DC Power Supply Project

PRESENTED BY

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Variable Regulated Power Supply

Description:

the project aims to construct an adjustable regulated power supply that can provide DC voltage ranging from **1.2 – 30 V.**

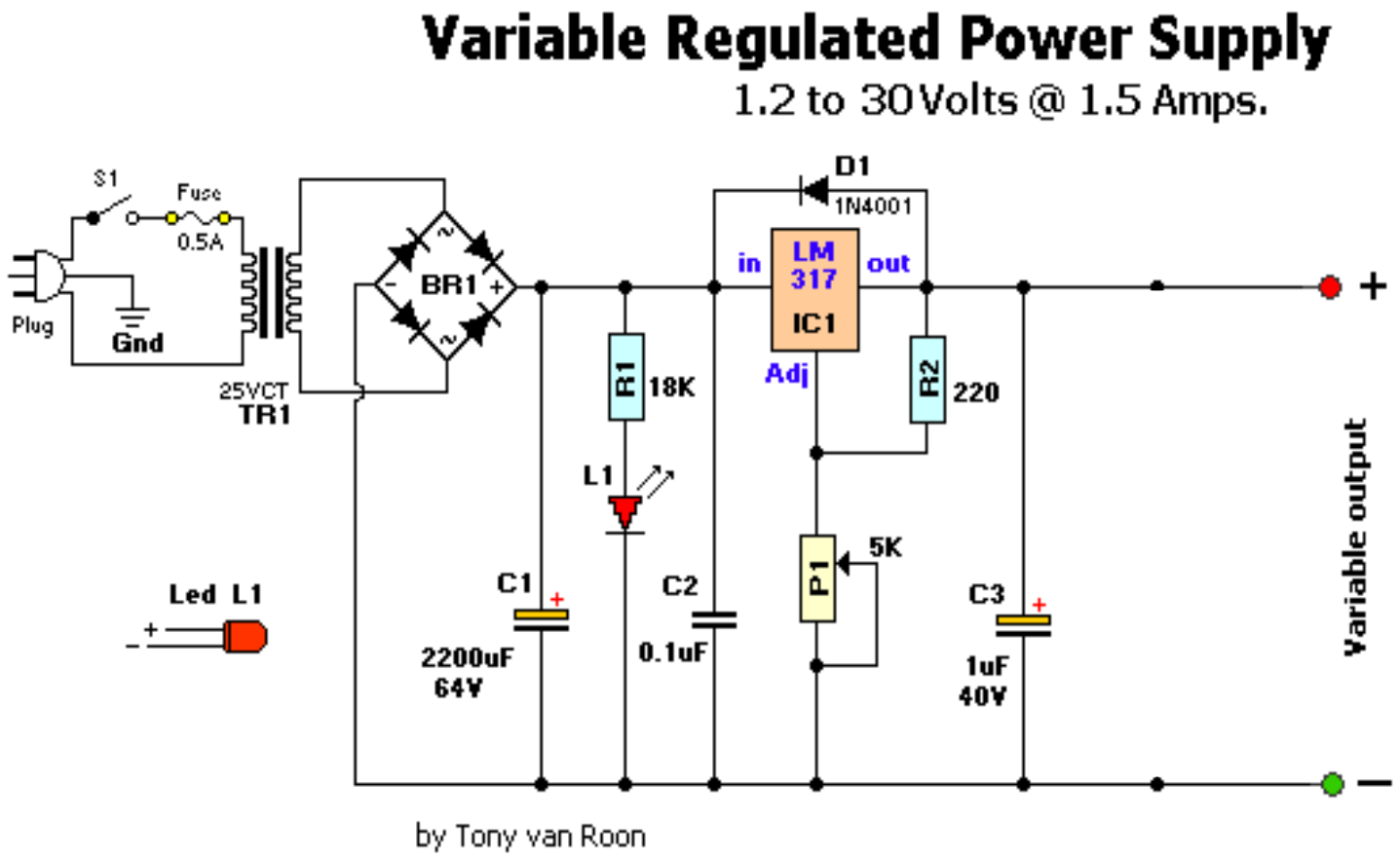
the electric circuit consists of an AC Transformer followed by a rectifier bridge then smoothing capacitor and an adjustable voltage regulator integrated circuit.

Variable Regulated Power Supply

Objective: you will learn the following skills that are related to the topics of the course

- ❑ Understanding the working theory of diodes, rectifiers, and linear regulators.
- ❑ Design and simulate the electric circuit on the simulator (Proteus).
- ❑ Read the data sheets of different components in the circuit to select the suitable components for design.
- ❑ Extract the layout of printed circuit from Proteus then Implement the electric circuit on PCB board.
- ❑ Solve the problems of practical implementation through troubleshooting.

Variable Regulated Power Supply

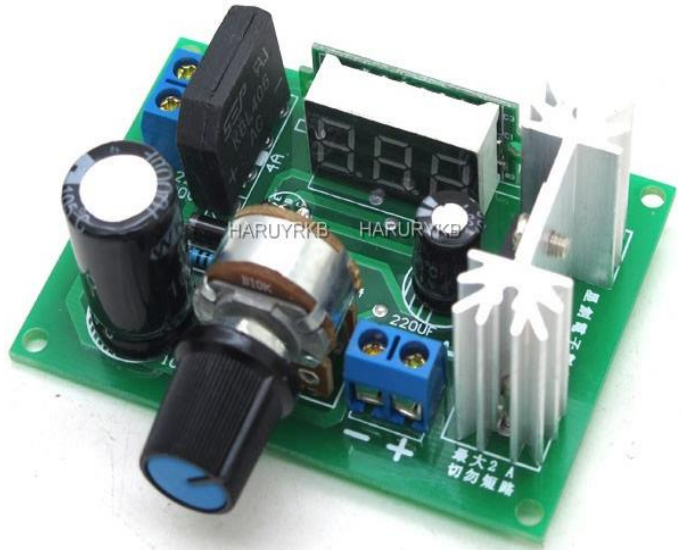


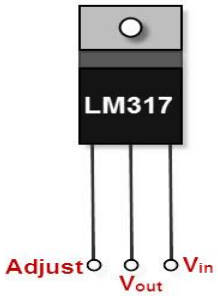
Variable Regulated Power Supply

Component List

BR1 = Bridge Rectifier, 100V - 3A
IC1 = LM317, adjustable regulator
V = Meter, 30V, Ri = 85 ohm
TR1 = Transformer, 25V, 2A
R1 = 18K, 5%
R2 = 220 ohm, 5%
R3 = 27K, 5%
P1 = 5K, potentiometer
Heat sink, knob for P1
Soldering Iron
Red & Black Banana Jacks

C1 = 2200 µF, 63V
C2 = 0.1 µF
C3 = 1µF, 40V
Plug = 3-wire plug & cord
S1 = On-Off toggle switch
D1 = 1N4001
Fuse = 220V, 500mA, slow-blow
Fuse Holder, wires, solder, case





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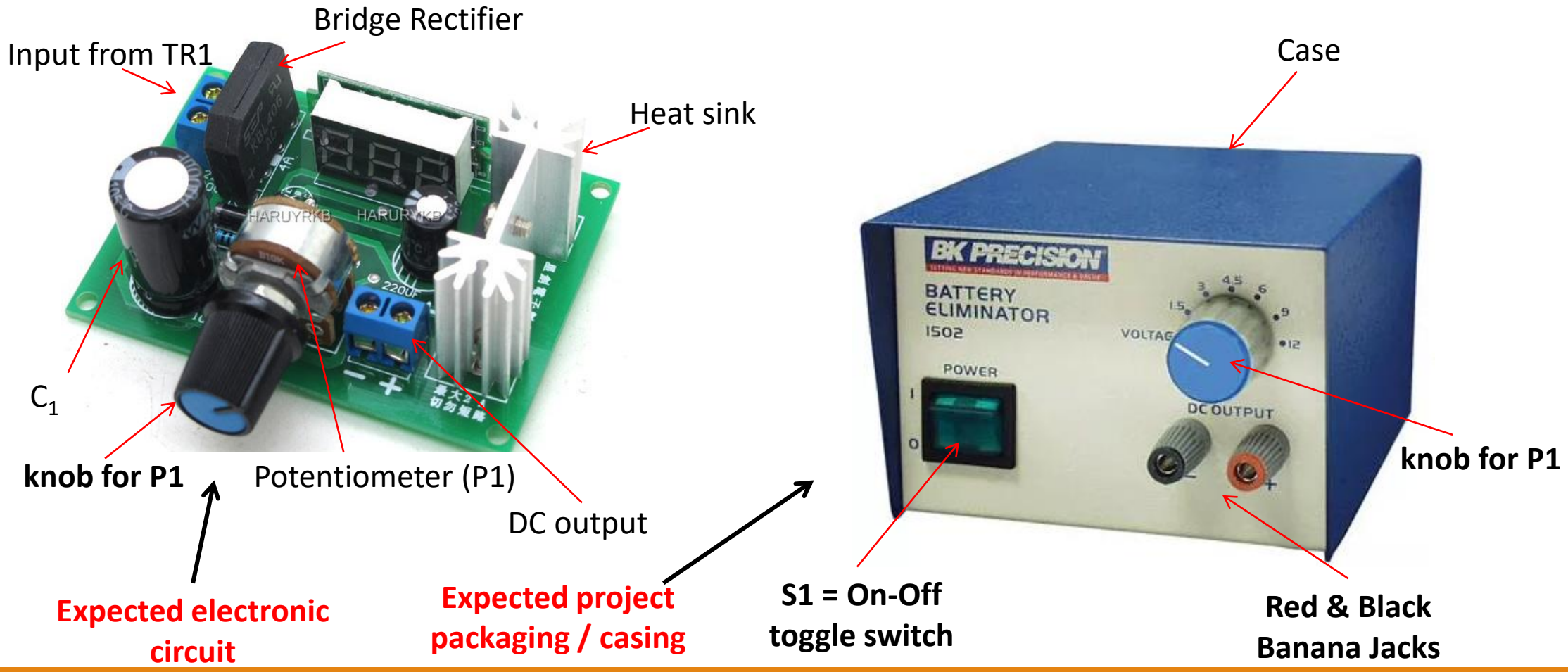

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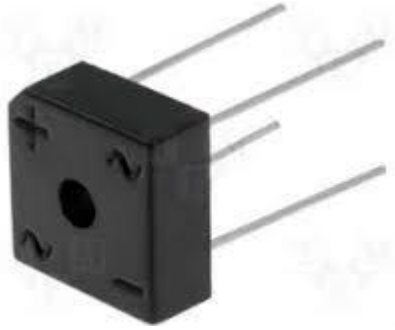
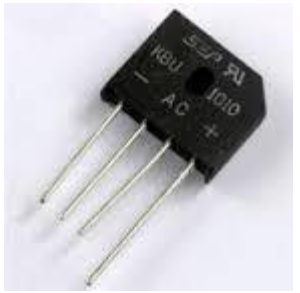
Soldering Iron

Solder

Fuse





Bridge Rectifier

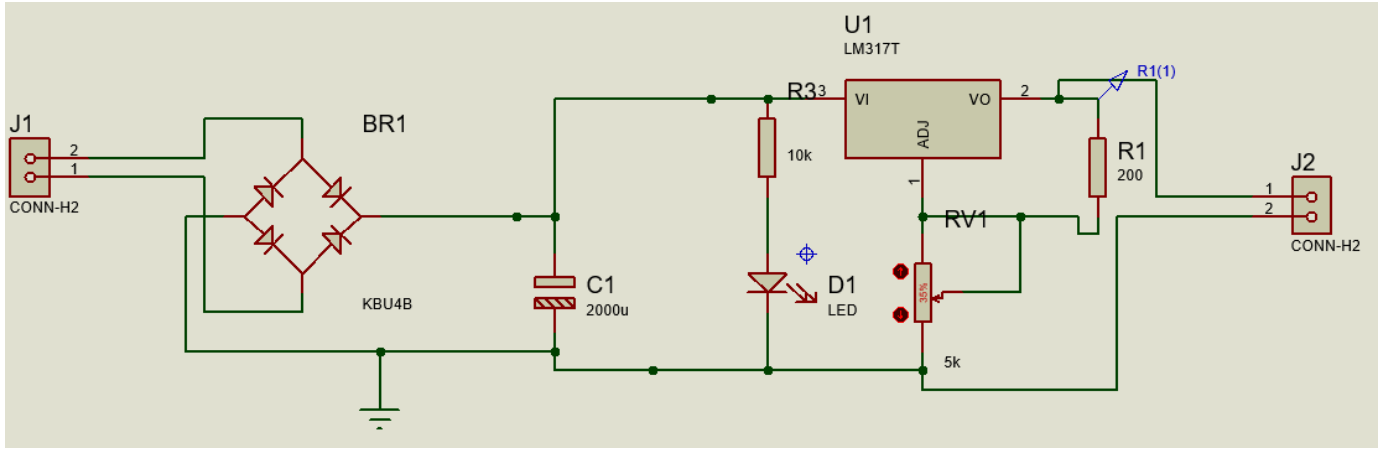
PCB Layout

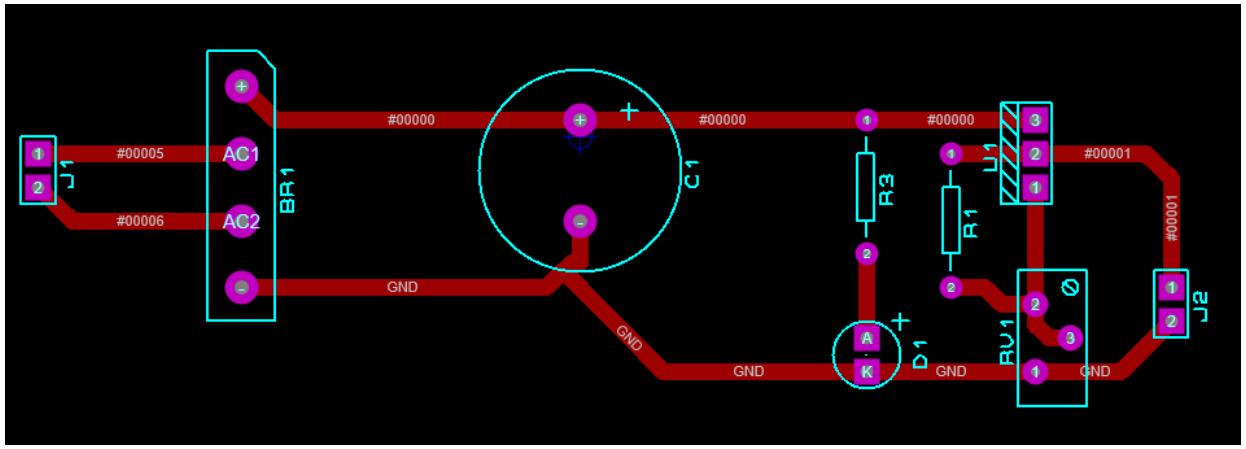
The next slide shows simple circuit with the exported PCB layout using proteus.

I need your circuit to be optimized more than the proposed one in the next slide.

Try to optimize the positions of different components to get small size of the electronic circuit, say 40 mm x 40 mm.

PCB Layout for example





3D view from Proteus for example