

5V Charger Lab Report

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Circuit and Component description

The circuit includes

- 12-0-12 step down transformer
- 4 Si diodes connected to form a full bridge rectifier
- Capacitor for smoothing
- 7805 regulator

The step-down transformer converts the input 220V 50Hz AC signal into a 12V 50Hz AC signal which looks like as shown in fig 2.

The full bridge rectifier, which is made by arranging the diodes as shown in the circuit figure, converts the signal into a rectified 12V 100Hz signal. The $100\mu\text{F}$ capacitor charges due to the rectified signal and as the signal drops it discharges slow enough to maintain nearly the same voltage output until the peak of the rectified signal is attained again.

The 7805 regulator produces an output of constant 5V DC from an input of 12V DC.

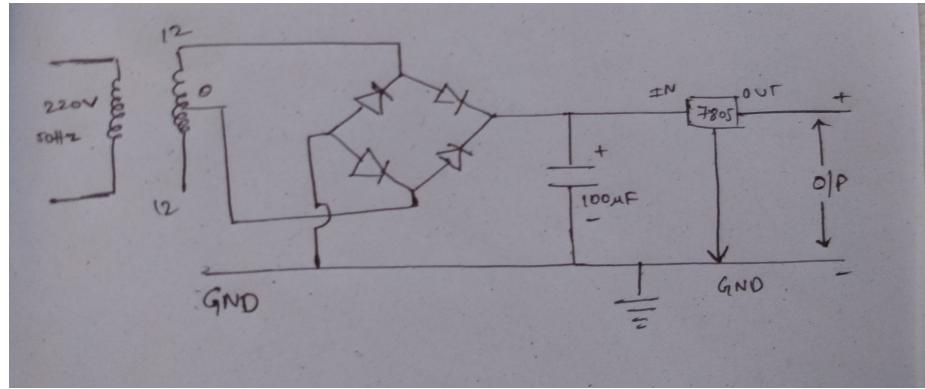


Figure 1: Circuit

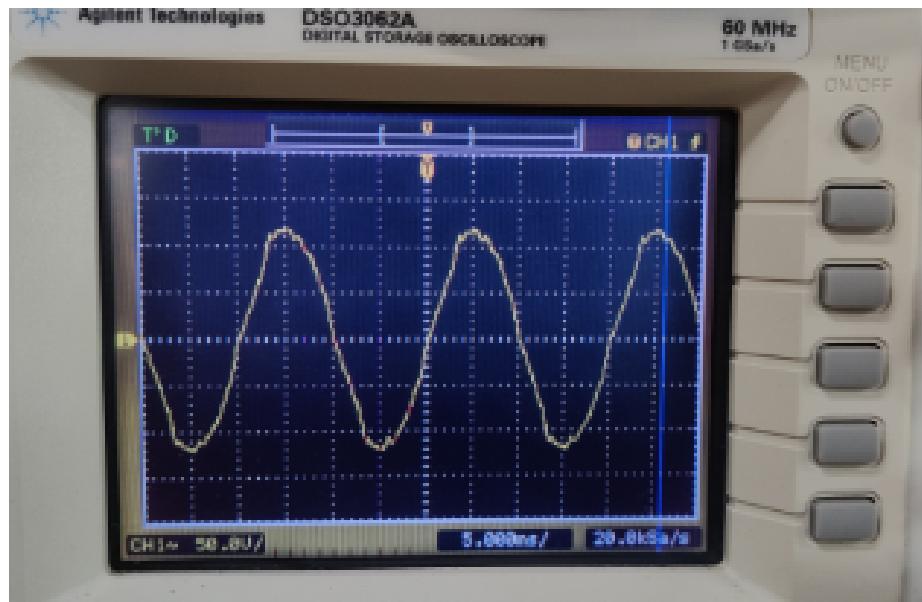


Figure 2: Transformer output

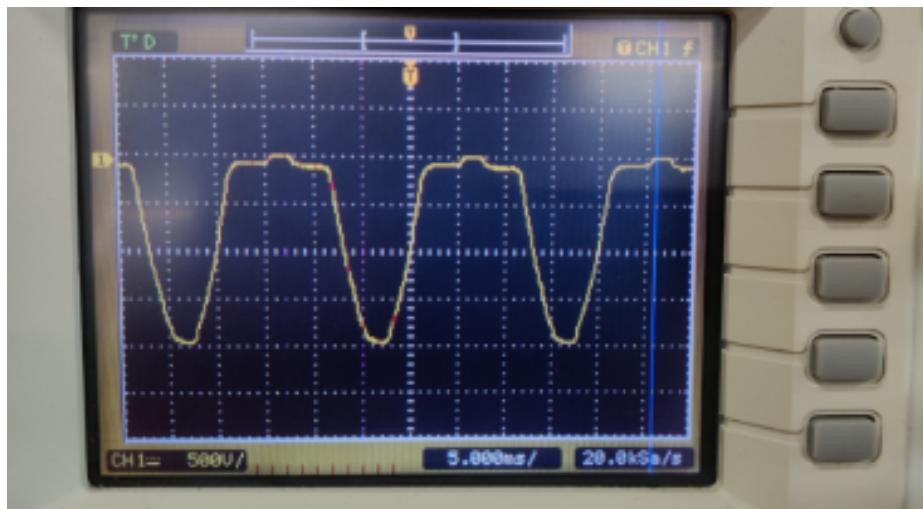


Figure 3: Rectified signal

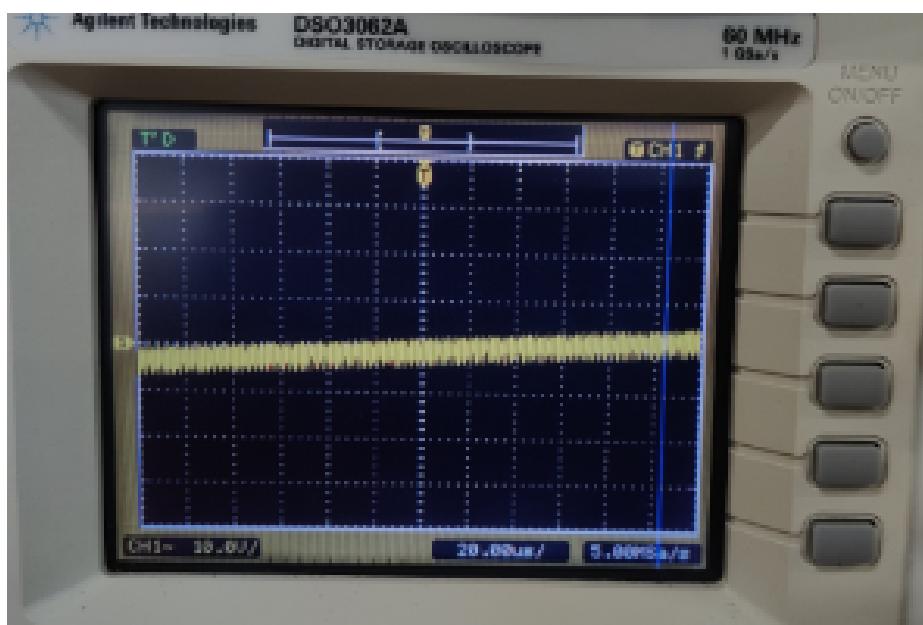


Figure 4: Across capacitor 18V output

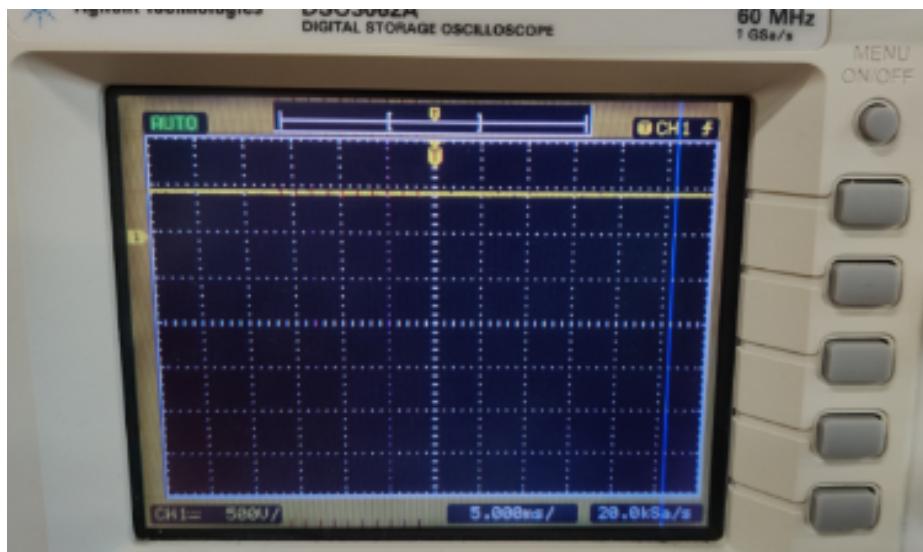


Figure 5: DC output

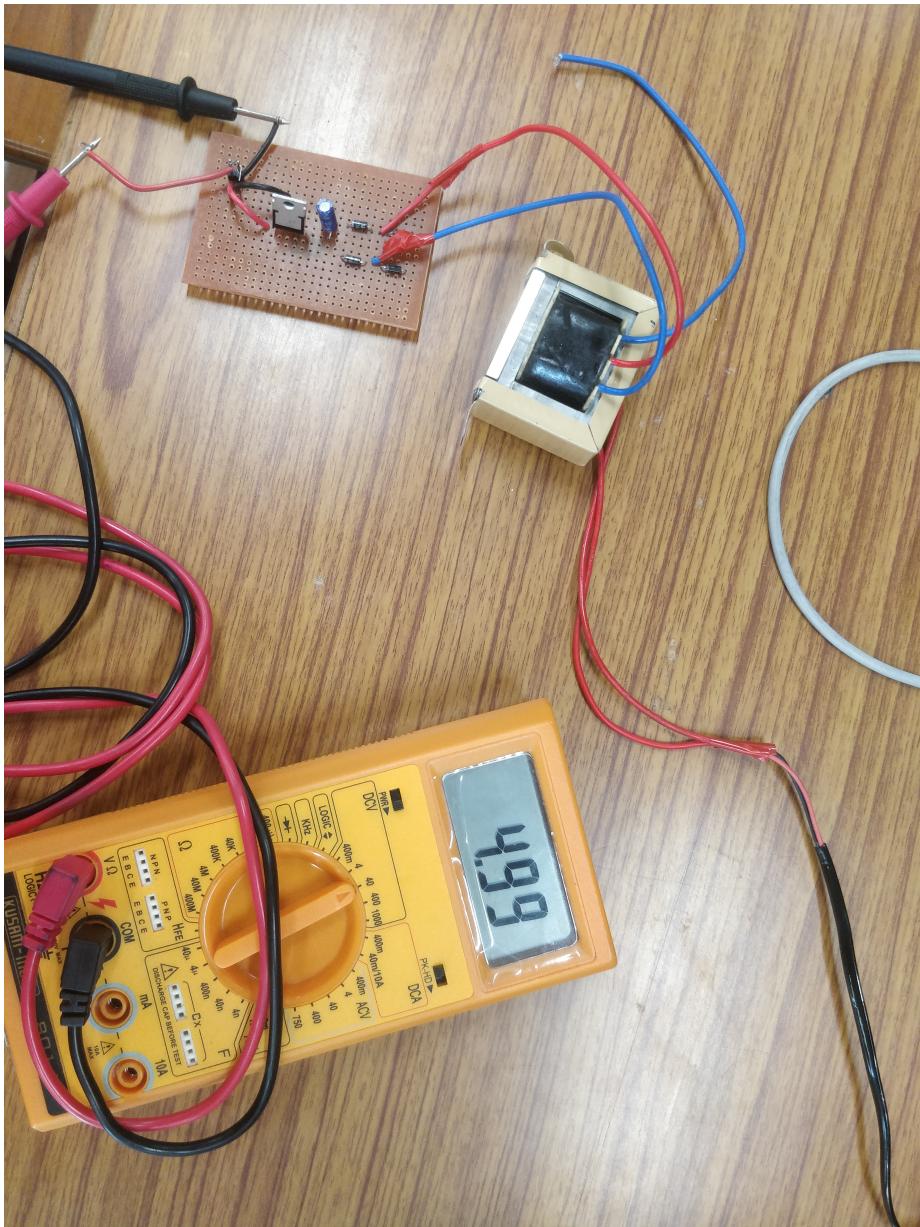


Figure 6: Final output