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EEE 419 – 01

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EEE 419 Project Part 3 Report

Introduction

In this part of the project, the DC-DC Flyback Converter is implemented on the designed PCB. The PCB design is shown in Figure 1. The aim of this converter is to convert 12V DC input voltage to 25V output voltage.

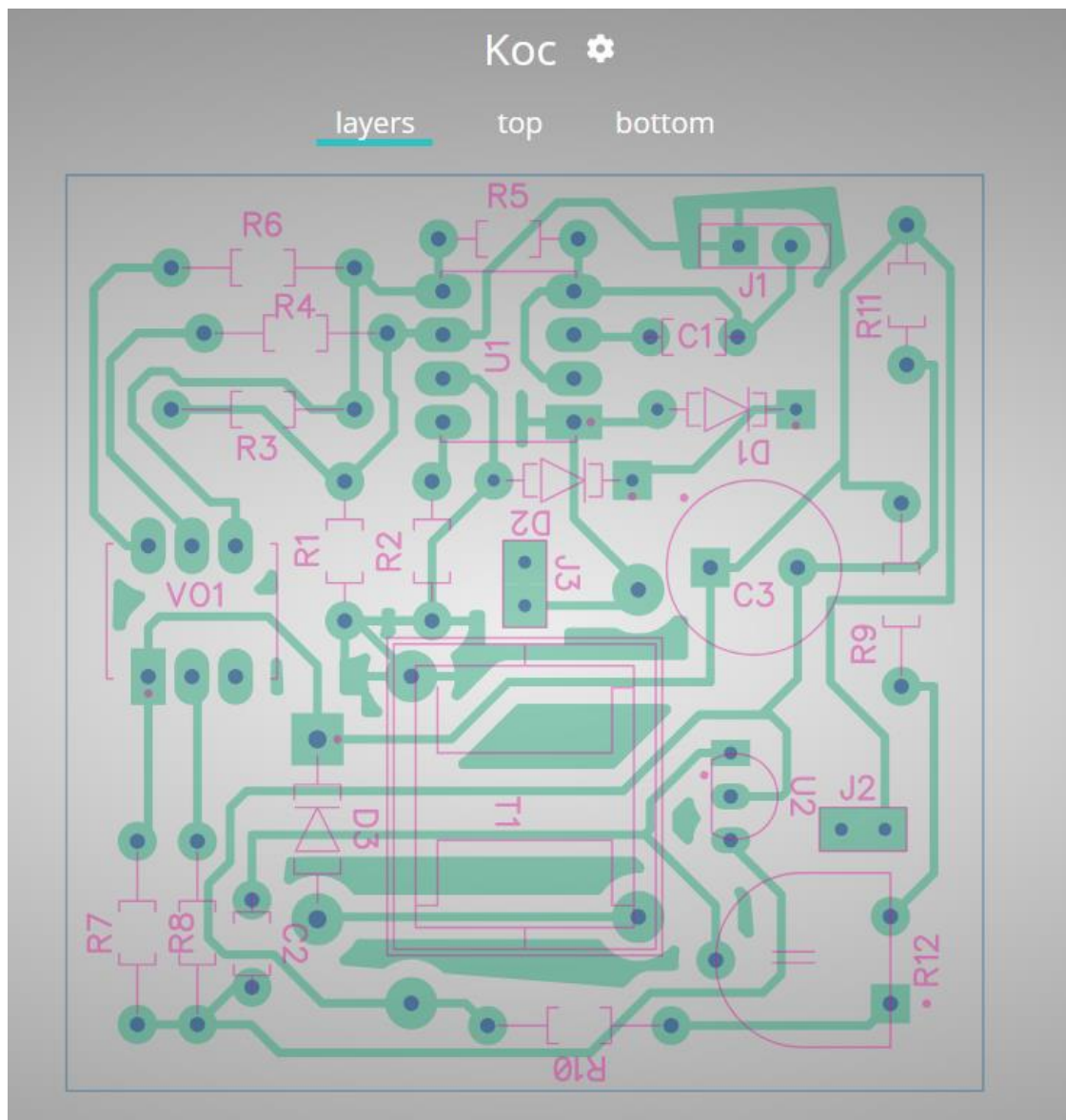


Figure 1: PCB Design of the Flyback Converter

The bottom and top sides of the mounted PCB are shown in Figures 2 and 3, respectively.

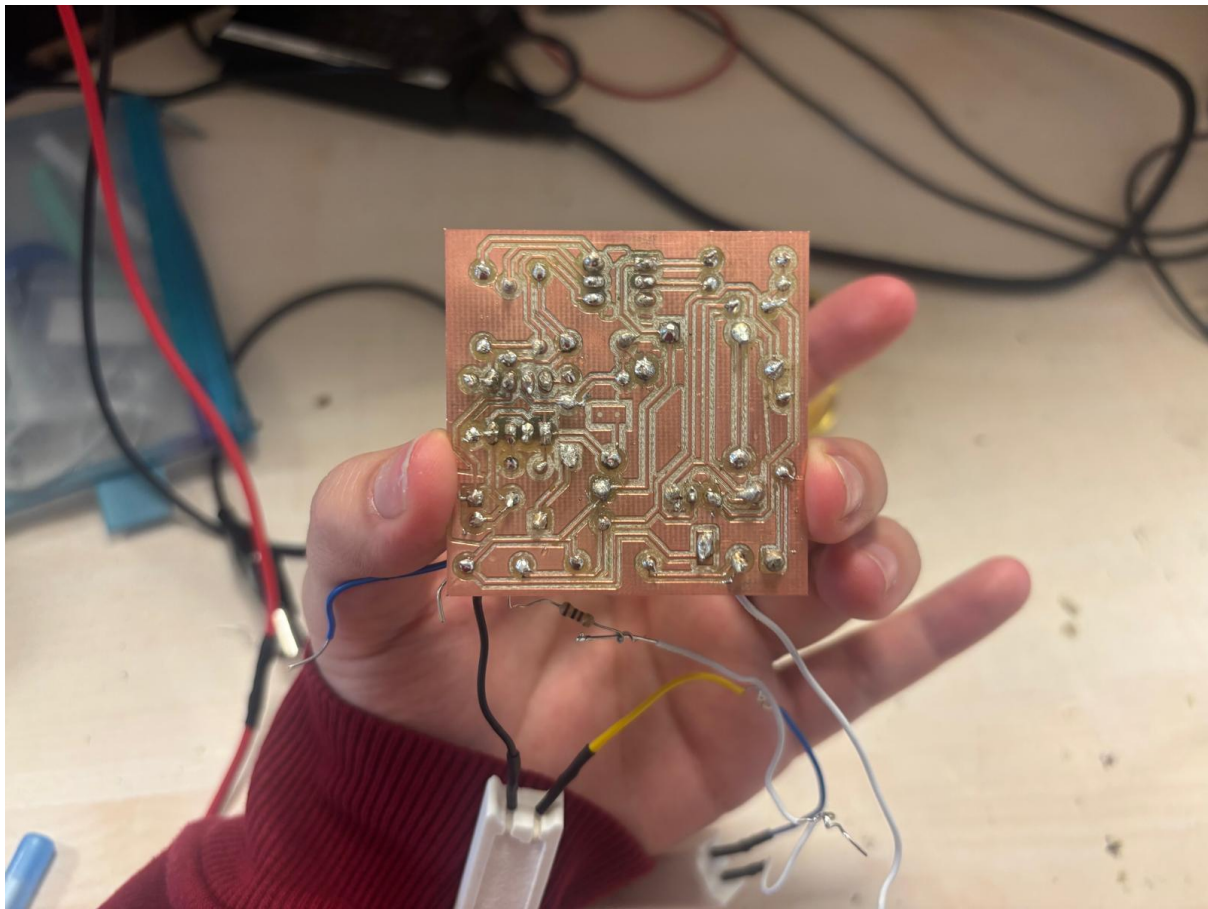


Figure 2: The Bottom Side of the PCB

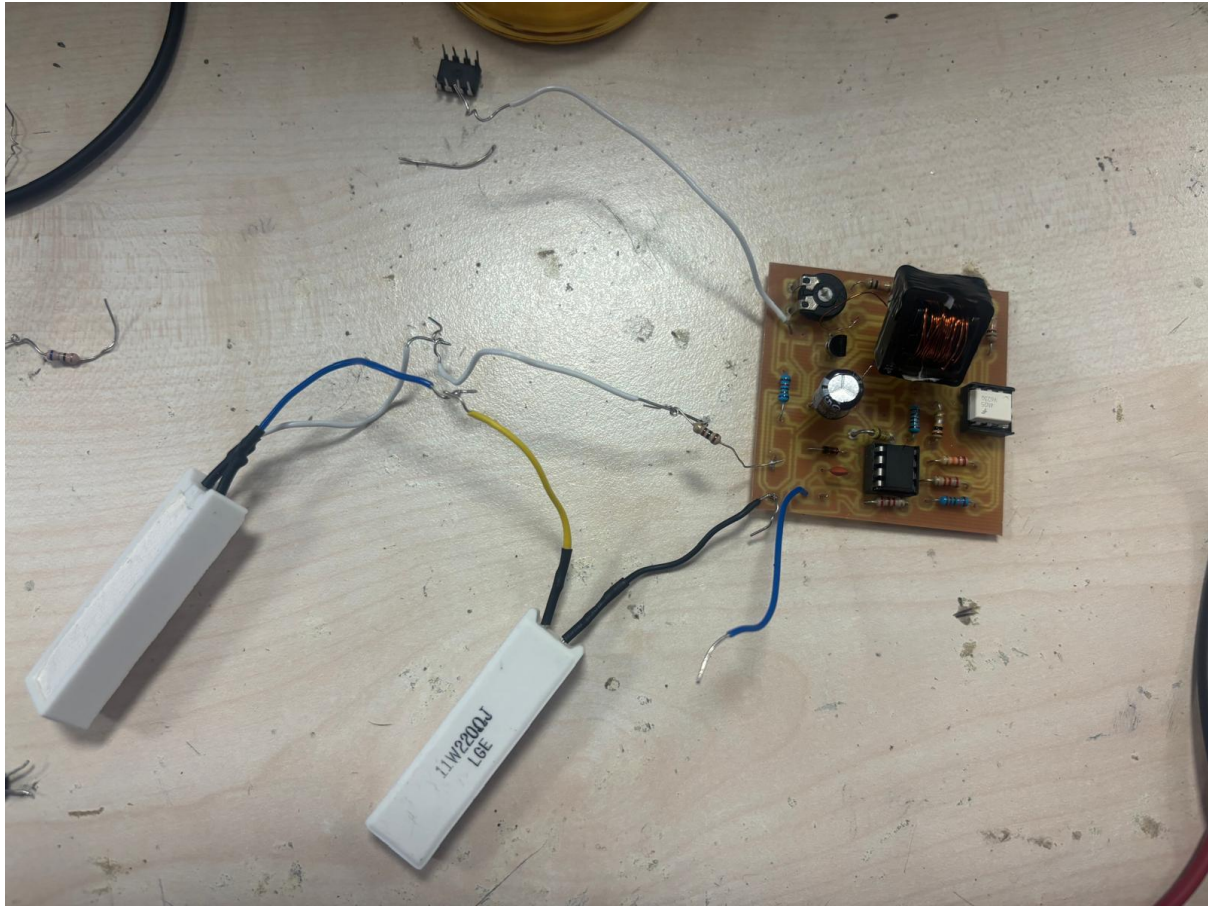


Figure 3: The Top Side of the PCB

Results and Measurements

After the circuit is mounted and soldered, the required measurements and observations are recorded.

The input power supply and its voltage – current values are shown in Figure 4.



Figure 4: Voltage and Current of the Power Supply

Hence the input power is calculated to be 3.56W.

Output voltage measurement of the converter is measured with multimeter, and the result is shown in Figure 5.

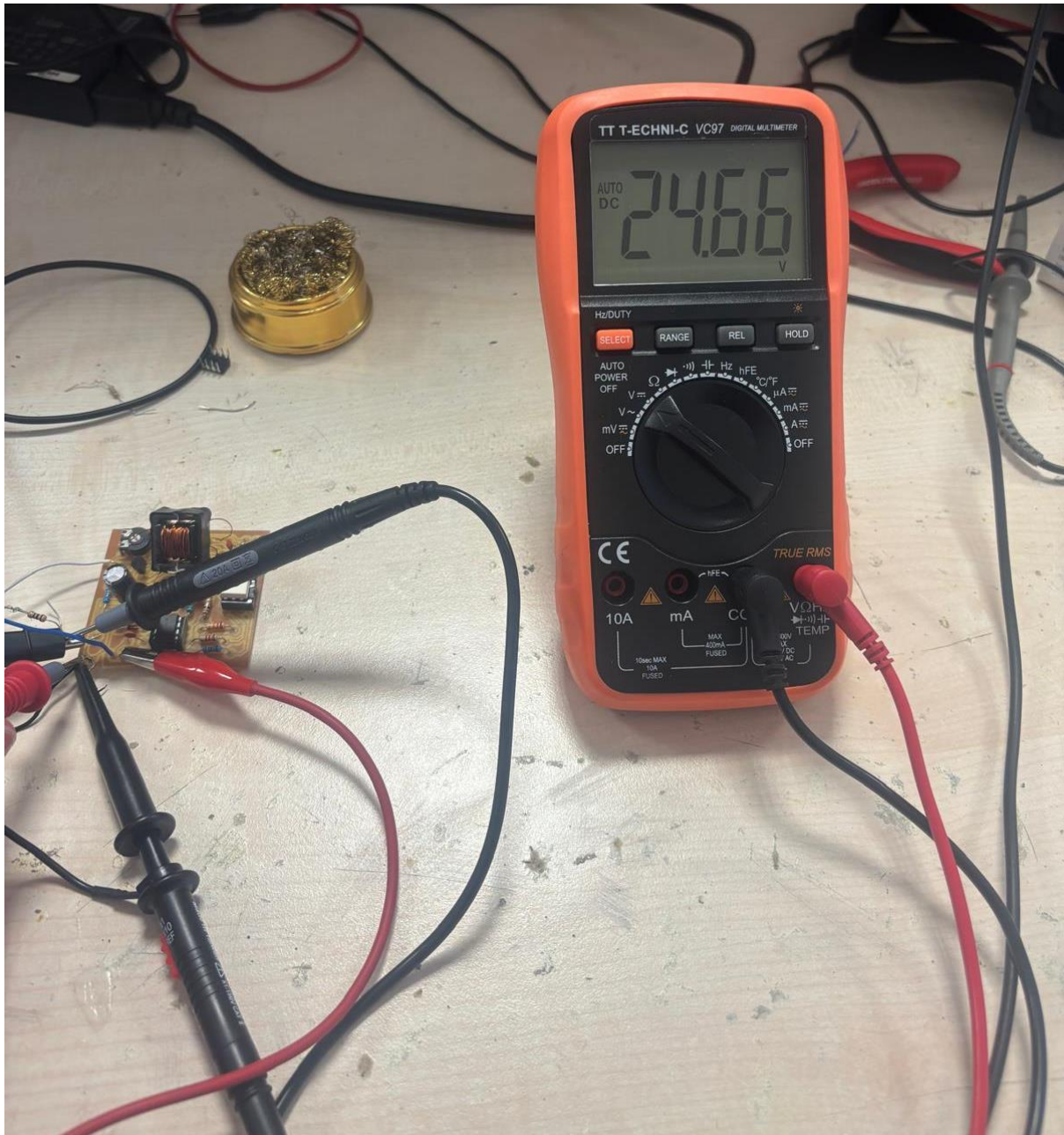


Figure 5: Output Voltage Measurement with Multimeter

The output voltage is measured as 24.66V. Hence the input voltage is converted to the desired output voltage with %1.36 error rate.

Since 420Ω load resistance is used for the converter, the output power is found to be 1.45W. Hence the efficiency of the Flyback Converter is %40.67.

Switch voltage, Pin 1 of MC34063, is shown in Figure 6.

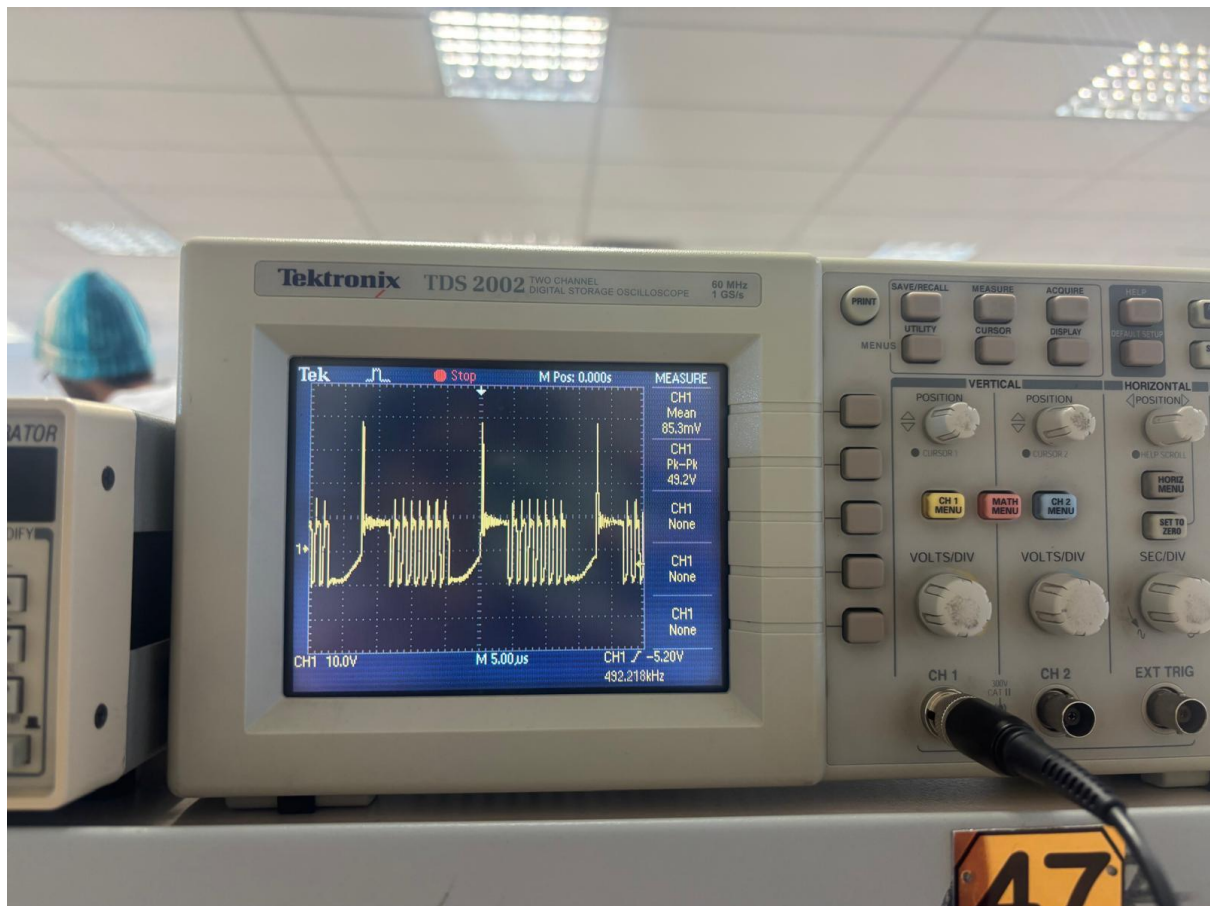


Figure 6: Two Cycles of the Switch Voltage

The observed value and cycle are as expected according to the simulation results.

The ripple amount of the output voltage is shown in Figure 7.

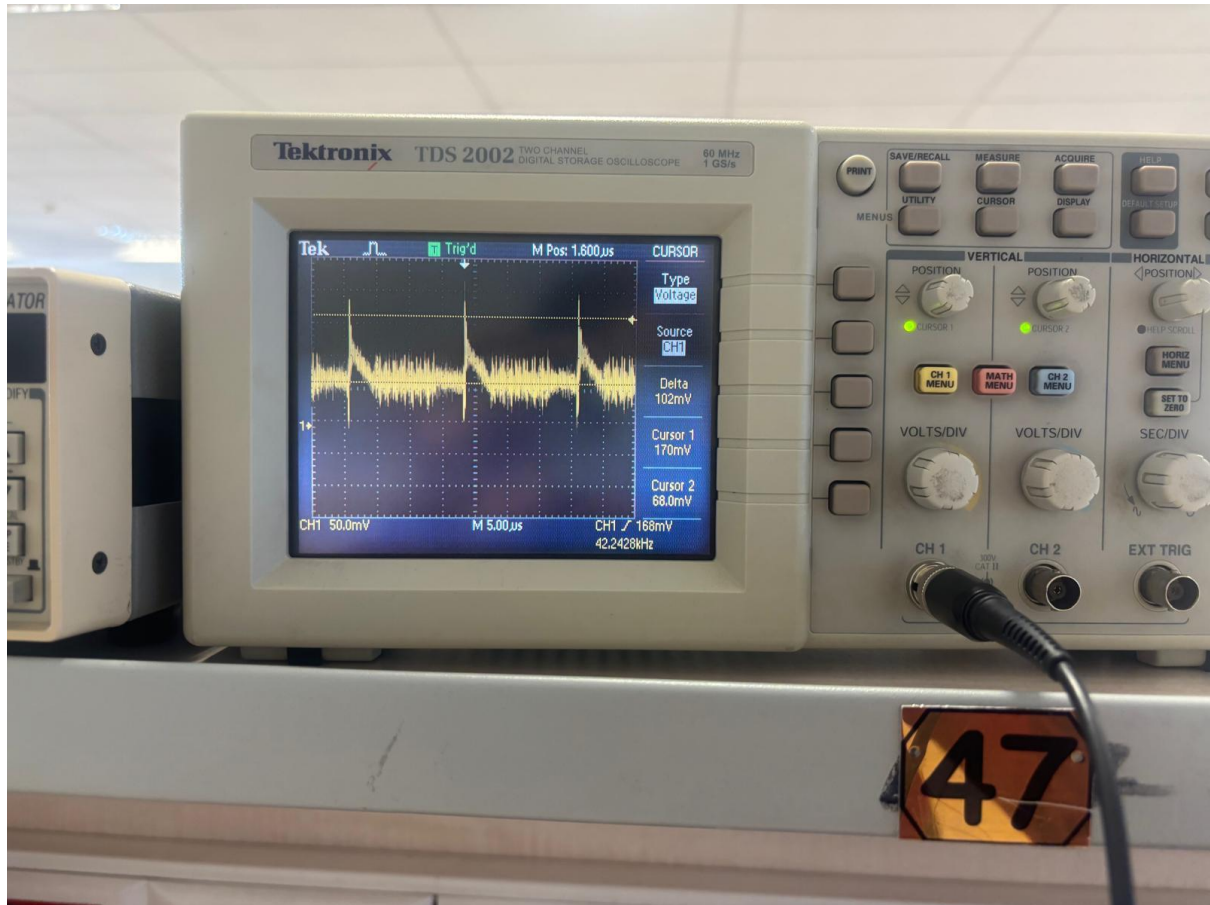


Figure 7: Ripple of the Output Voltage

Hence the output ripple is found to be 102mV, approximately.

Conclusion

The designed Flyback converter is mounted and soldered to the designed PCB and the converter achieved its aim and converted 12V input voltage to 24.6V output voltage with %40.67 efficiency.