

# Indian Institute of Space Science and Technology



**By:**

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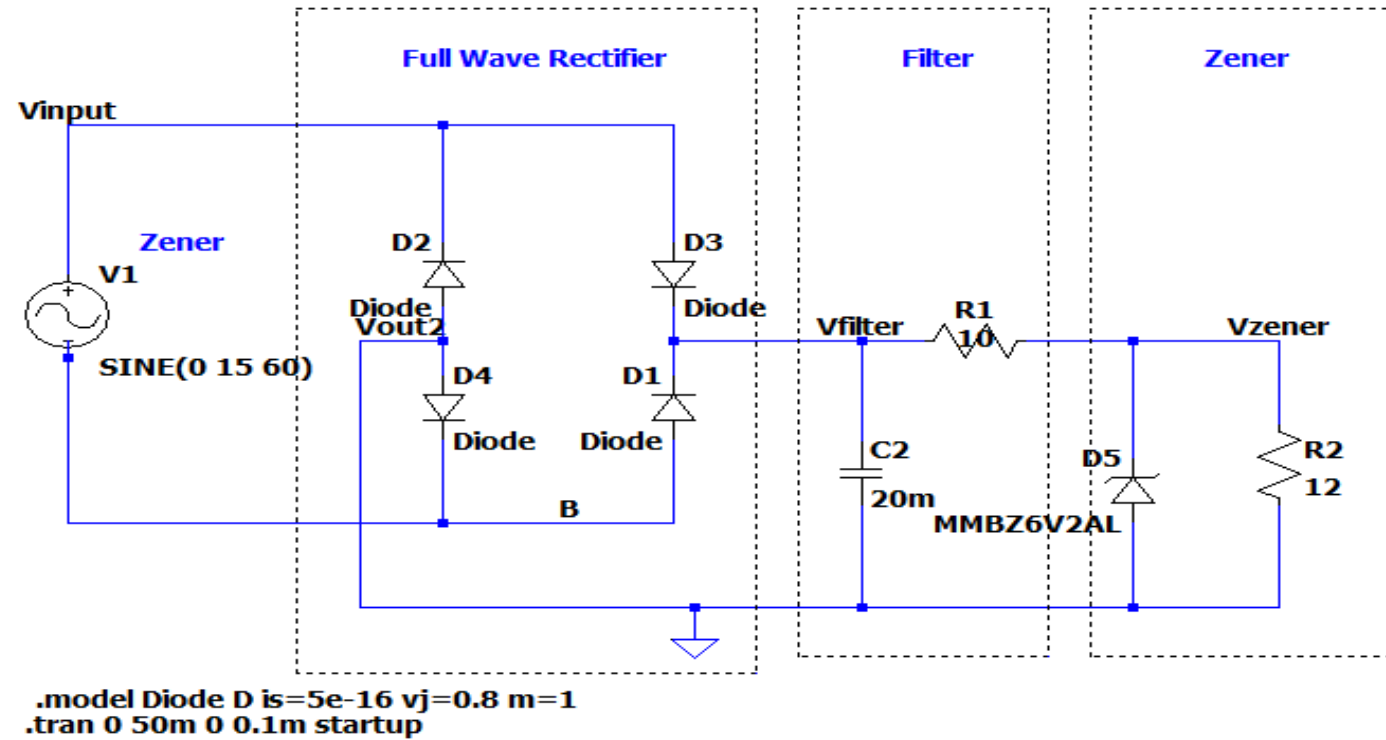
SC19B091

# Precision AC-DC convertor

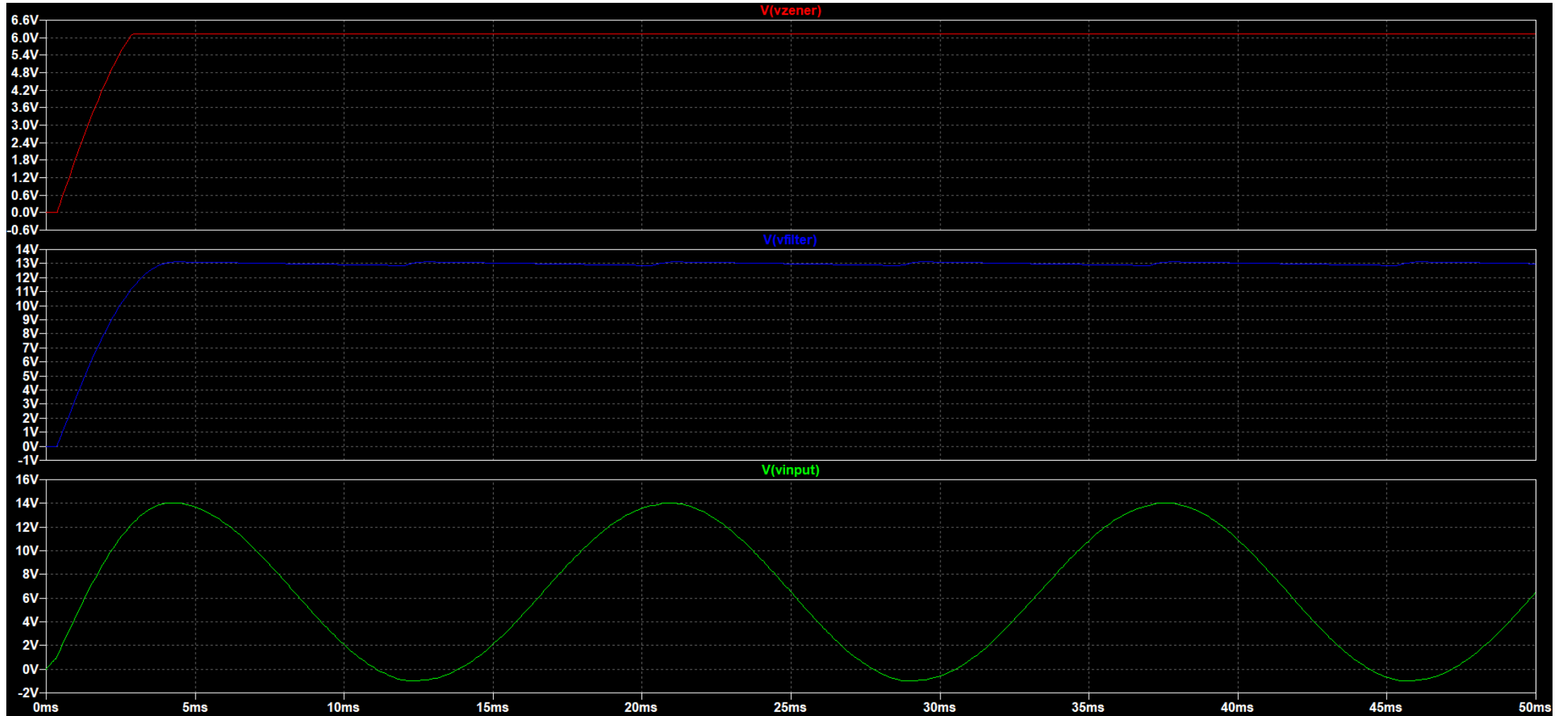
It is a simple full wave precision rectifier using a single supply operational amplifier in saturation mode.

The rectification is achieved by the non linearity that arises due to output saturation at ground voltage and without the use of diodes.

# Initial design



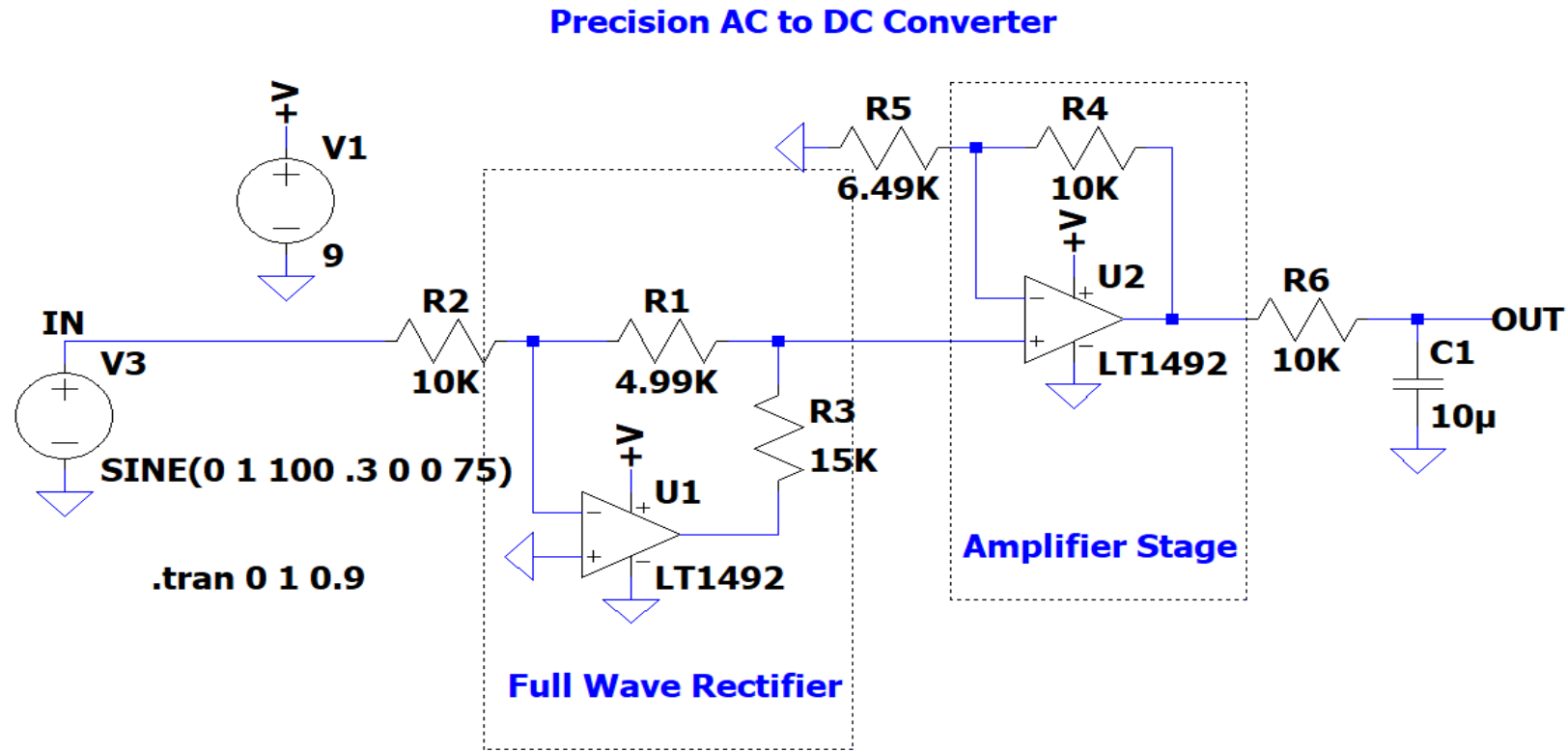
# Output(initial Design)



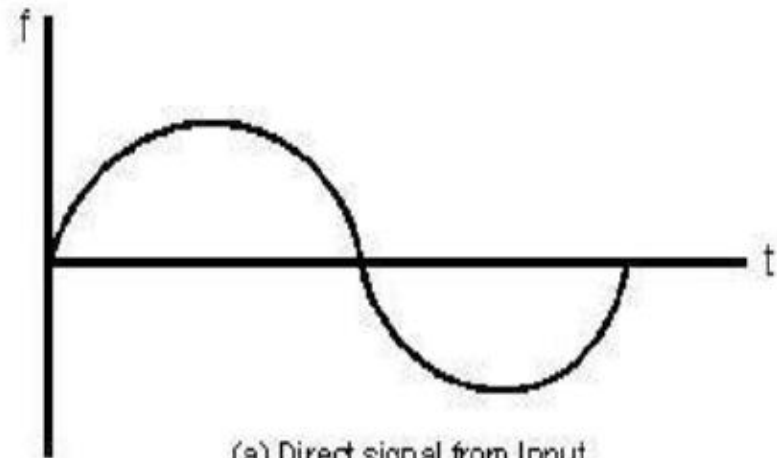
# Drawbacks

- Cut-in Voltage of Diodes
- Temperature dependence of diode
- Transients due to switching noise of diode

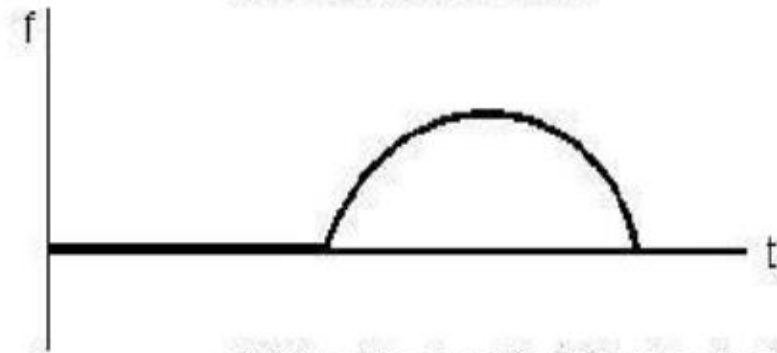
# Opamp based AC-DC convertor



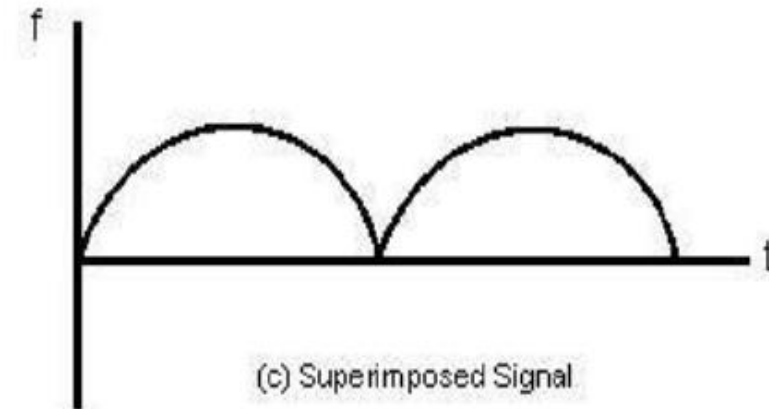
# Principle of Working



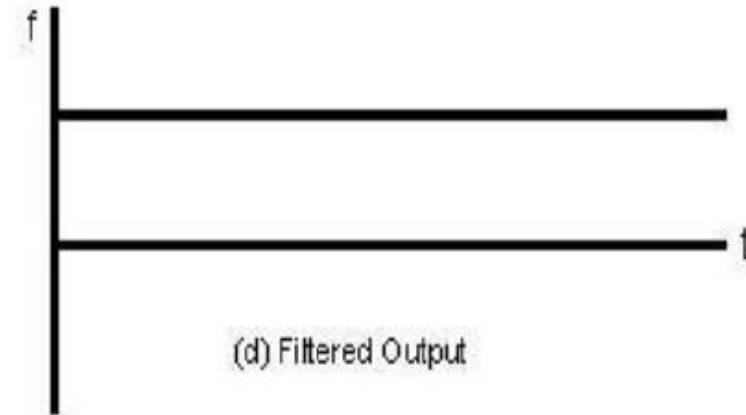
(a) Direct signal from Input



(b) Signal from Inverting Saturation Amplifier

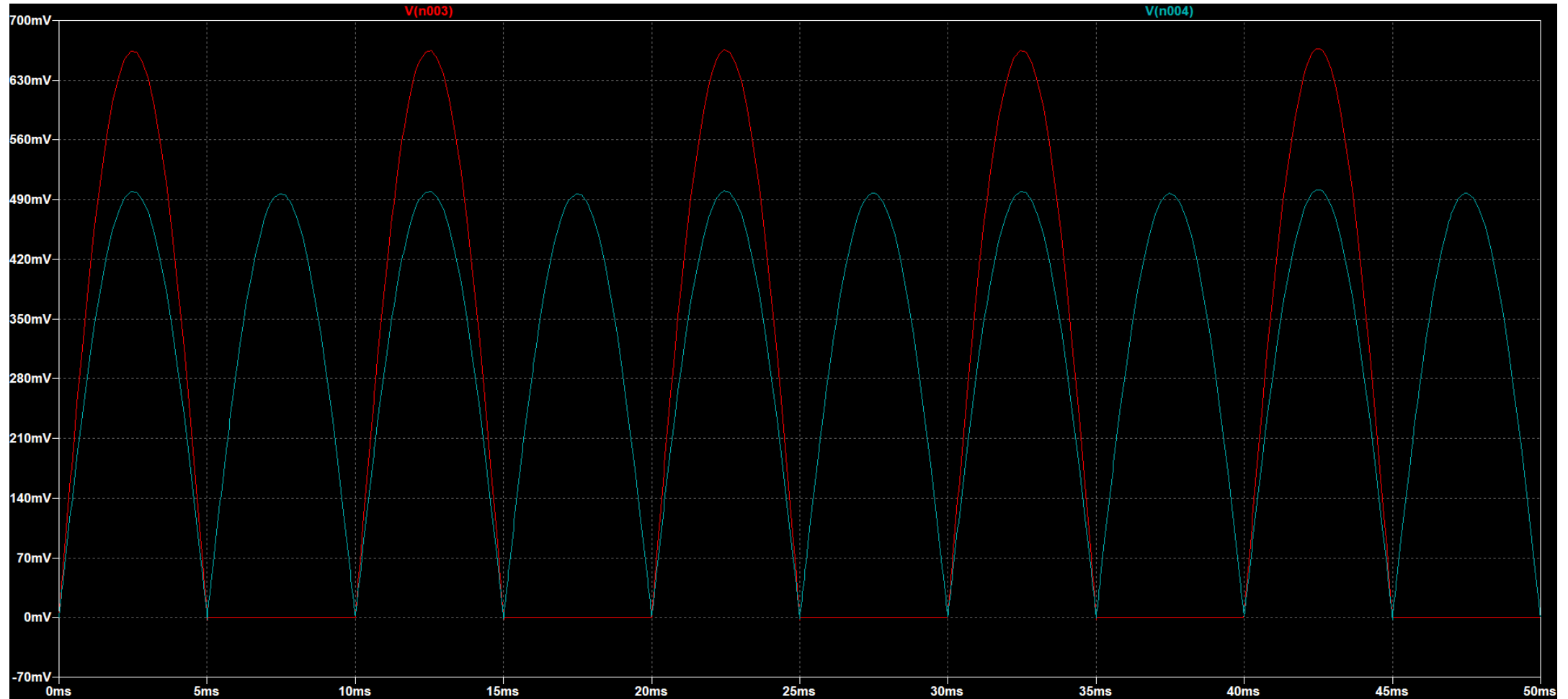


(c) Superimposed Signal



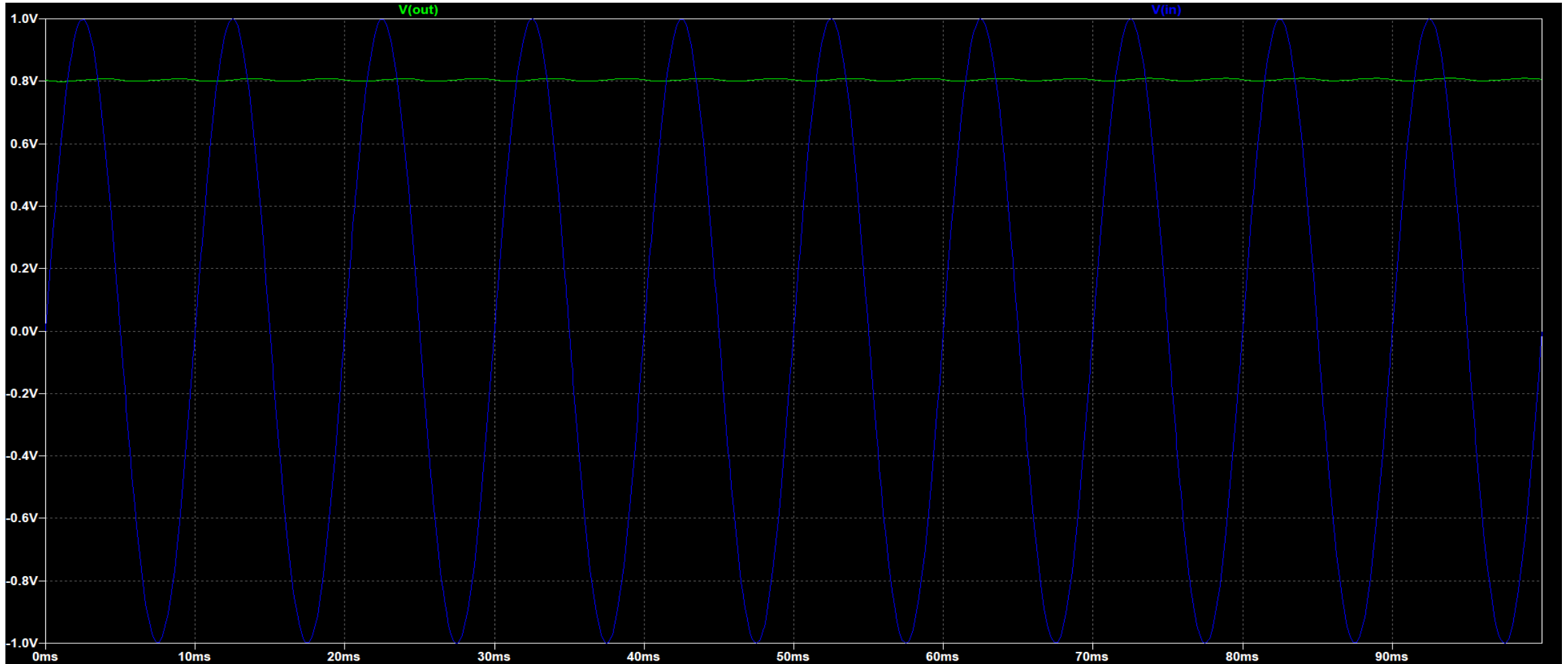
(d) Filtered Output

# LT Spice Simulation



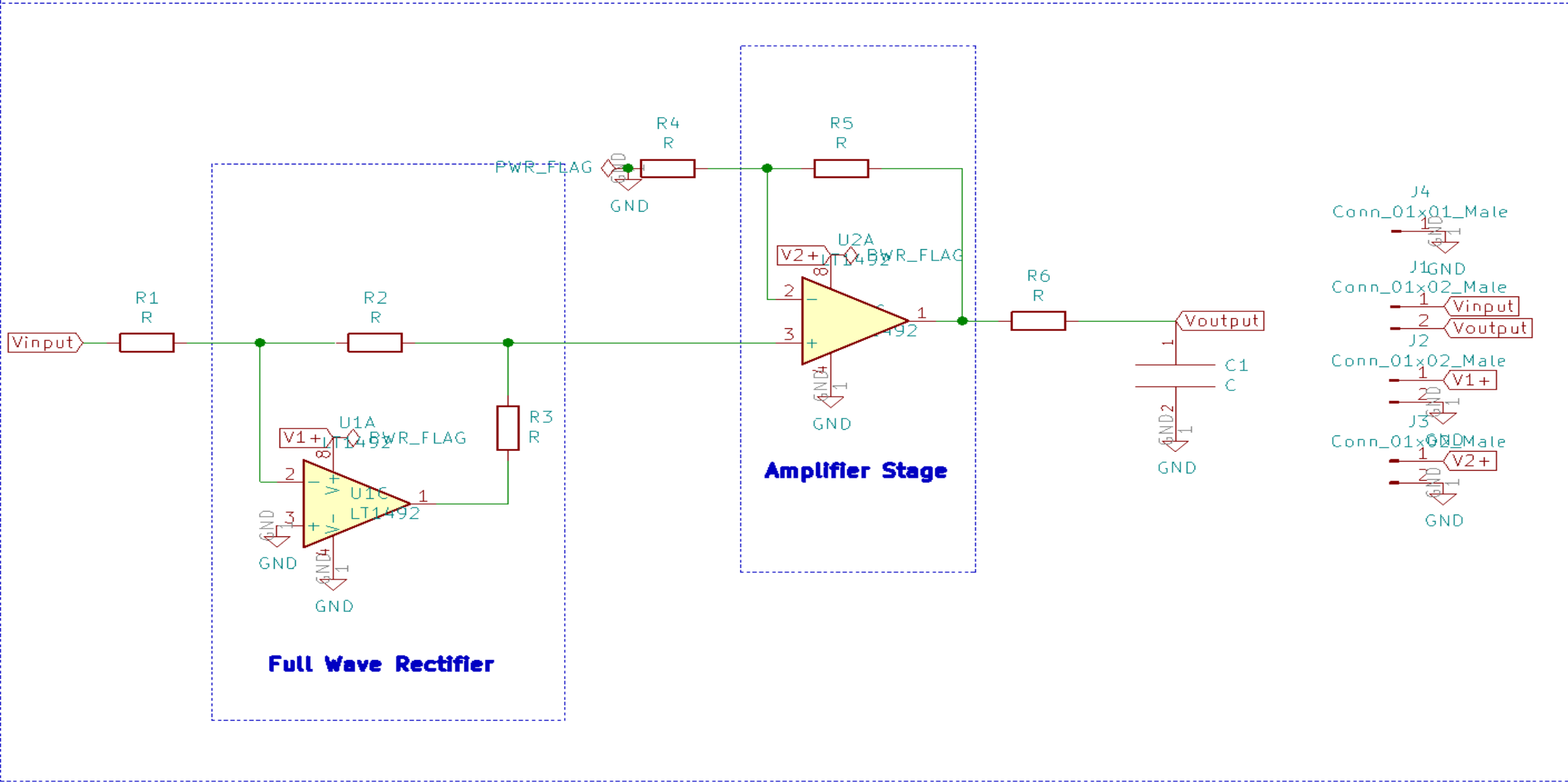


# Output

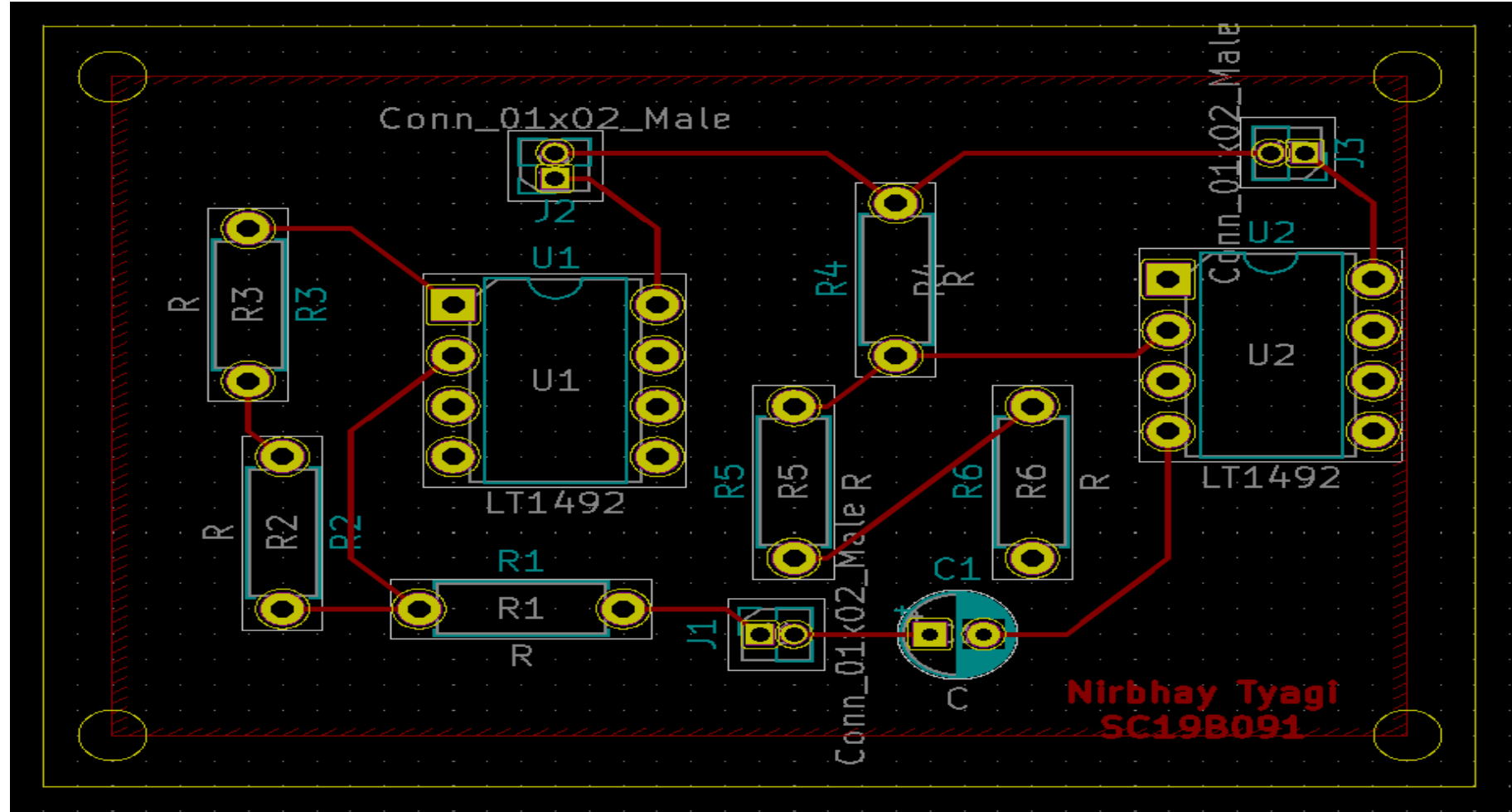


# Kicad Schematics

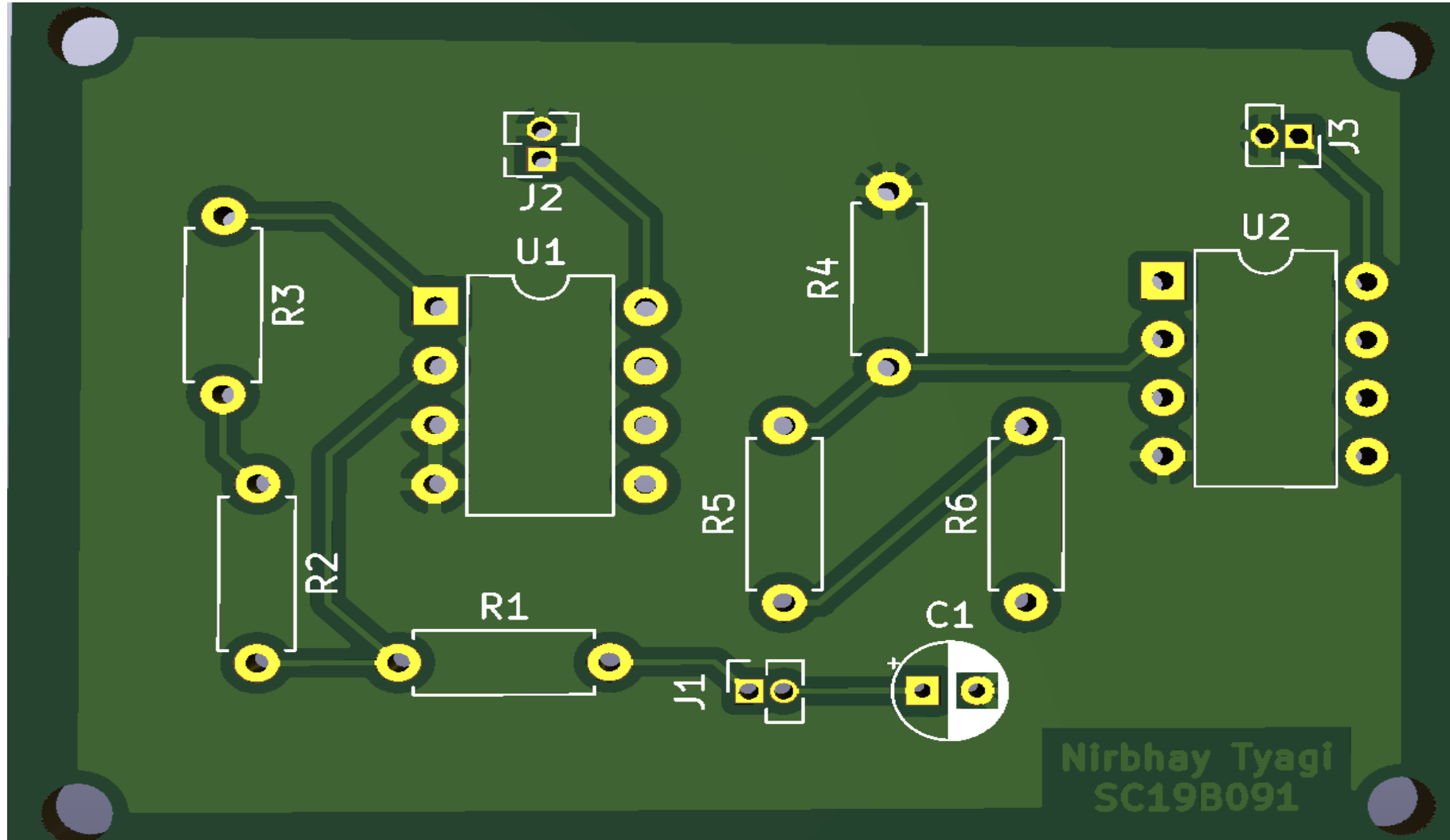
# Schematic



# Footprint

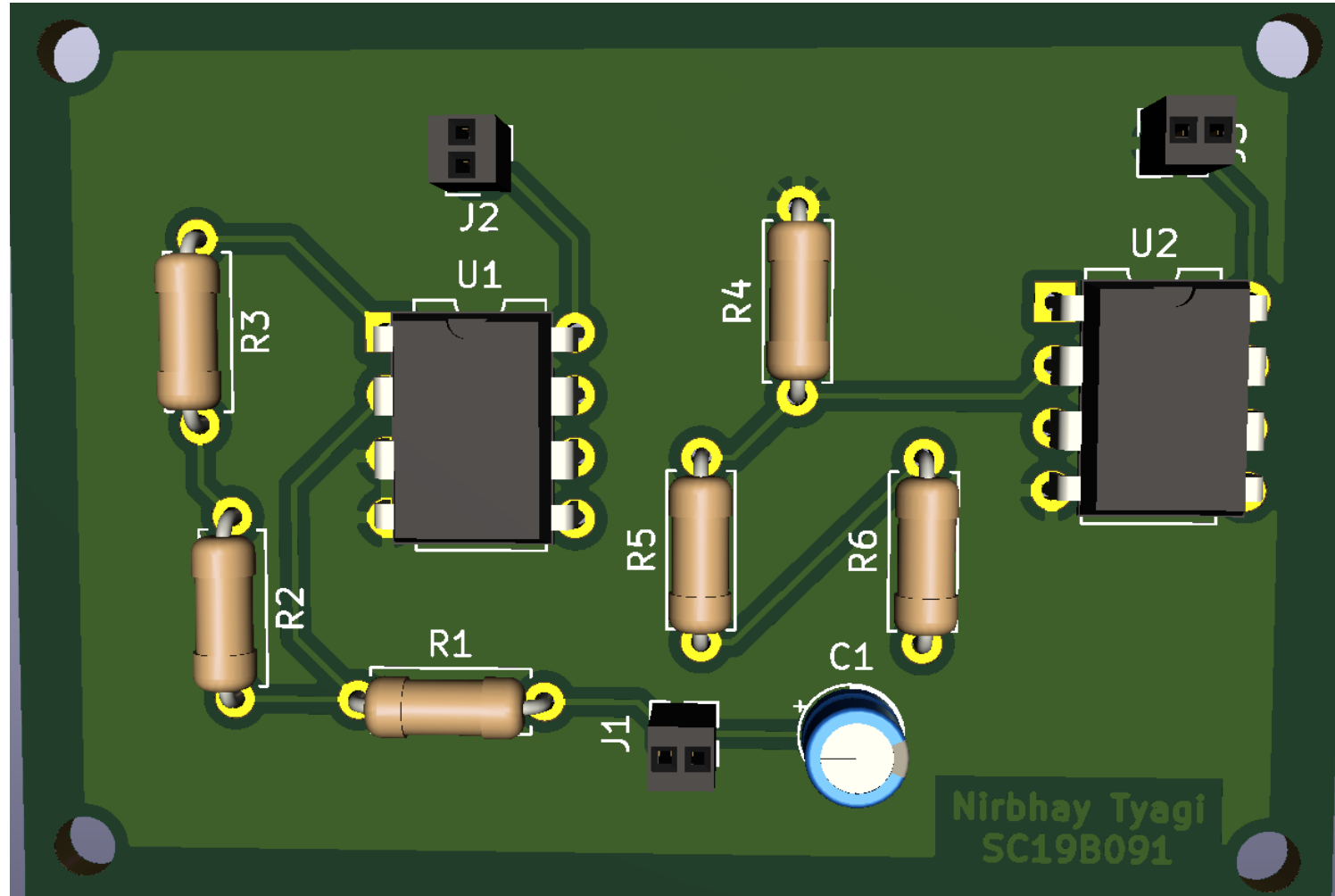


# Footprint contd.

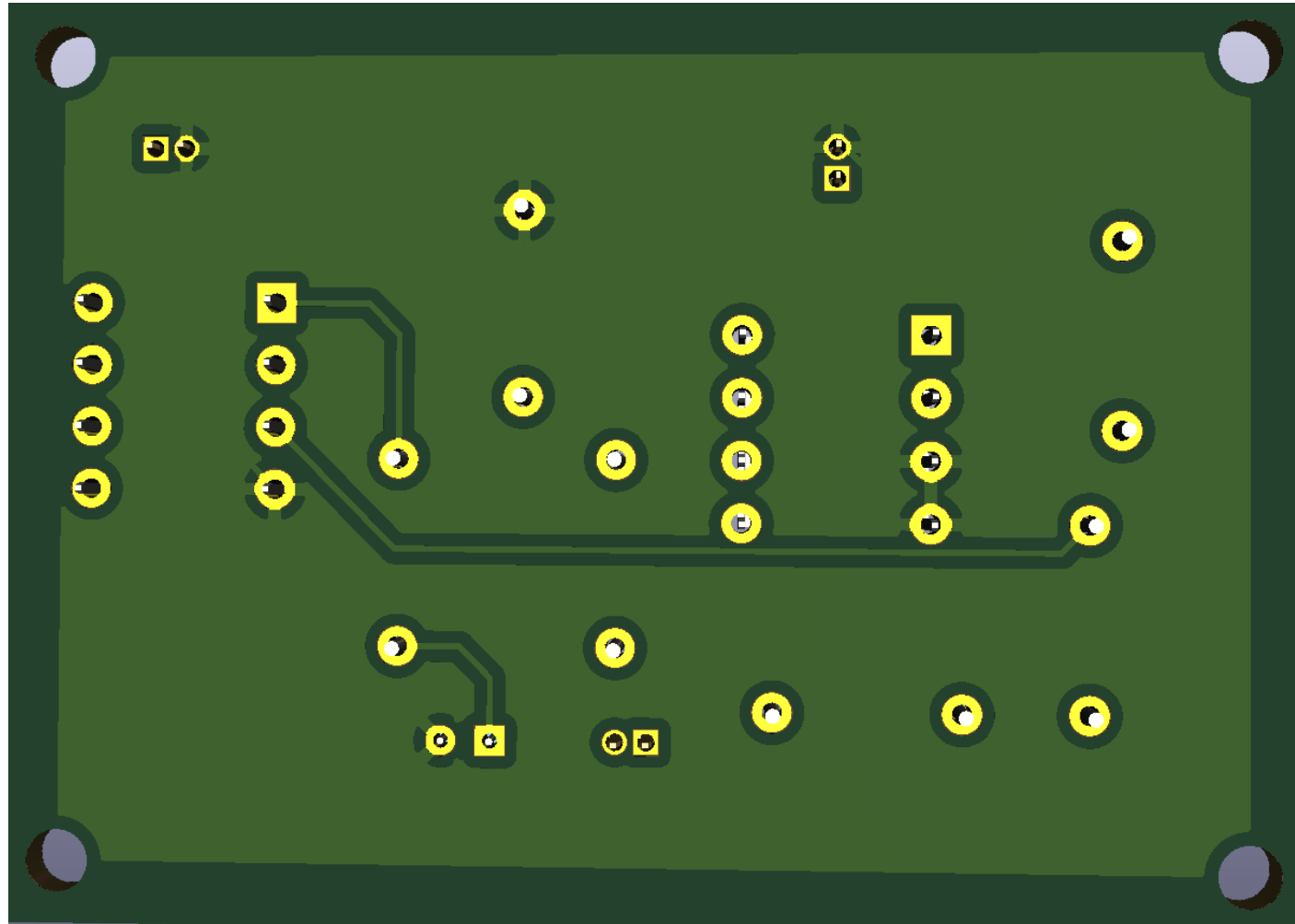


# PCB Layout

# PCB Top View



# PCB Back View





# PCB Front View

