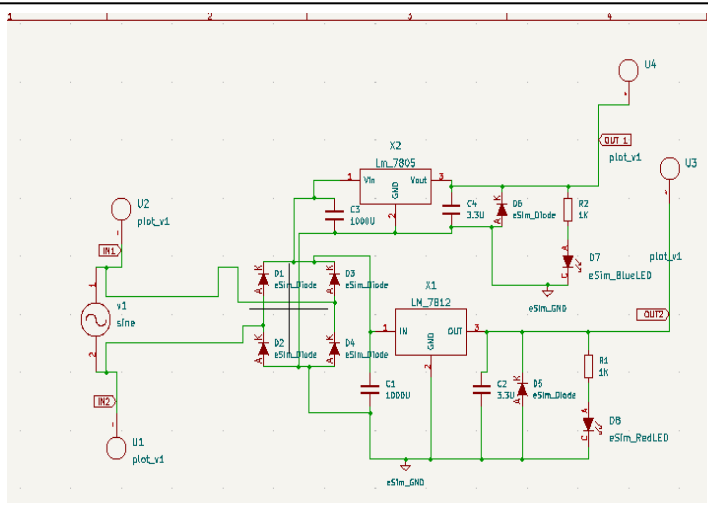


12V BATTERY CHARGER WITH AUTOMATIC CUT-OFF

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Objective : This project focuses on designing and implementing a 12V automatic battery charger with overcharge protection and reverse current prevention, addressing the growing need for safe and efficient portable power solutions. The charger automatically stops charging at 13.5V to prevent overcharging and extend battery life, ensuring reliable performance. The circuit uses an AC supply, bridge rectifier, voltage regulators (7805, 7812), LM317 for precise voltage and current control, and a relay module for automatic cut-off. An additional 5V output is included for auxiliary use. The design emphasizes safety, efficiency, and ease of use, making it suitable for various applications such as automotive, home backup power systems, and small electronic devices that require consistent and autonomous battery charging. The project demonstrates practical circuit design, component selection, and the integration of protection features to enhance battery lifespan and overall system reliability.

schematic of circuit :



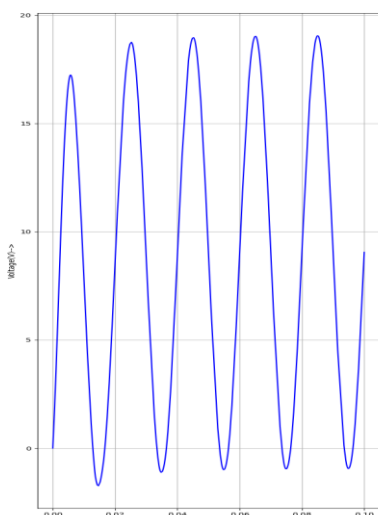
Additional Information:

I made a 12V battery charger with automatic cut-off using an AC source connected to a bridge rectifier, followed by 7805 and 7812 voltage regulators with capacitors for smooth DC output. The LM317 controls the charging voltage and current, and a relay module disconnects the battery when fully charged. In eSIM simulation, I faced issues with transformer parameter settings since the relay module and LM317 were not available, so I obtained only pure 12V DC output. I also added a 5V output in the circuit for extra use.

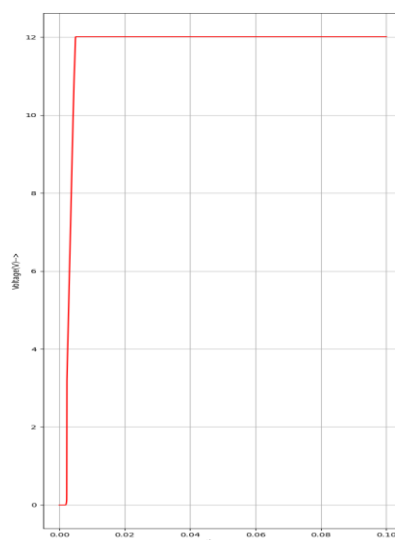
Conclusion: The 12V automatic battery charger successfully provides safe and efficient charging with overcharge protection and reverse current prevention. The automatic cut-off and controlled charging ensure extended battery life and reliable performance. The added 5V output increases versatility, making the system suitable for various practical applications.

Link GitHub : https://github.com/Diguxyz/12vbatterychargerwith-automatic_cutoff.git

i/p AC sine wave:



12 volt DC output :



12volt and 5volt o/p DC :

