Group - 9

Rechargeable Battery Charger with Indicator

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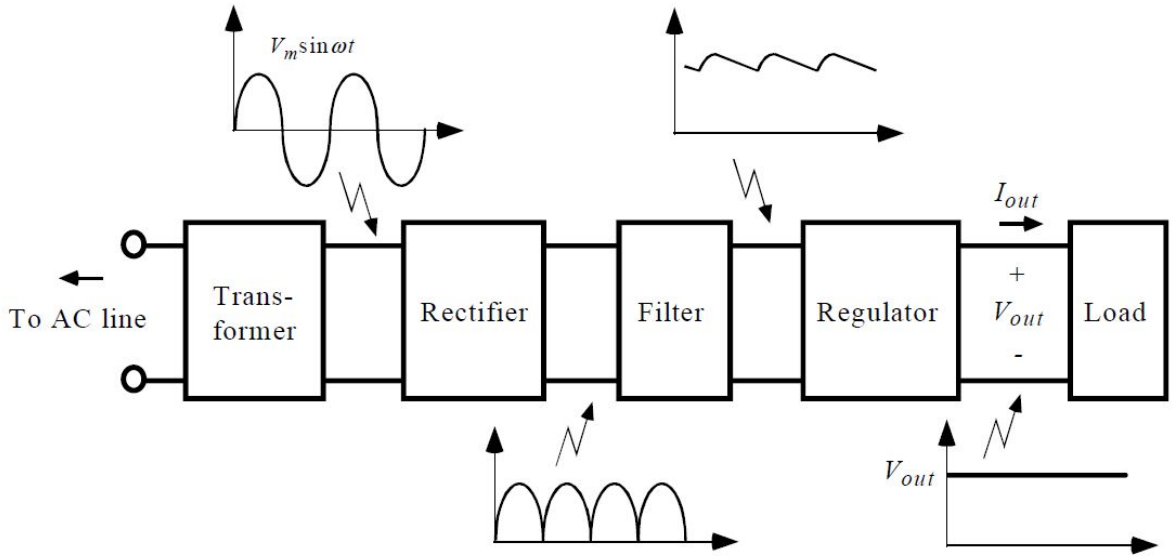
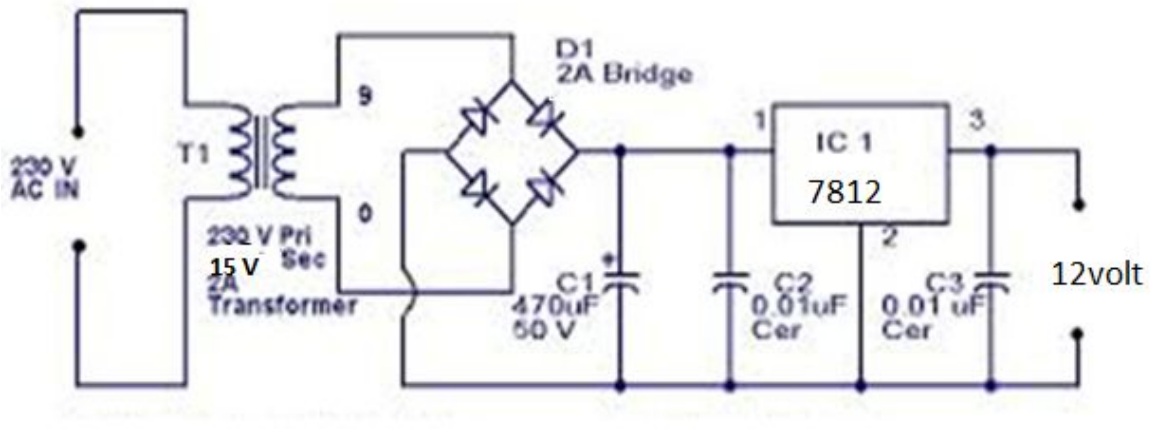
BLOCK DIAGRAM:



Components of a typical linear power supply

CIRCUIT (Charging):



COMPONENTS:

- ➢ **Transformer (15V) – 1**
- ➢ **Rectifier Diodes – 1**
- ➢ **Capacitors:**
  - **1) 470uF – 1**
  - **2) 0.01uF – 2**
- ➢ **IC 7812 (Voltage Regulator)**

Further Information

- ➢ **Input Voltage : 230V**
- ➢ **Step down Transformer : Transformed to 12V**

Readings & Circuit Information:

➢ **The Circuit contains a 15V step- down transformer (A transformer is an electrical device that transfer energy between two or more circuit through electromagnetic induction) with 4 "1N4007"diodes as Rectifier Circuit to Rectify AC voltage into DC voltage.**

- **About IC7812:**

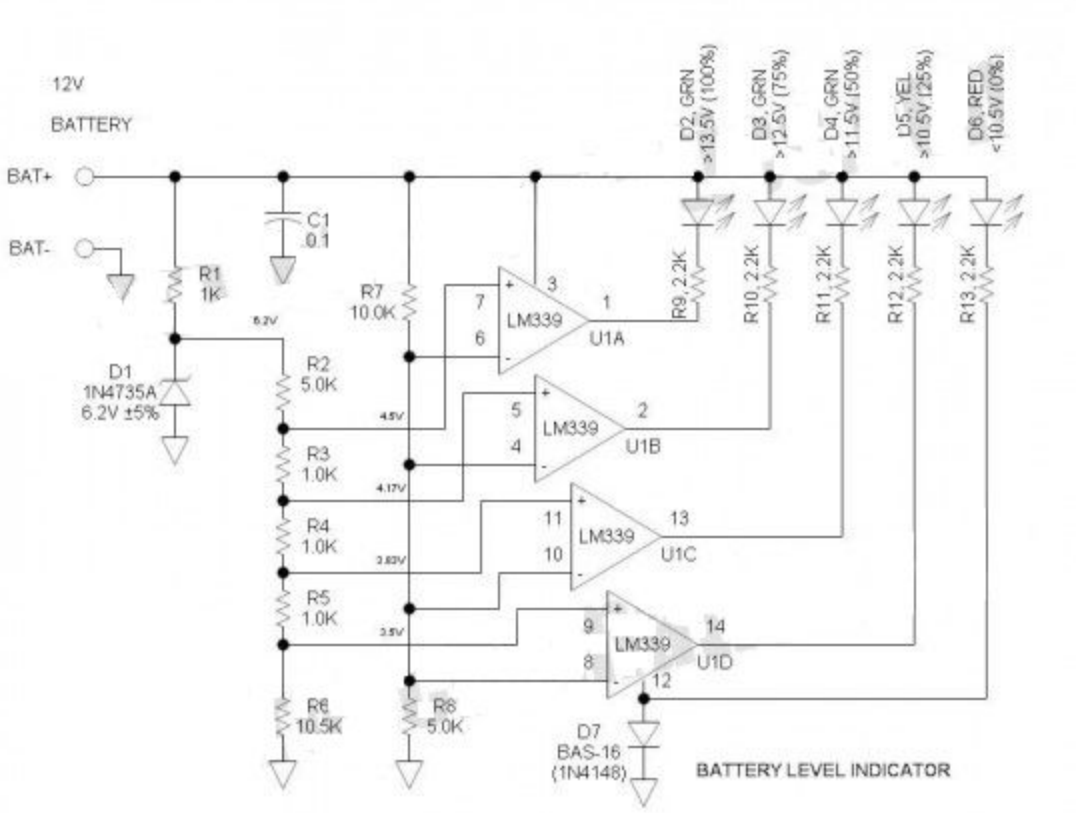
➢ **1st pin is connected in Parallel with 470uF and 0.01uF Resistor and with diode as shown in the circuit while 3rd pin is connected with 0.01uF Resistor and output. Here 2nd pin is connected with other terminal of 1st and 3rd pin's components.**

➢ **This whole setup is expected to give output voltage of 12V DC Voltage.**

➢ **Experimental Voltage : 12.18V**

➢ **Error : (0.18/12)*100 = 1.5%.**

CIRCUIT (Indicator):



COMPONENTS:

- **IC : LM339**
- **ZENER diode:**
  1) **1N4735A - 1**
  2) **1N4148 - 1**

- **RESISTORS:**
  1) **2.2kΩ - 4**
  2) **1kΩ - 4**
  3) **10.5kΩ - 1**
  4) **5.0kΩ - 2**
  5) **10kΩ - 1**

- **CAPACITOR:**
  1) **0.1uF - 1**

- **LEDs:**
  1) **Green - 3**
  2) **Yellow - 1**
  3) **Red - 1**

Further Information

- **Input Voltage : 12V**

Readings & Circuit Information:

- ➢ **Here we have made a circuit having an IC equivalent to 4 operational amplifiers namely LM339 with different resistors in order to get indication of LEDs at certain specific amount of voltages.**
- ➢ **Experimented Result obtained are as follows:**

Indication	Voltage
LED1 (0%)	1.8
LED2 (25%)	10.8
LED3 (50%)	11.8
LED4(75%)	12.9
LED5 (100%)	13.9

- **Thank You**