

Function Generator with Variable Frequency

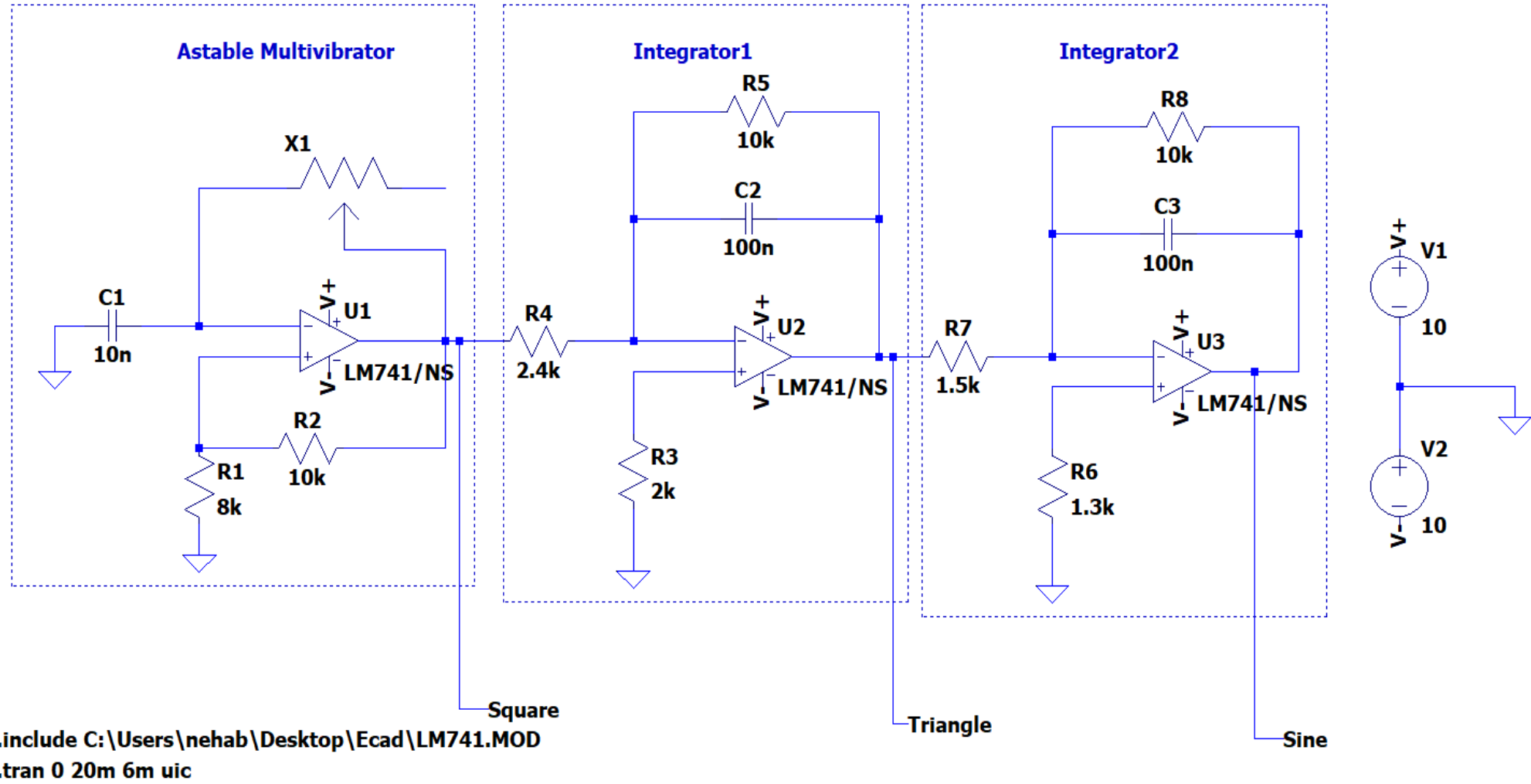
Name: Neha Binny

SC Code: SC19B090

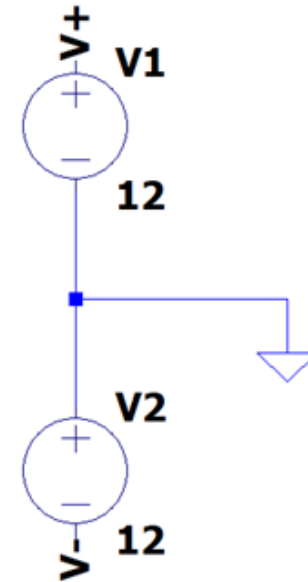
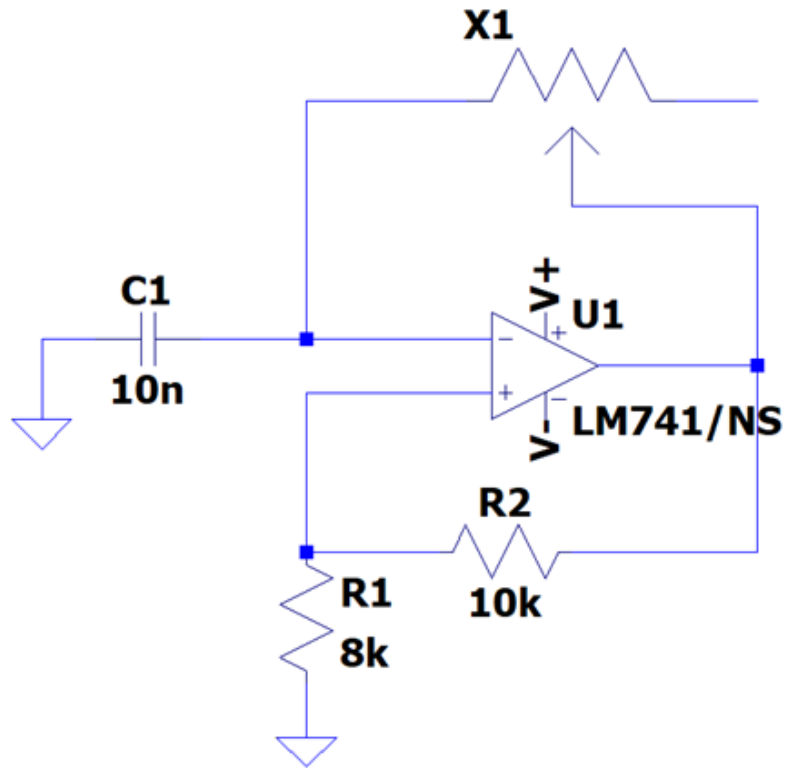
Function Generator with Variable Frequency

- The function generator produces three different waveforms:
 - Square Wave
 - Triangle Wave
 - Square Wave
- It can be used to vary the frequency in the range of 1000-3200Hz using a potentiometer.

Circuit

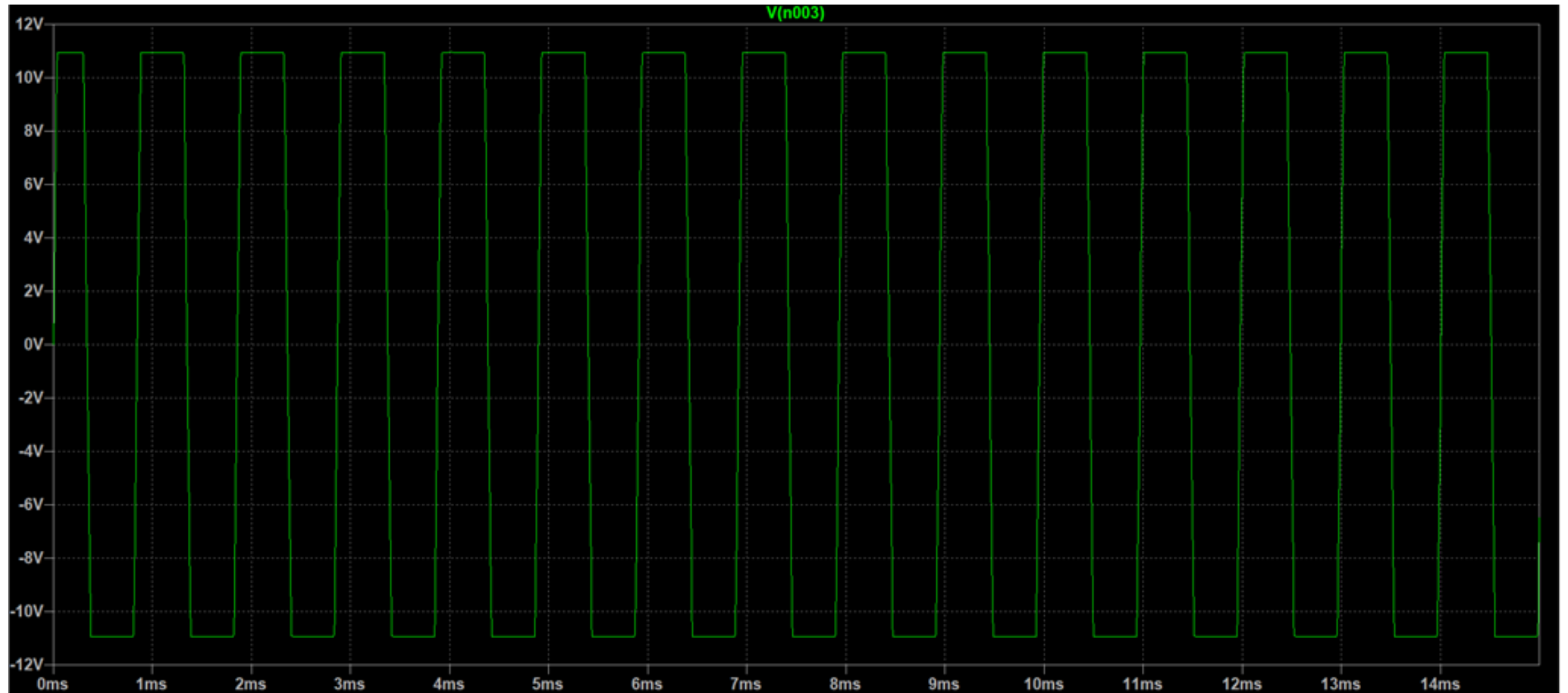


Square Wave Generation: Astable Multivibrator

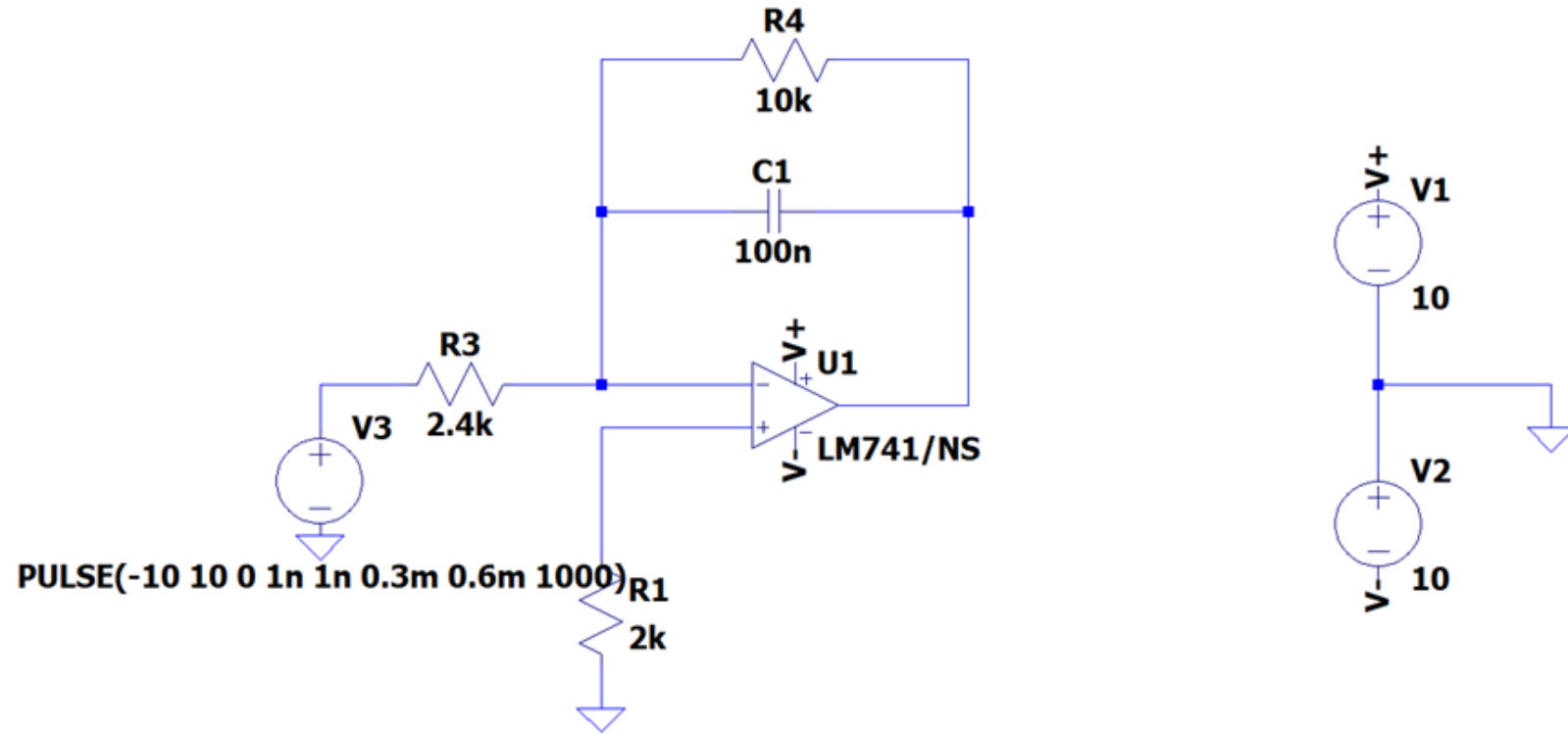


```
.include C:\Users\nehab\Desktop\Ecad\LM741.MOD  
.tran 15m uic
```

Simulation

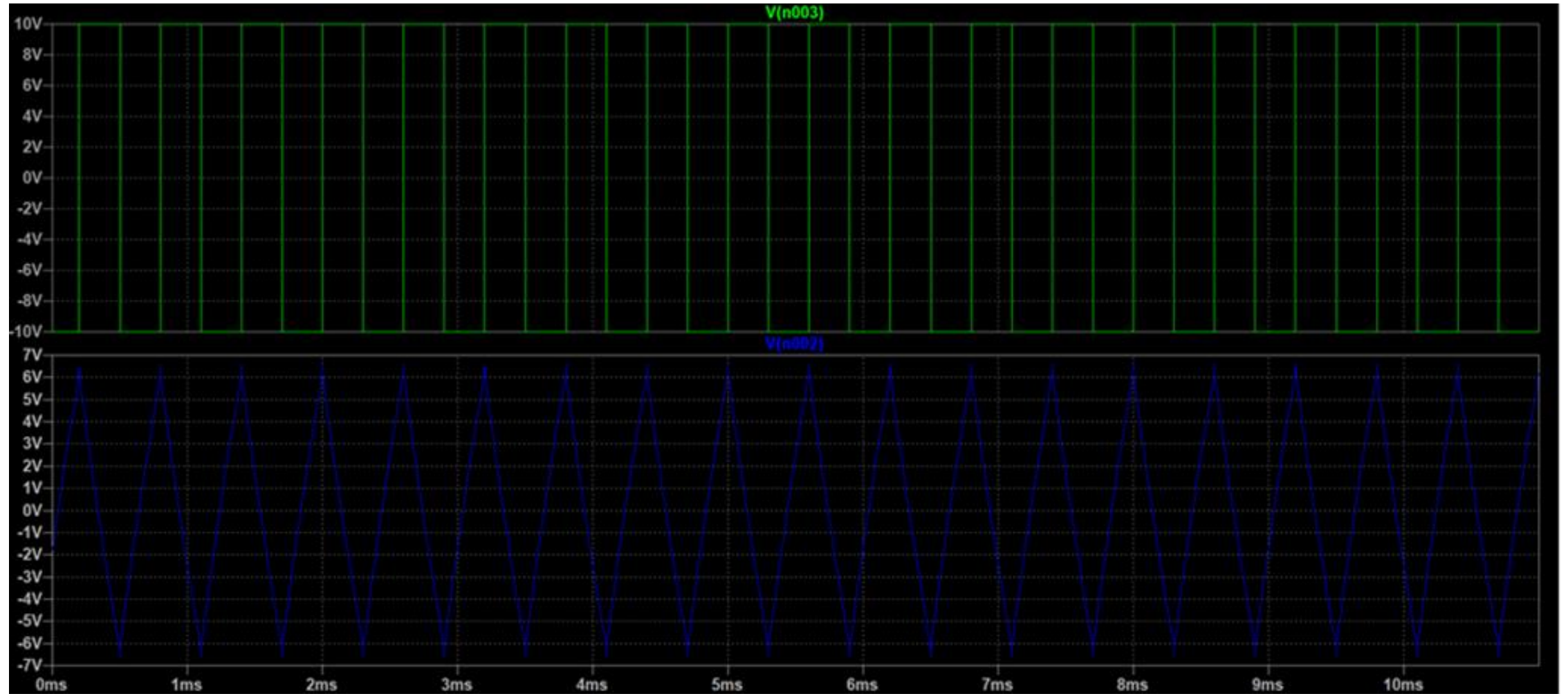


Triangle Wave Generation: Integrator

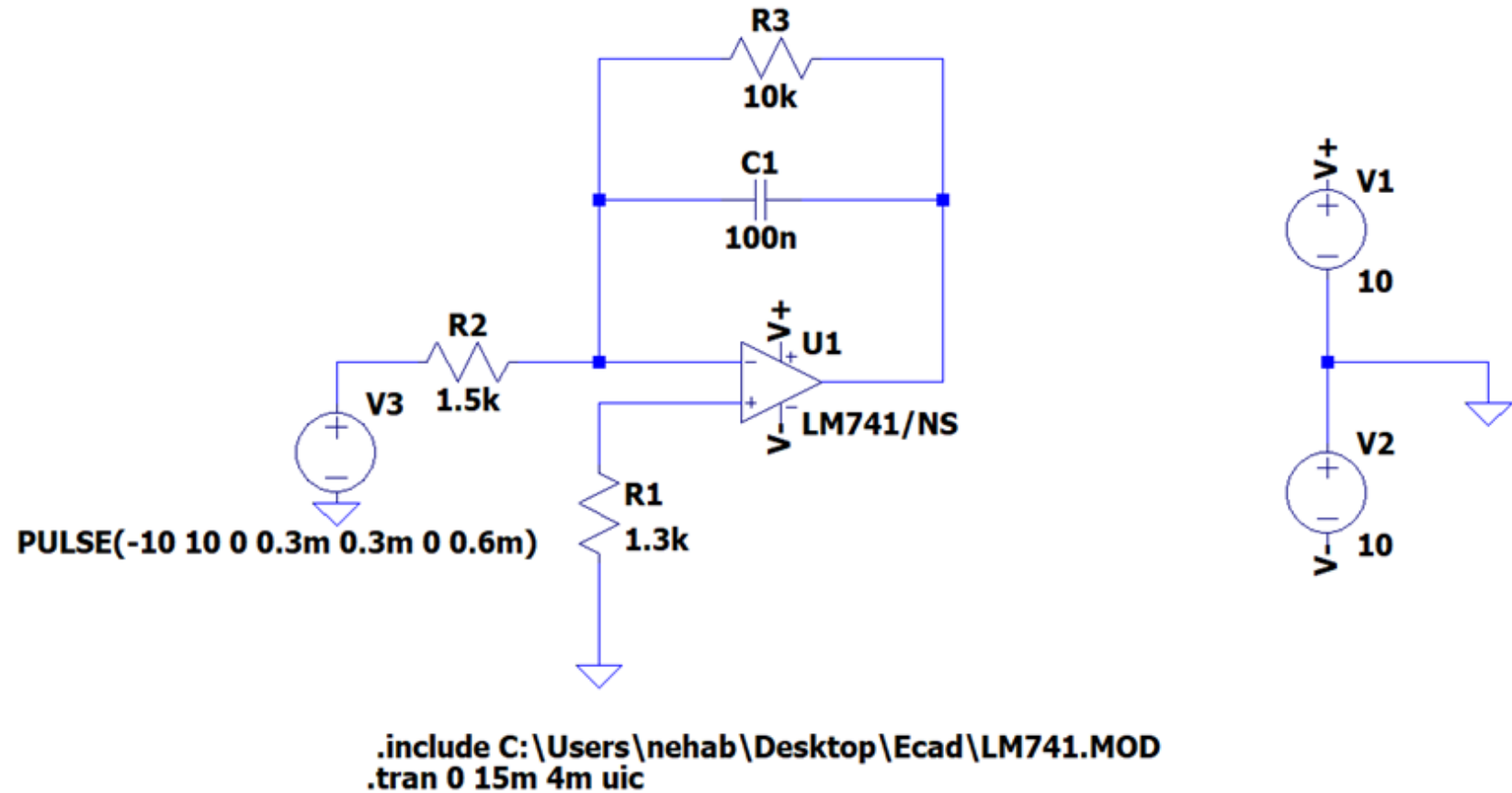


```
.include C:\Users\nehab\Desktop\Ecad\LM741.MOD  
.tran 0 15m 4m uic
```

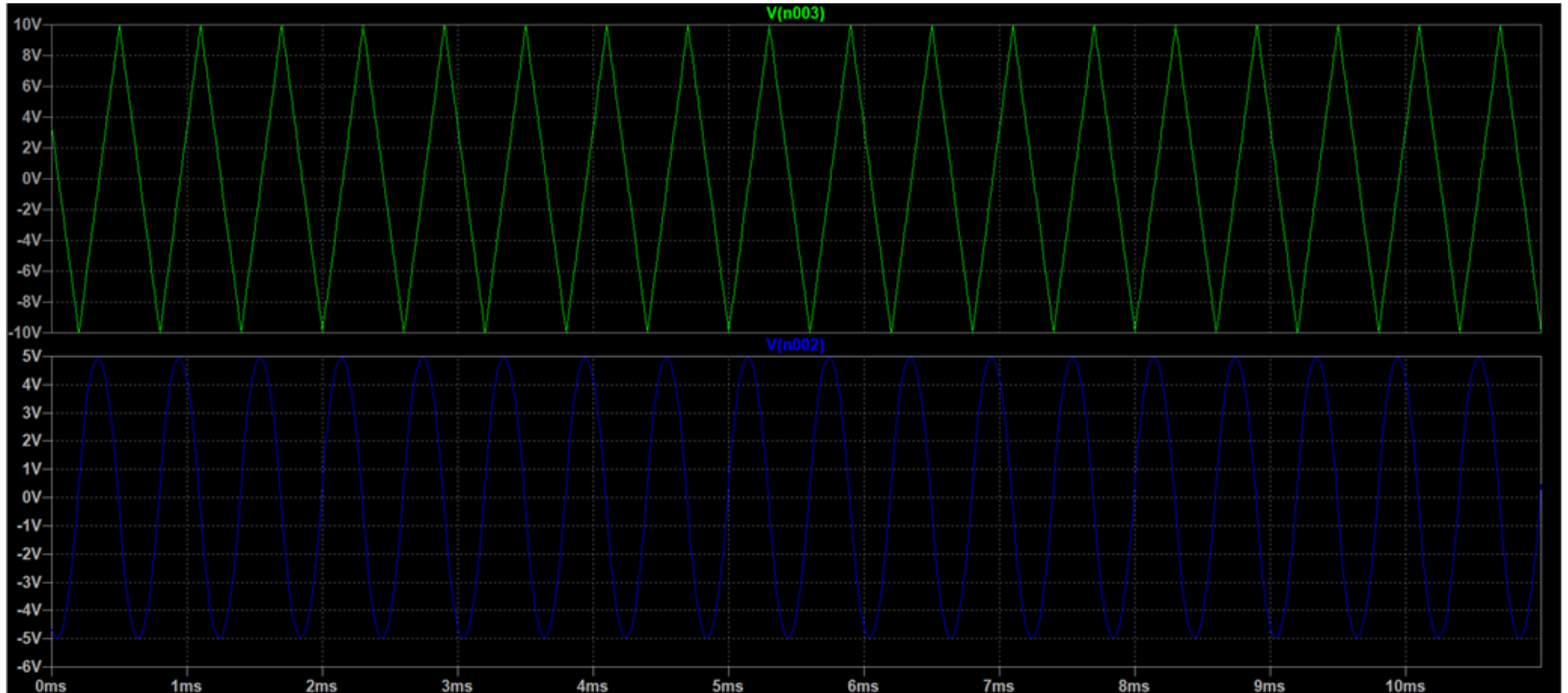
Simulation



Sine Wave Generation: Integrator

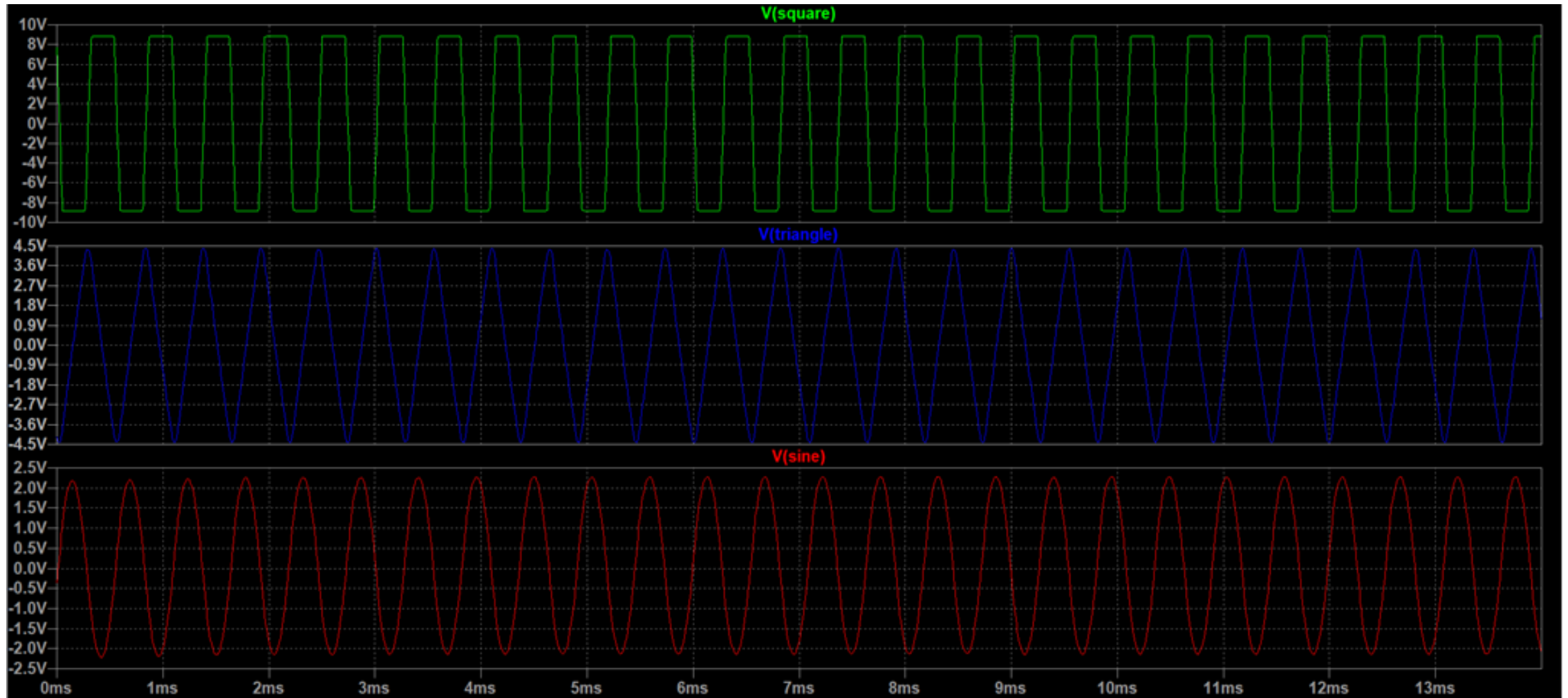


Simulation

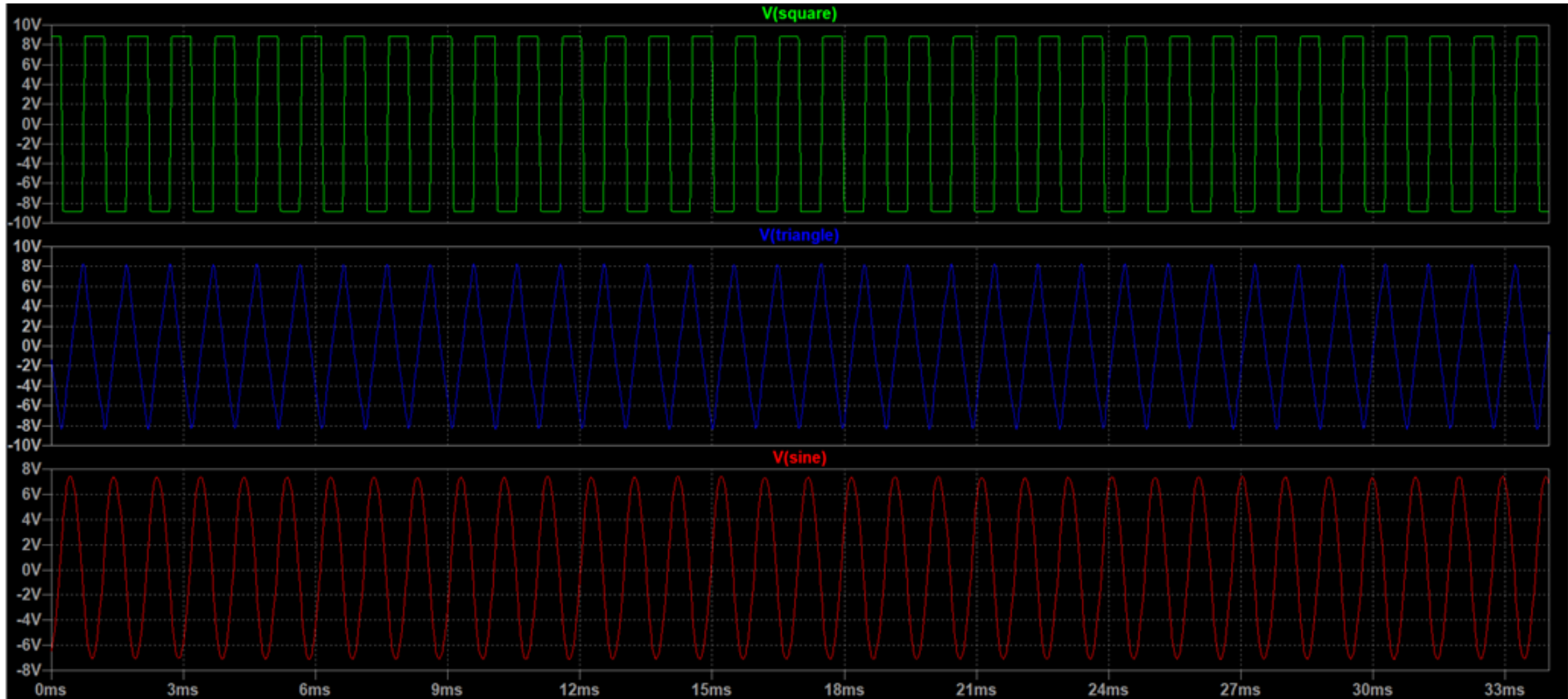


Simulation of the Cascaded Circuit

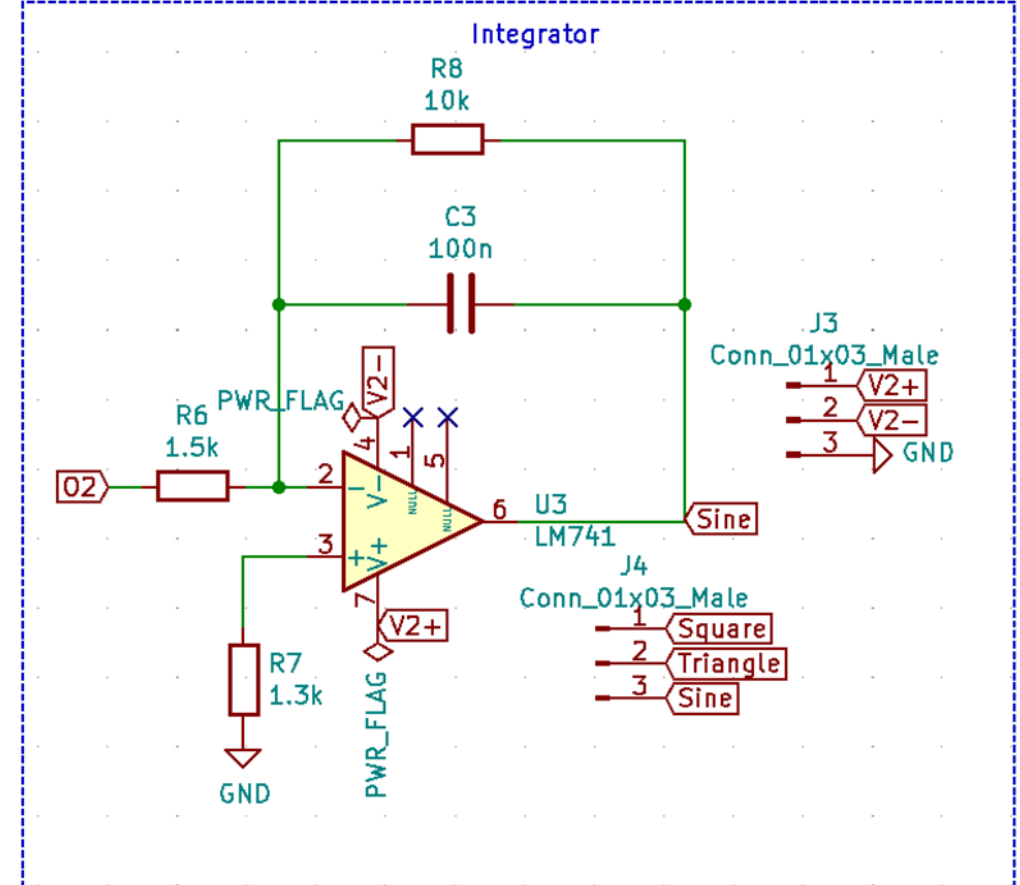
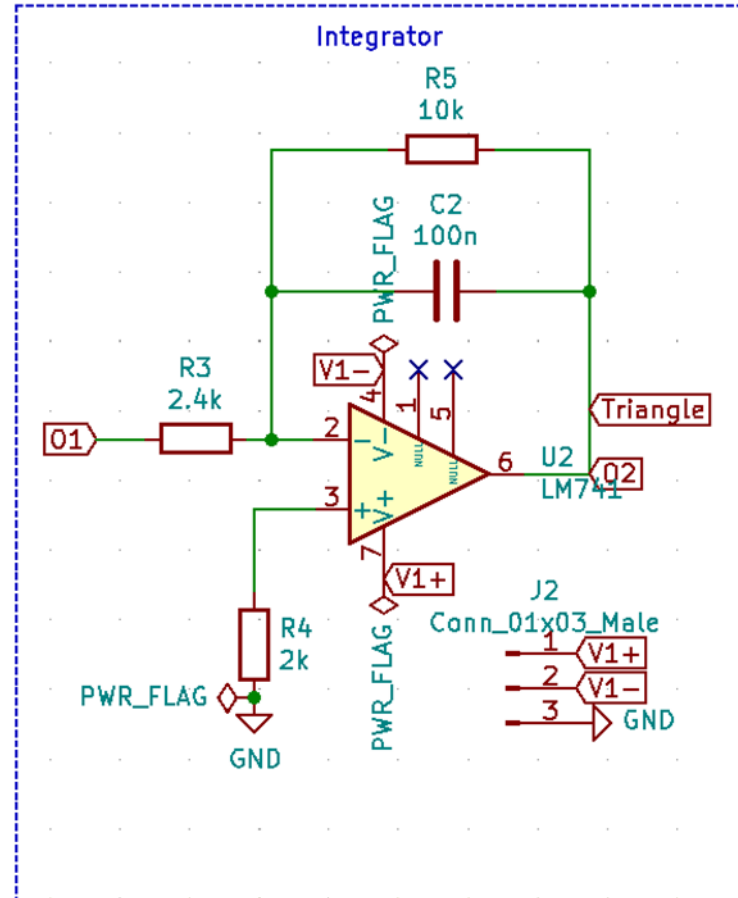
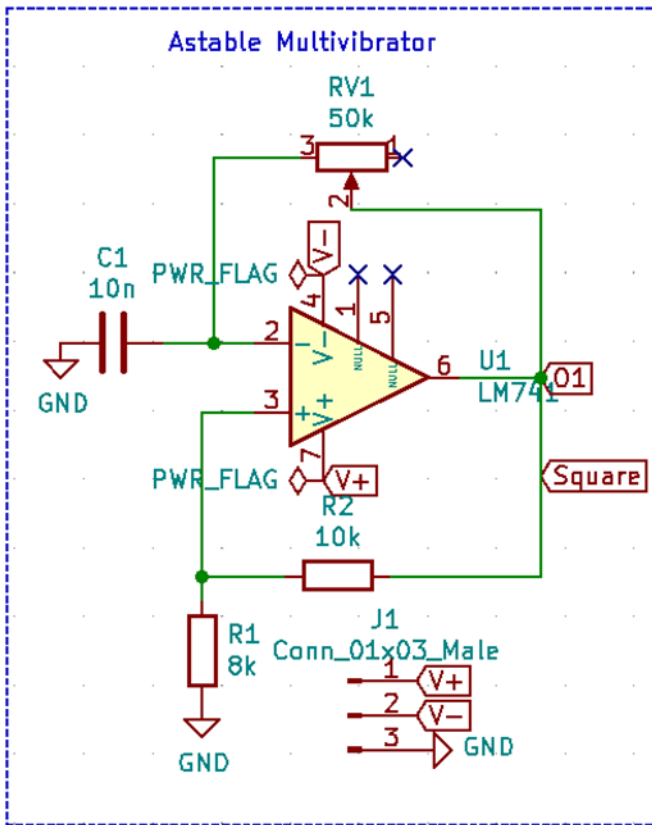
Simulation for $X1 = 25k\Omega$

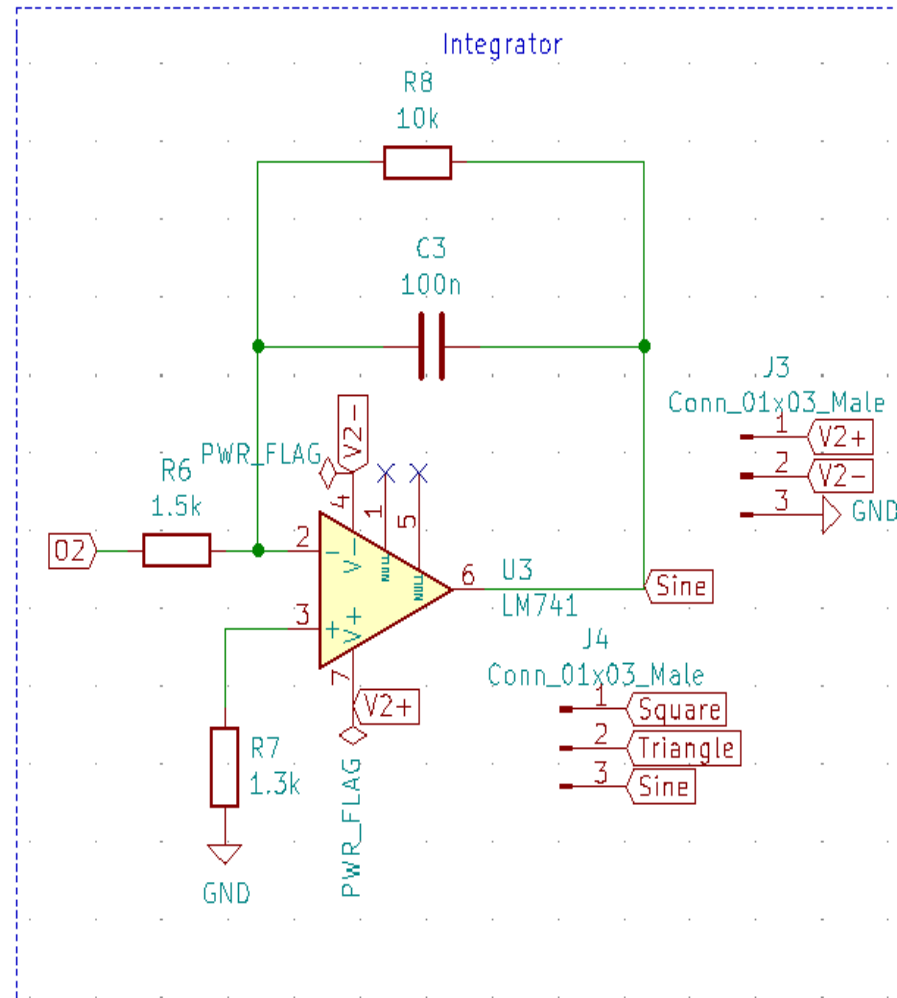
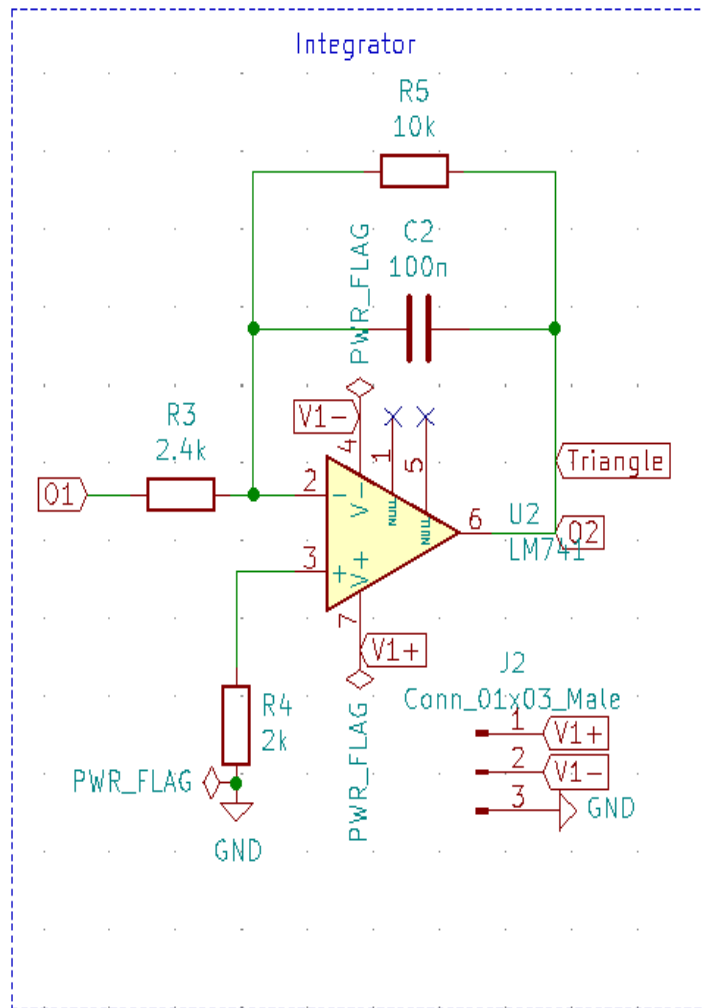
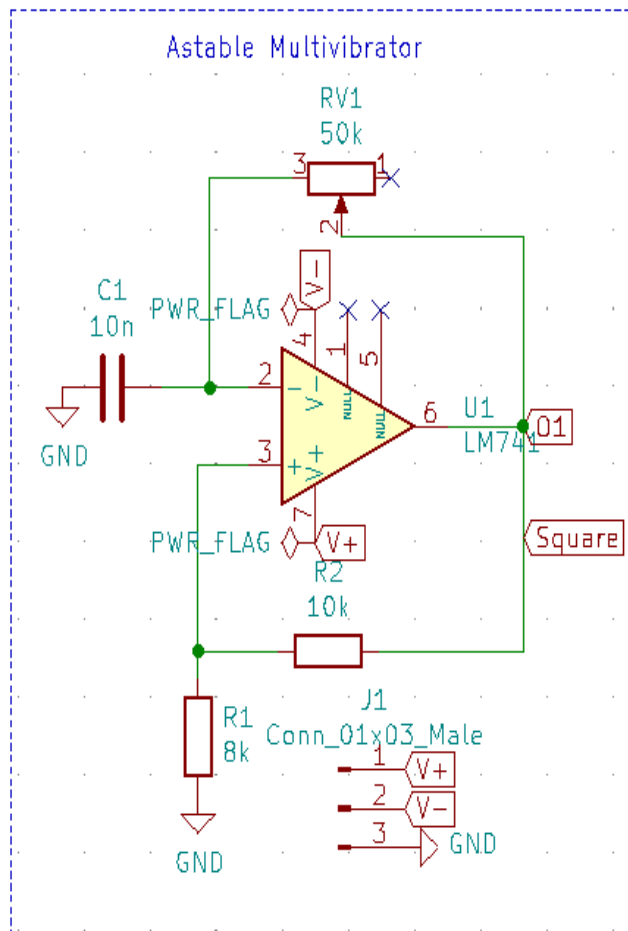


Simulation for $X1 = 49.5\text{k}\Omega$

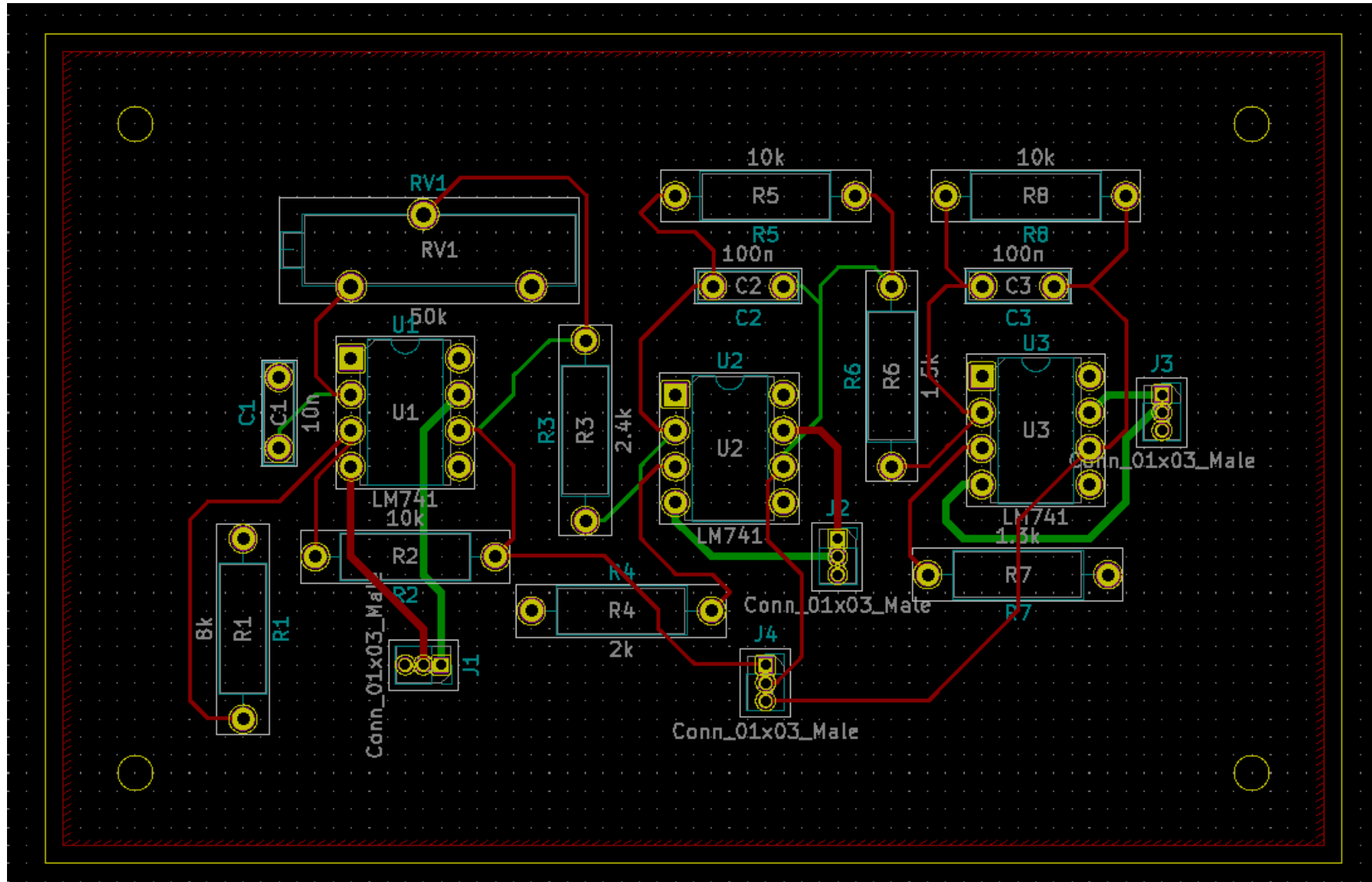


Schematic in Kicad



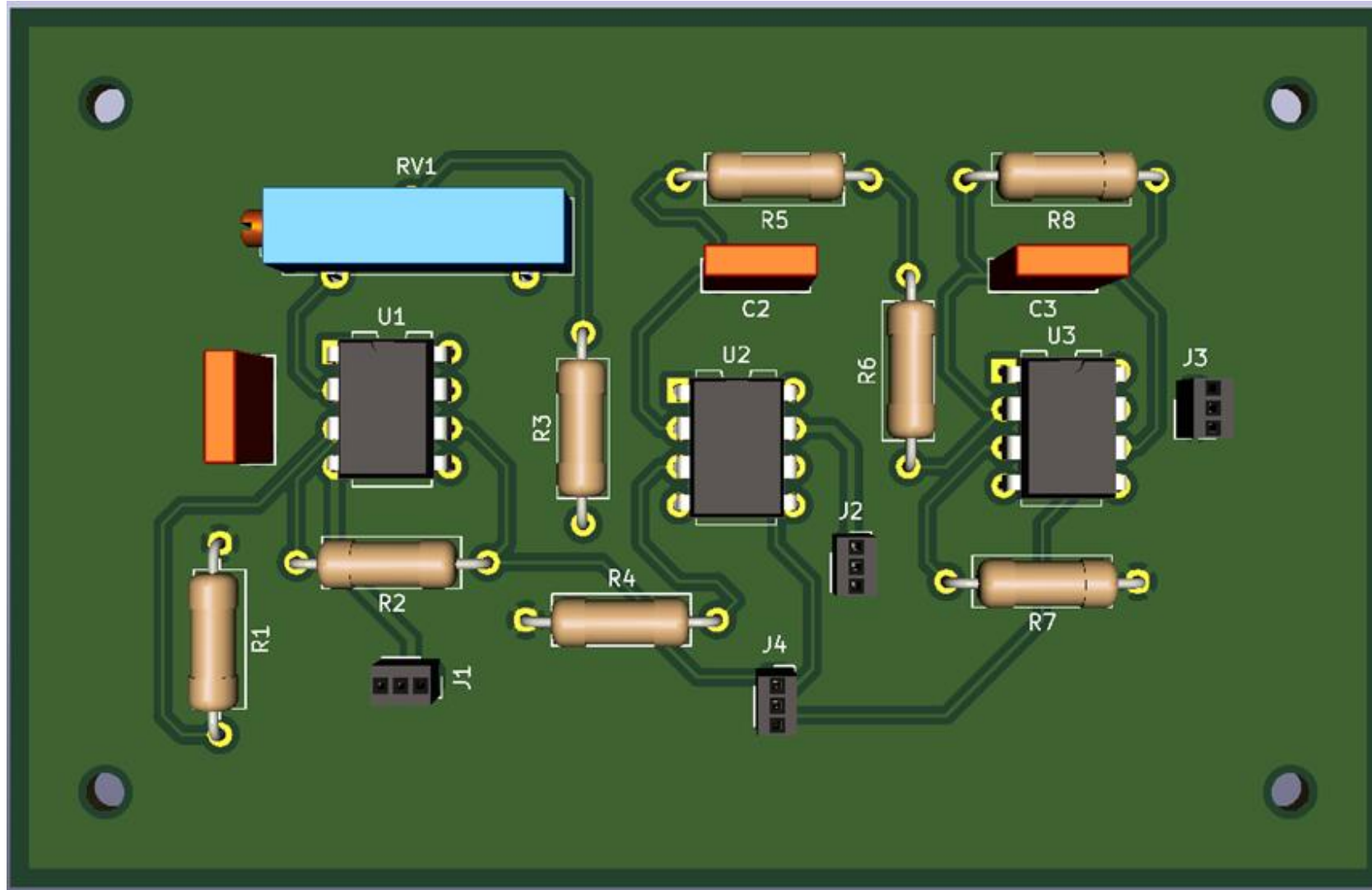


Footprint

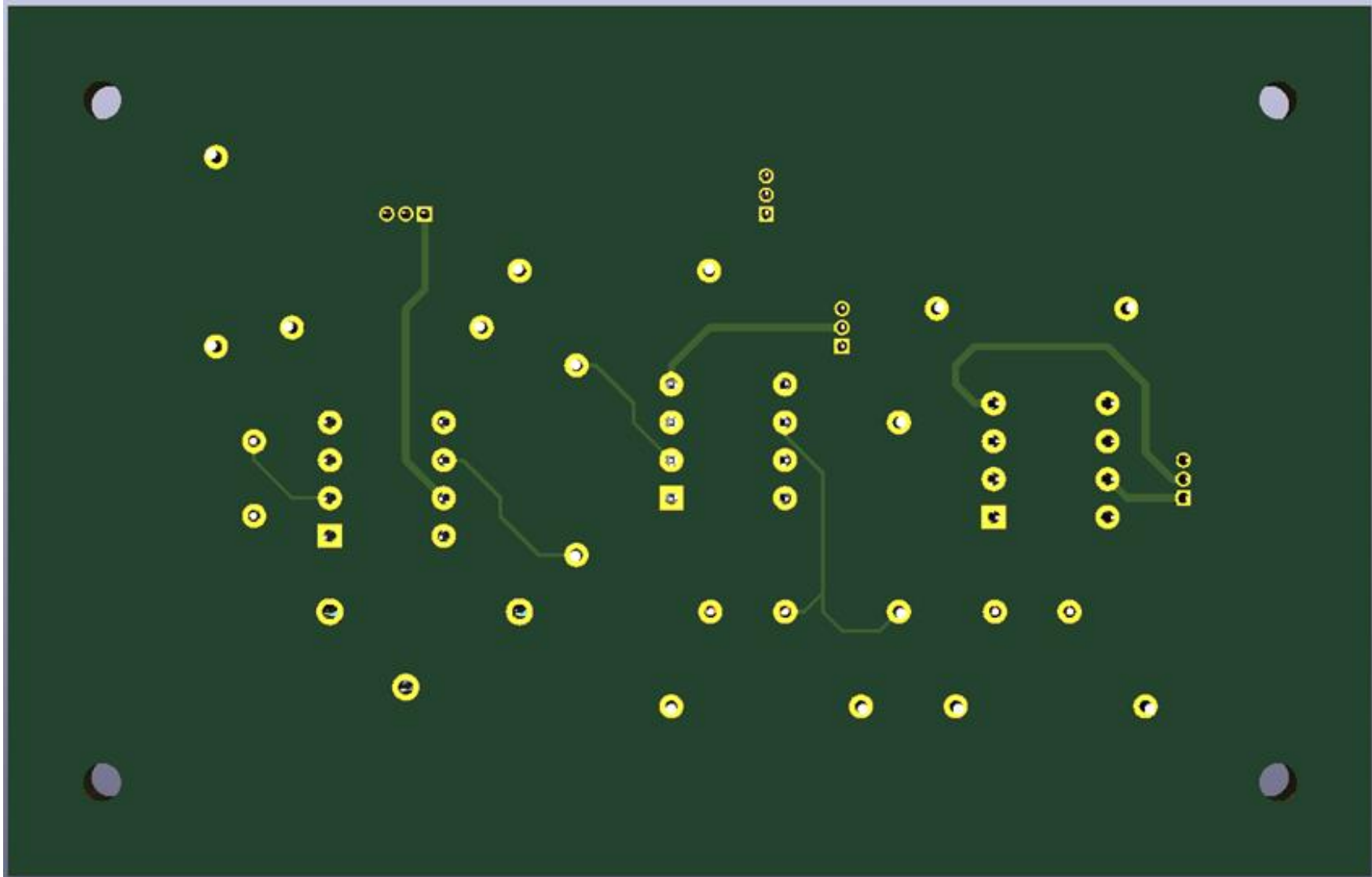


PCB Layout

Front View



Back View



Side View

