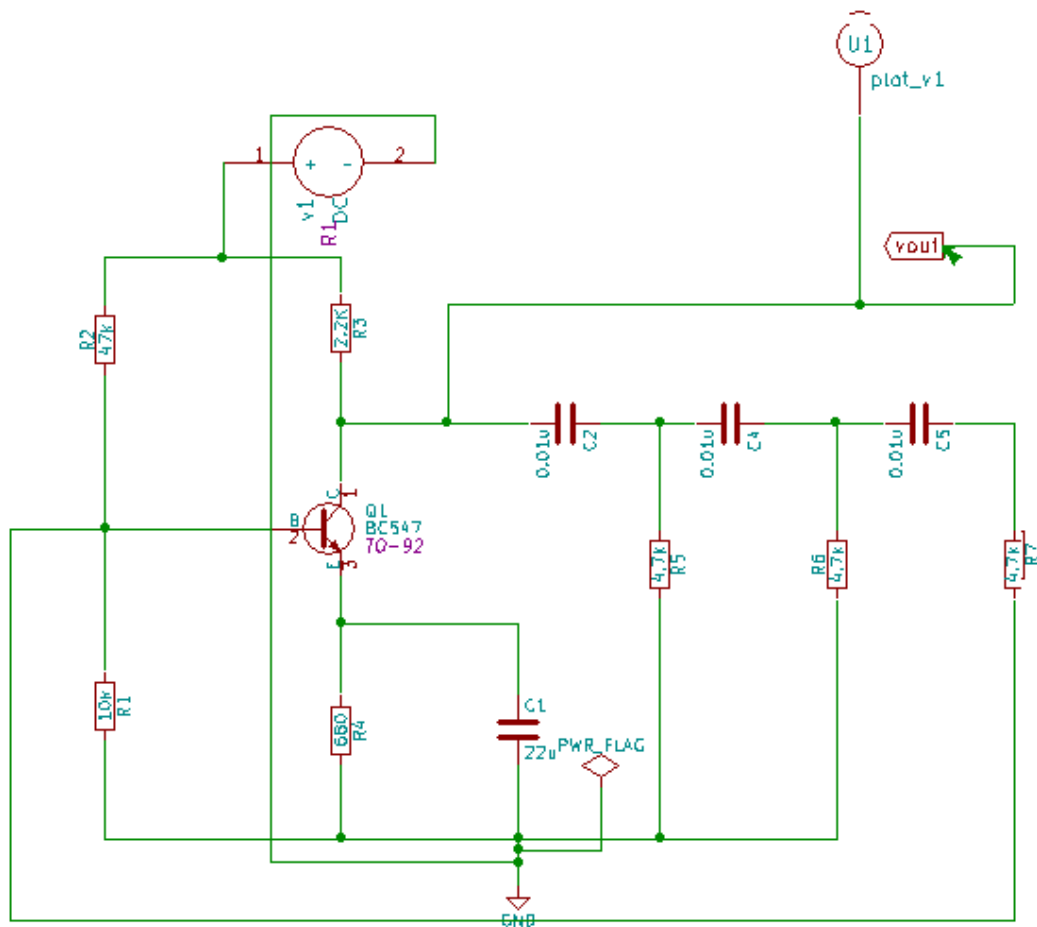
## **INTRODUCTION:**

A phase shift oscillator is a linear electronic oscillator circuit that produces a sine wave output. The circuit consists of inverting amplifier element such as transistor with its output feedback . In this, feedback network consisting of resistors and capacitors to form a ladder network. Because of presence of resistors and capacitors in feedback circuit said to be as RC network. The feedback network shifts the phase of the amplifier output by 180degrees at the oscillation frequency to give positive feedback. The oscillator is commonly used in frequency variable signal generators. It provides good frequency stability. They have wide range of frequency. This circuit is particularly used for low frequency applications.

**CIRCUIT DIAGRAM:**



**RTL Schematic generated using esim:**



### DESIGN MODELLING:

The below equation is used to find the value of unknown feedback resistance value,

$$f = \frac{1}{2\pi RC\sqrt{6+4n}}$$

f is the frequency of oscillator

R is the feedback resistance

C is the capacitor

n is the number of feedback stages used

### ANALYSIS:

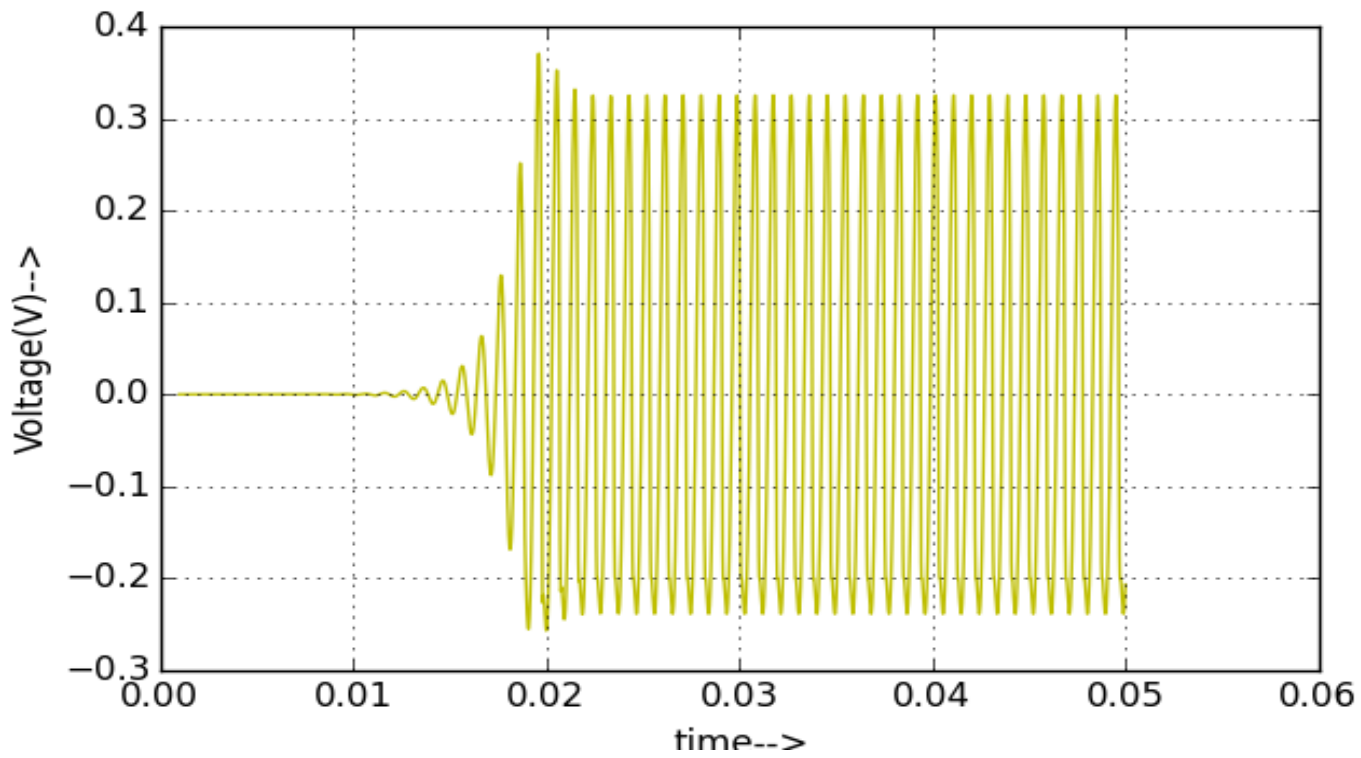
We designed this oscillator working at the frequency of 2kHz,

C=0.01uF,n=number of stages in the circuit(3)

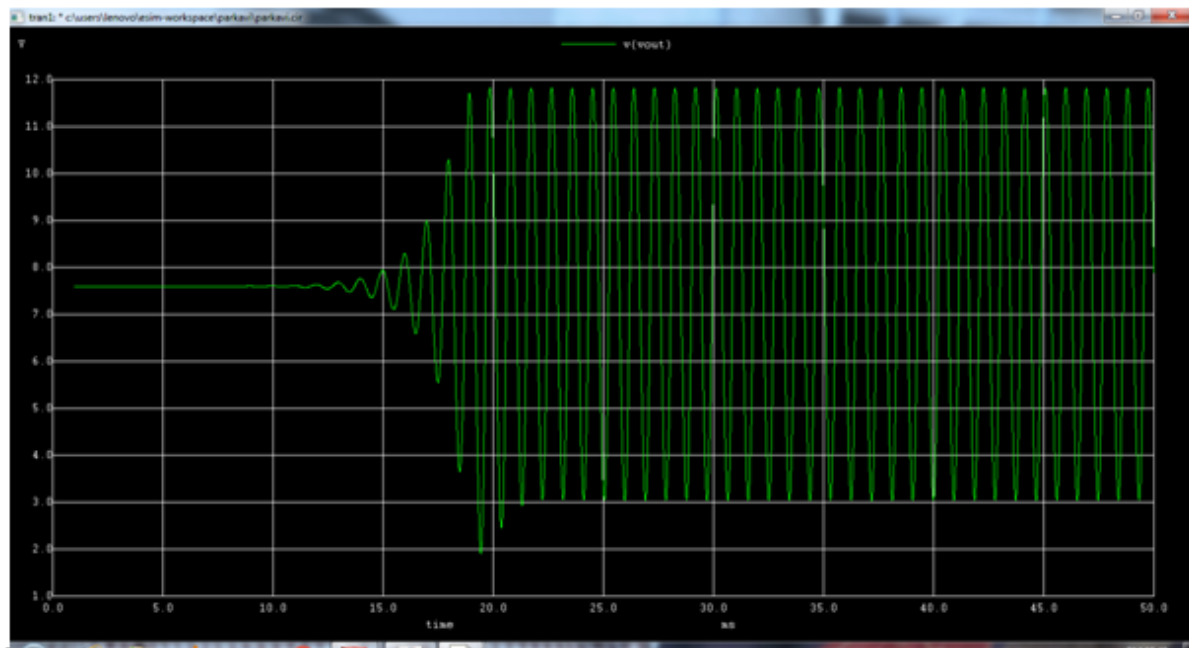
Using the above formula, feedback resistance value is calculated,

$$R=1.8K$$

### SIMULATION OUTPUT:



### NG SPICE PLOT:



**REFERENCE:**

<https://www.electronicshub.org/rc-oscillator/>