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## 12V Dc regulated power supply circuit

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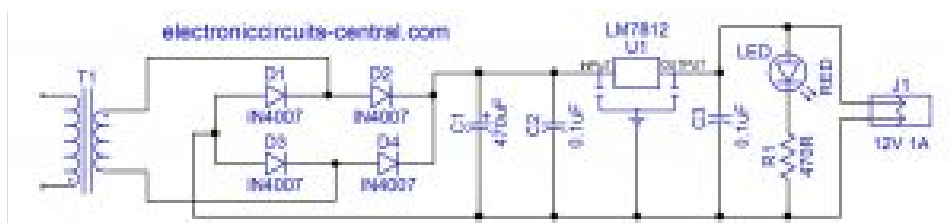
The circuit presented here is about a regulated power supply. In the field of electronics, most of the projects require DC power supply as the input. So it is necessary to convert mains AC (alternating current) voltage in to regulated DC (direct current) voltage. Here is the **12V DC regulated power supply circuit** using LM7812 which is capable of supplying a stabilized output DC voltage of 12V without any fluctuation.



The **12V DC regulated power supply circuit** is based on five important factors,

1. Step down transformer
2. Rectifier
3. Smoothing Capacitors
4. 7812-Voltage regulator
5. Output

### Schematic



### Step Down Transformer

The transformer used in this circuit is a step down transformer, in which the primary winding side receives the input voltage of 230V and produces an unregulated AC voltage of 24V on the secondary winding side. It should be capable of delivering a current output of 1A.

### Rectifier

Rectifier is used to convert AC in to DC and allows the current to flow in one direction. Here, the diodes D1, D2, D3, and D4 are arranged accordingly to form a full wave bridge rectifier.

## Smoothing Capacitors

The ripple in the DC output voltage from the full bridge rectifier is removed using a capacitor. The smoothing Capacitor should be electrolytic, which steadies the fluctuating voltage. And the voltage rating for C1 should be 50V, which assures the performance of the circuit and lifetime of the capacitor for long period.

## 7812-Voltage Regulator

7812 is a three terminal positive voltage regulator available in TO-220 plastic package and a TO-3(K) metal can aluminum package. Here the plastic package is used in the PCB. The input voltage for this device ranges from 7V to 20V. For better output results, a heat sink should be attached to the voltage regulator.

## Output

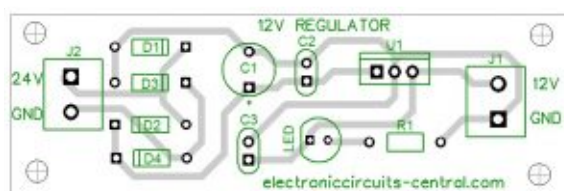
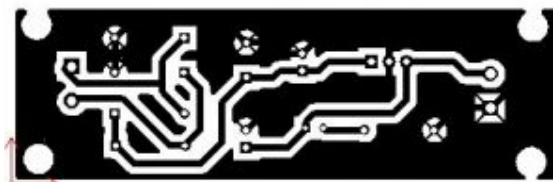
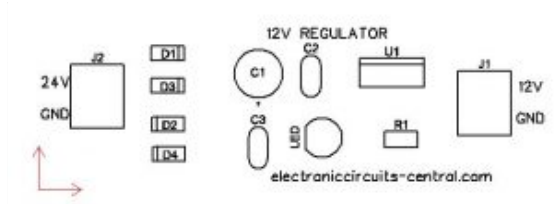
The output of the circuit is ensured by the LED (RED). Connecting a LED directly to the output voltage of 12V will damage it. So, 470  $\Omega$  resistor is used to protect the LED. You can also use other LEDs (white or green), for different LEDs uses this LED resistance Calculator.

The transformer is excluded in the PCB, as the footprint patterns may vary. So, screw terminal block connectors are used for input and output of PCB.

## Parts list

#	RefDes	Value	Quantity
1	C1	470uF	1
2	C2, C3	0.1uF	2
3	D1, D2, D3, D4	IN4007	4
4	J1	SCREW TERM BLOCK	1
5	LED	RED	1
6	R1	470R	1
7	T1	24-0-24	1
8	U1	LM7812	1
			12

## PCB



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