5V–10V to 80V DC-DC Boost Converter

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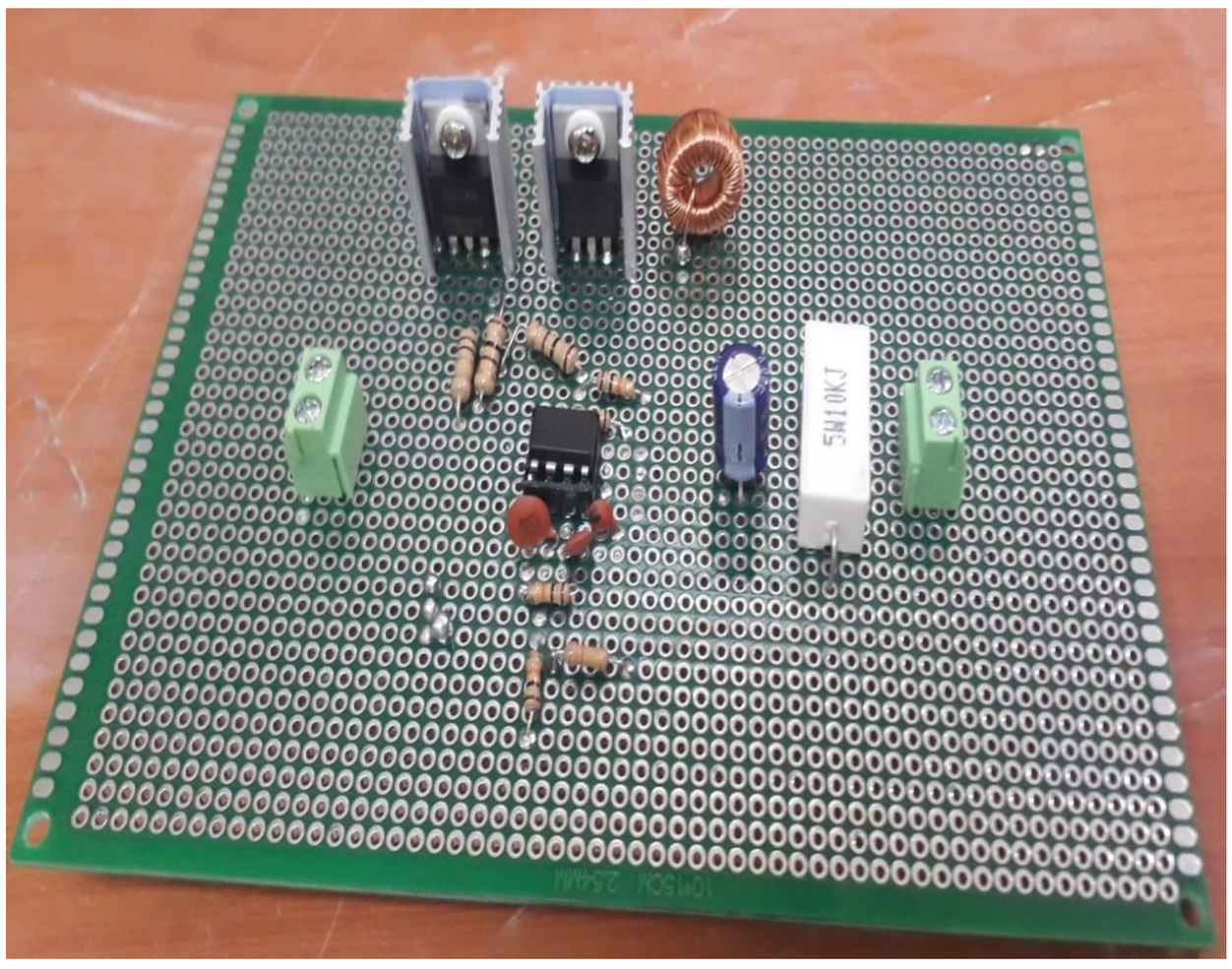
ABSTRACT

This project presents the design, simulation, and implementation of a DC-DC boost converter using the UC3843 PWM controller. The converter steps up an input voltage of 5–10 V to a regulated 80 V output with a maximum load current of 50 mA. Designed for low-power, embedded applications, it offers compactness and high efficiency.

Objectives

- Convert low input DC voltage (5–10V) to 80V
- Achieve stable PWM control using UC3843
- Simulate, test, and prototype the design
- Ensure efficiency and hardware compatibility



MAIN COMPONENTS

- Battery
- Inductor
- MOSFET
- Schottky Diode
- Output capacitor
- Perforated Board
- UC3843 PWM controller

CONCLUSION

The UC1843-based boost converter successfully achieved a regulated 80V output from a 10V input. Simulation results confirm the design is suitable for sensor and embedded systems with limited power requirements.

References

[1] UC3843 Datasheet, Texas Instruments

[2] R. Erickson, Fundamentals of Power Electronics, Springer, 2001

[3] IRL540N Datasheet, Vishay

[4] 1N5819 Datasheet, ON Semiconductor