

Step-Down Buck Converters (LM2596)

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Electronics & Prototyping

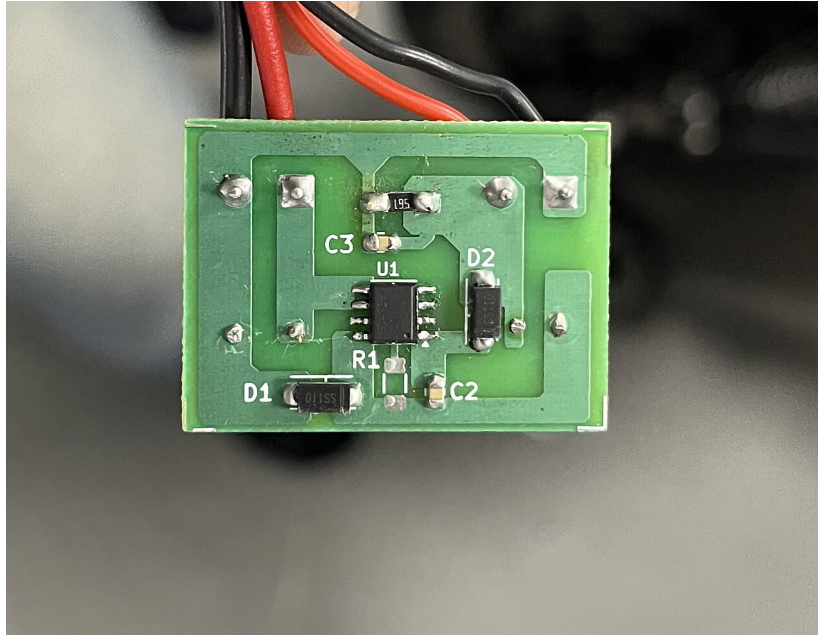


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A buck converter steps a higher DC voltage down to a lower adjustable output efficiently, letting a 12 V supply power 5 V or 3.3 V circuits and modules. The LM2596 module is the standard adjustable step-down for prototypes.

Key Features

- LM2596 modules with adjustable output
- Inputs up to 40 V
- Outputs from 1.25 to 35 V
- 2-3 A capacity with cooling
- Trimpot adjustment

Typical Uses in the Workshop

- Derive 5 V and 3.3 V from a 12 V rail
- Power motors and logic from one battery
- Adjust voltage to match modules
- Efficient battery-powered projects

Safe Operation

1. Set the output voltage before connecting the load
2. Check the input voltage and polarity
3. Mount with the heatsink clear
4. Connect the load within the current rating
5. Verify with a multimeter

SAFETY NOTES

- Never connect the output to a higher voltage source
- Check polarity before powering
- Keep the module away from moisture
- Do not exceed the input voltage
- Add a fuse in the supply line

Maintenance & Consumables

- Clean the trimpot and board
- Check for loose terminals
- Verify the output with a meter
- Keep the heatsink clear
- Replace damaged modules

Specification & Buying Notes

LM2596 modules with an LED display are easier to set for students. Quality modules regulate cleanly; cheap ones ripple and overheat under load.