0-60V Dual Variable power supply circuit using LM317&LM337

- Hobby Electronic Projects
- Power supply

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Dual output power supply, LM317, LM337, Variable DC Power Supply
Email

If you want Dual Variable power supply circuit that covers most applications. This circuit may be what you're looking for. The price you deny difficult. With the following features.
1. On signal mode can supply DC voltage between 0 volt and 60 volt
2. Can provide DC dual variable on positive, negative and ground are +/- 0-30 volts.
3. Can supply current out maximum about 1.5 A.
4. Use the most popular IC are LM317T and LM337 circuit, so do not have to worry about finding the device, and it certainly easy.

Before construction, we study the properties of important devices, is regulator IC.

Choosing a regulator IC.
The regulator IC is used to regulates DC voltage, which in this circuit we use an IC numeber of LM317T for the positive voltage and the LM337 circuit for the negative voltage. Both IC have the same features. Thus, So describes specific number **LM317T** only.
The LM317T is readymade regulator IC can use to adjust voltage from 1.25 volt to 37 volt, there is 3 leg, body same the regulated IC number 7805.
But it batter that can provides to 1.5 A and get input voltage from 3 volt to 40 volt It's easy to applications and, of these features have advantages over the regular letters IC 78xx series a lot.
In addition, Internal the IC is also circuit is fully protected are the short-circuit protection, input overthe voltage protection, over load protection. And another interesting feature is the elimination the ripple.
The output voltage (Vo) Determined from the formula.
Vo =1.25{1+(R2/R1)}
The R1 is the resistance constant. Which should be between 120-240 Ohm. The R2 can be adjusted from a minimum value (0 ohm) to the value we want. If R2 is equal to 0 ohm minimum output the voltage of about 1.25 volts.

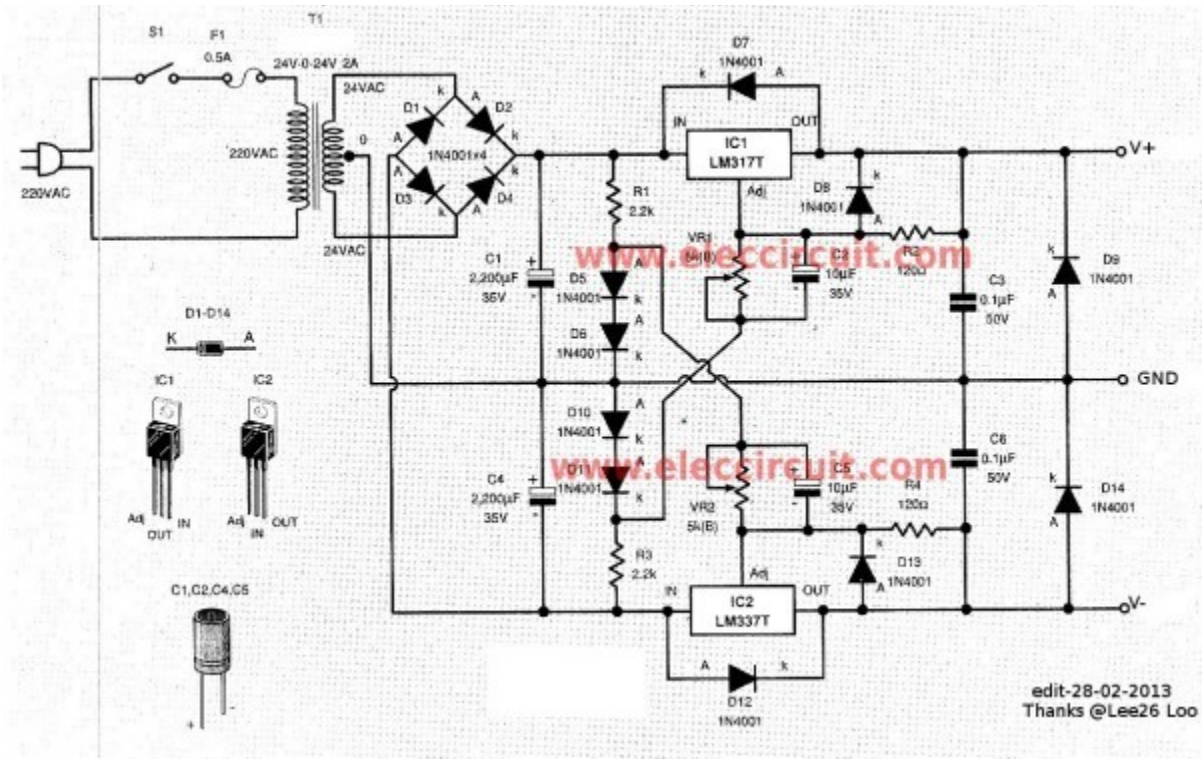


Figure 1 0-60 volt DC variable power supply circuits using LM317&LM337

How to make LM317 start at 0 volts

In electronic circuits require constant voltage. Would not be necessary to make the voltage at output of LM317T down to 0 volt. However, in the experiments will be necessary to adjust the the voltage. The IC LM317T, there is a weakness in this is the output the voltage minimum adj pin is connected to ground is equal to 1.25 volts.

But there are tricks to make LM317T adjustable voltage output is 0 volts. By creating a lower reference voltage to 0 volt to 1.25V (-1.25 volt). Then to the adj Will be able to adjust the output the voltage to 0 volt.
The negative voltage regulated IC number **LM337T** as same is if adj pin connect to ground will get lowest output voltage into -1.25 volt. Which if adjust as 0 volt reference voltage of +1.25 volts, it must be connected to the adj pin of the IC only.

How this circuit works
In figure 1 is this complete circuit. The Diodes D1-D4 are regtifier ACV from 24 volts of transformer is DCV of about 33 volts both positive and negative voltage. The capacitor C1 and C4 is voltage filter from the bridge diode to smooth. The R1,D5 and D6 are made the reference voltage of +1.25 volts to the LM337T to adjust to 0 volt.

The R3,D10 and D11 make voltage -1.25 volts to LM317T to it can adjust to 0 volt as well.
The D7,D8 and D12,D13 protects voltage backward voltage from output. Which may makes IC Which may cause damage to the IC. The C2 and C5 are connected to reduce noise signal that from adjustable the potentiometer (VR1,VR2) and makes voltage at output to smooth up.

Judicially built and tested before applications.
This project has a few amount of equipment. We can assemble onto the versatile PCB. Check the circuit for error. When you are sure all the wires and components are installed correctly.
After examining successfully assemble the devices. Then, try to applies AC power. If not was wrong. Hold the DC voltmeter measure on the positive output. And then Rotate VR1 you can read the voltage from 0-30 volt. If everything is correct ,then move the lead of meter to measure the negative. And then adjust the VR2 can read voltage from 0-30 volts. Everything is ready to applications, However if the malfunction, disconnect the transformer. Then find unusual.

How to build this projects
This project is not used many components so can assemble on the universal PCB board. But can make a Single-sided PCB layout as Figure 2. And see the wiring and various components layout can view of the example in Figure 3. But be carefull the polarity of the electrolytic capacitors and Diodes and both IC1-LM317,IC2-LM337 correctly and hold proper the heatsink.

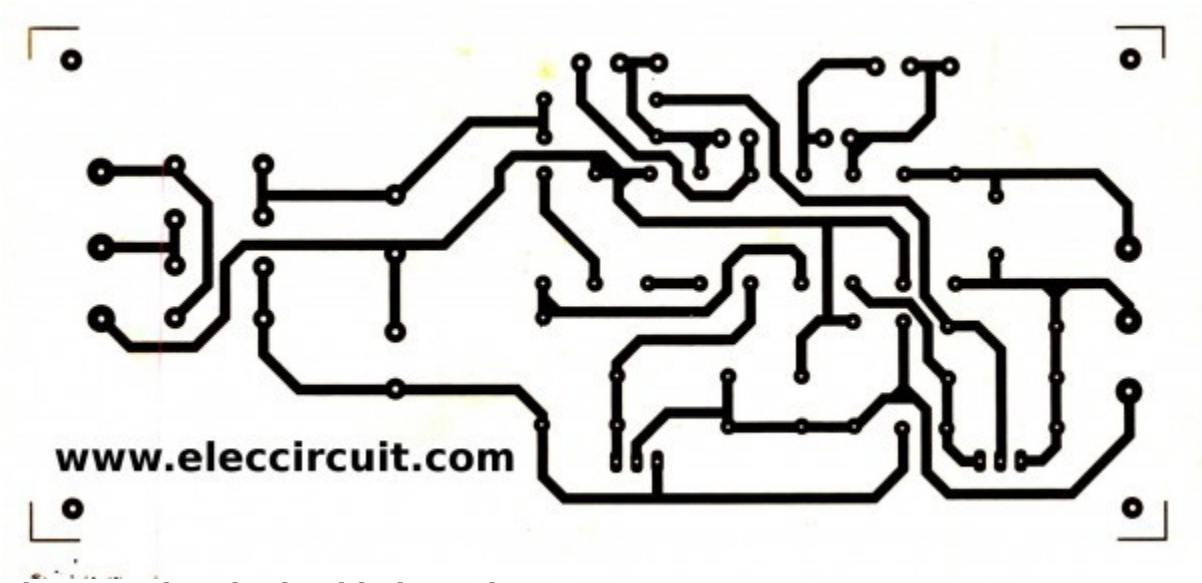


Figure 2 The Single-sided PCB layout

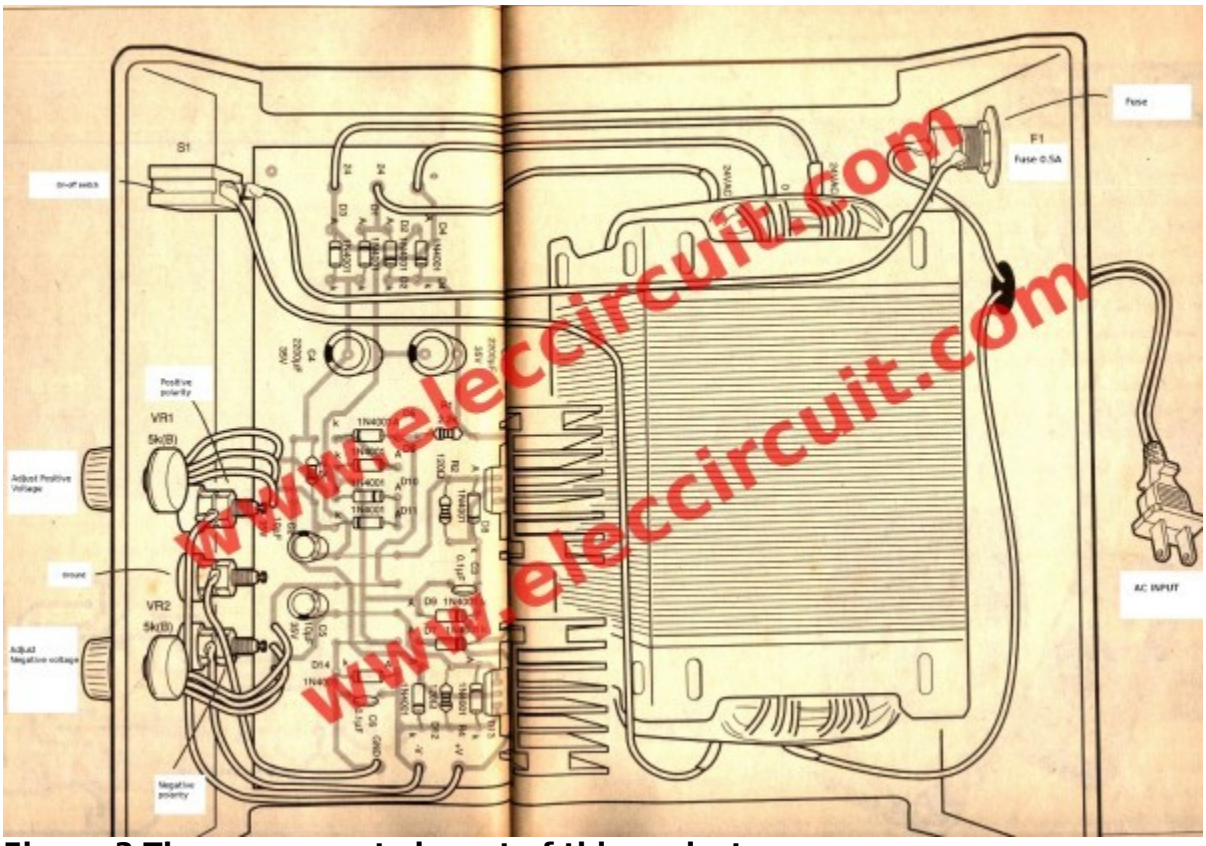


Figure 3 The components layout of this projects

Note:

For example Kits

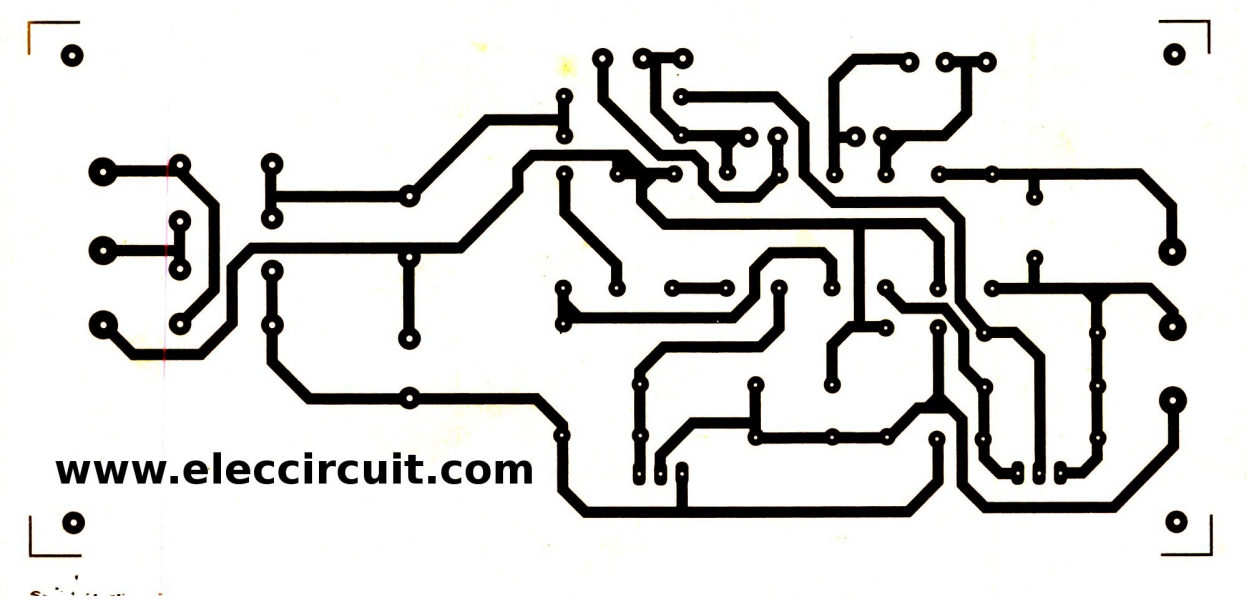
FAQ
The LM317T is positive voltage regulator ICs that low watts because is plastic case or TO-220 model.
The LM317K is higher watts because metal case. TO-3 model.
The LM337T is negative voltage regulator ICs in TO-220 model.

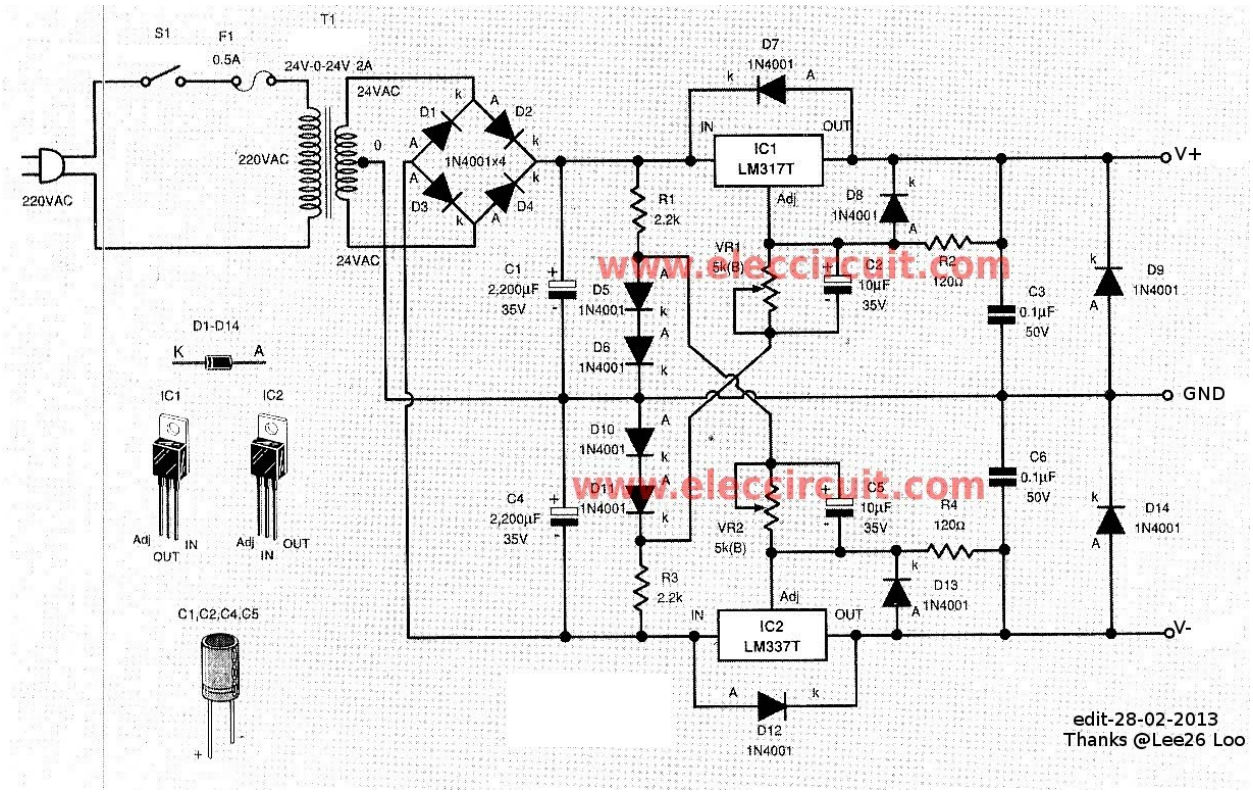
This circuit may be not favorites you. You may like these circuit below.
1.**My first Variable DC Power Supply 1.2V to 30V 1A by LM317** It's easy and cheap as possible.

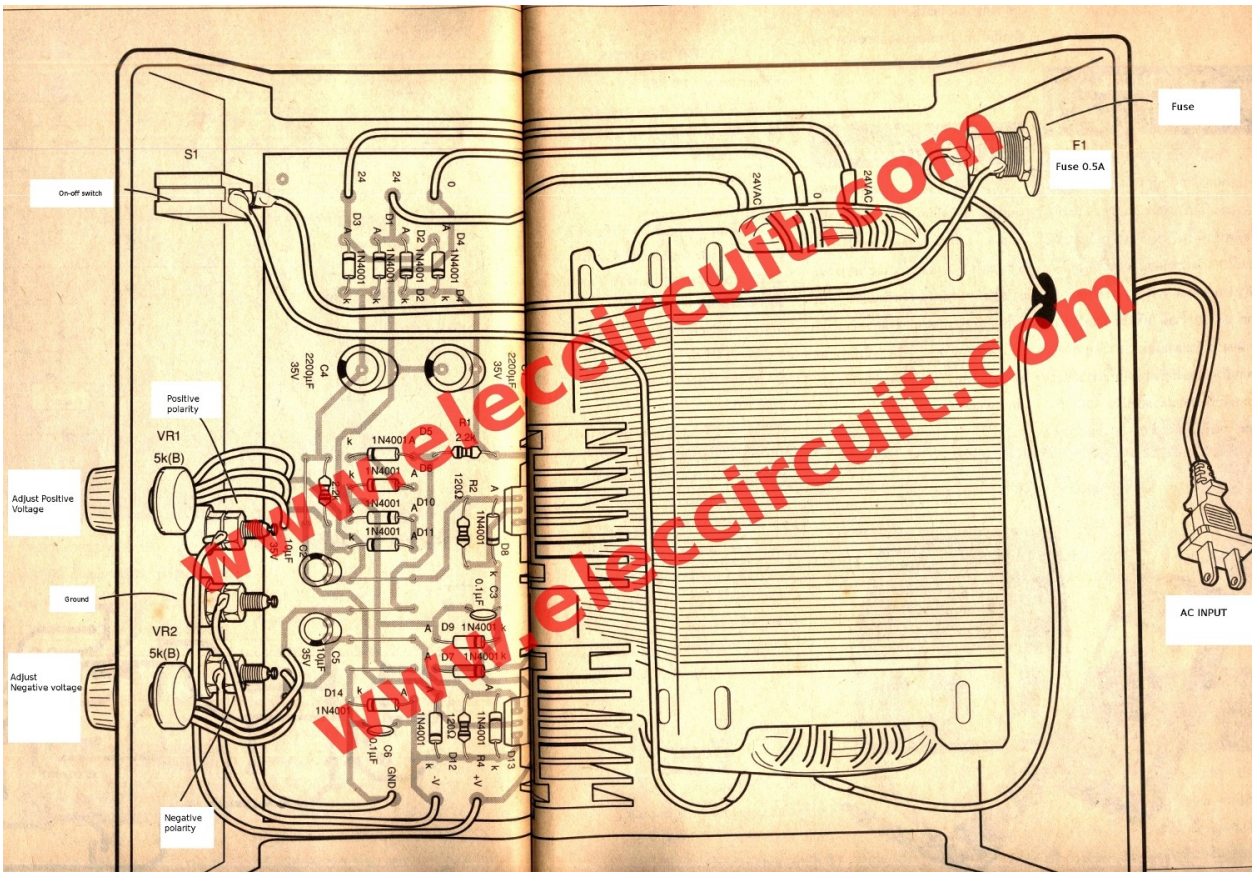
2.**LM317 Linear power supply Regulator selector 1.5V,3V,4.5V,5V,6V,9V 1.5A** It’s easy to selects voltage output.

3.**Best DC power supply 3Amp to adjust 1.2V-20V & 3V-6V-9V-12V** High current for all circuit easy to use.

4.**Dual power supply 3V,5V,6V,9V,12,15V with LM317,LM337**There positve and negative voltage output for all circuit easy to use.




S1
F1
0.5A
T1
24V-0-24V 2A
220VAC
24VAC
D1
D2
D3
D4
1N4001x4
D7
1N4001
IC1
LM317T
IN
OUT
Adj
R1
2.2k
D8
1N4001
VR1
5k(B)
C1
2,200µF
35V
D5
1N4001
D6
1N4001
C2
10µF
35V
R2
120Ω
C3
0.1µF
50V
D9
1N4001
V+
GND
D1-D14
K
A
IC1
IC2
Adj
IN
OUT
D10
1N4001
D11
1N4001
C4
2,200µF
35V
VR2
5k(B)
C5
10µF
35V
R4
120Ω
C6
0.1µF
50V
D14
1N4001
R3
2.2k
D13
1N4001
IC2
LM337T
V-
C1,C2,C4,C5
D12
1N4001
edit-28-02-2013
Thanks @Lee26 Loo
www.eleccircuit.com


S1
On-off switch
Fuse
F1
Fuse 0.5A
Positive polarity
VR1
5k(B)
Adjust Positive Voltage
Ground
VR2
5k(B)
Adjust Negative voltage
Negative polarity
AC INPUT
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