AK-252 MANUAL

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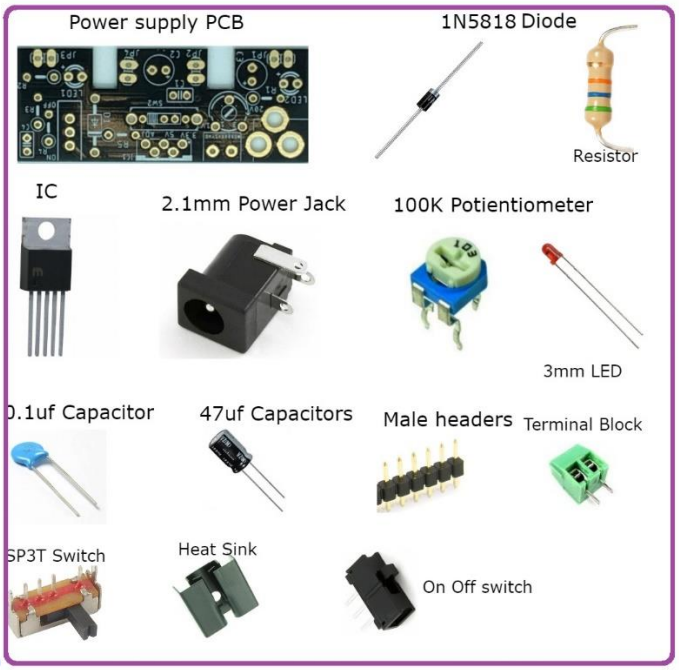
Components Includes



List of Components

Count	Name of the part	Abra Part number
1	MIC2941-Voltage Regulator IC	MIC2941ABT
1	1N5818 Diode	1N5818
2	1K-Resistors	R1/4-1K
1	11k,20k,6.2k Resistors	R1/4-11K R1/4-20K R1/4-6.2K
1	2.1mm Power Jack	31-155-0
1	100K Potentiometer	13P100K
2	104uf, 47uf Capacitors	CM104 47R25
1	Switch	SSW-120-BB
1	3mm pitch Terminal Block	2444P
Required amount	Male Header	SH-2
1	Heat Sink	574502B00000G
1	3 Way SP3T switch	OS103011MS8QP1
2	3mm LED (one Green, one Red)	LED-3R, LED-3G

Tools required

Special features of AK-252

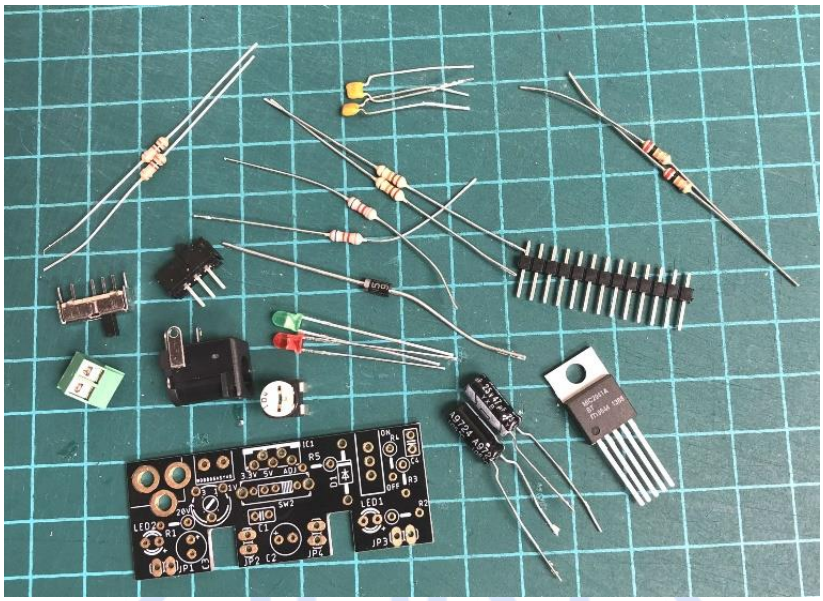
This Breadboard power supply module is designed to get regulated voltage from any external power source, either from the DC barrel jack or terminal block. The best part of this board is, you can use the power supply at three different modes of voltages- 3.3V,5V and at variable voltages from 1.25V to 20V. The end user can select the voltage using the 3-way switch.

Unique:

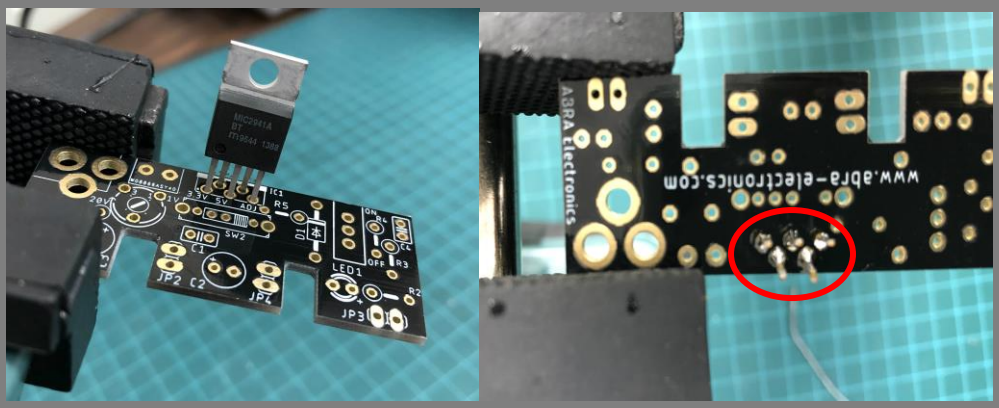
- Used MIC2941 which has low voltage dropout (40mV) compared to LM317(1.25V).
- 2.1mm DC jack and terminal connector for voltage inputs.
- Two indicator LEDs, Red for input power and green for output power.
- Short circuit and over heating protection.
- Input diode to protect circuitry from negative voltages or AC power supplies
- Onboard potentiometer for adjusting voltage from 1.25V to 20V within 0.5V of the input voltage.

Let's get start with soldering.

Follow my step by step instructions below to solder the PCB board. Carefully observe the note points that are provided.

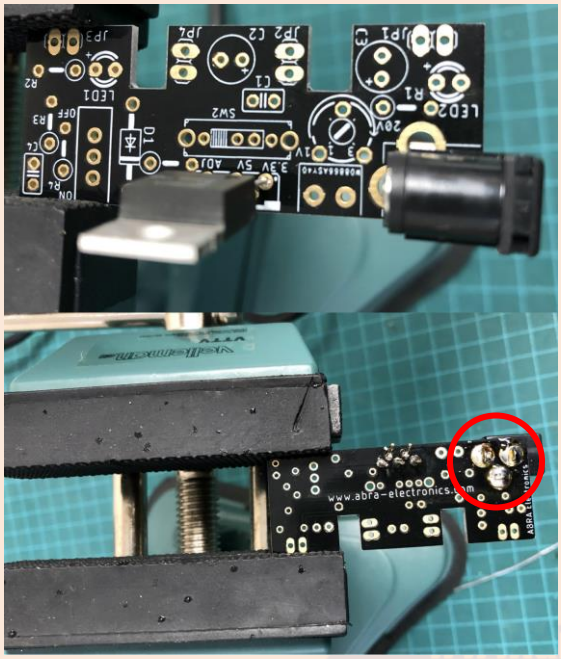


Step1:

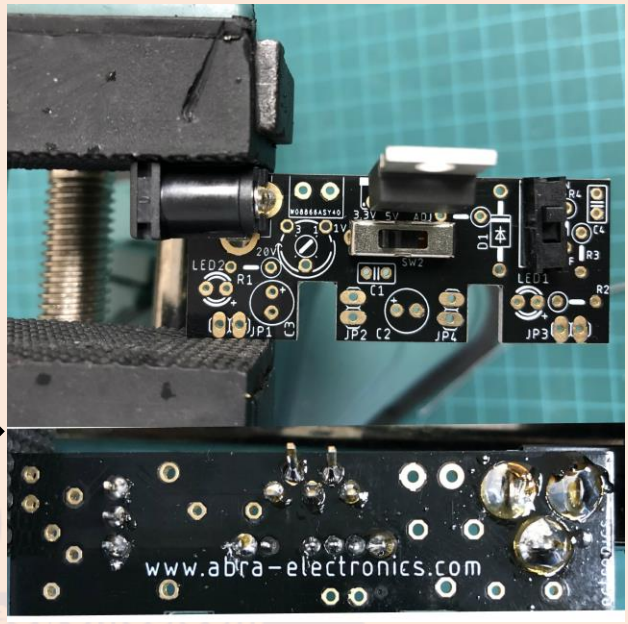


Start with IC, place as shown.
maintain height for bending

Step2:



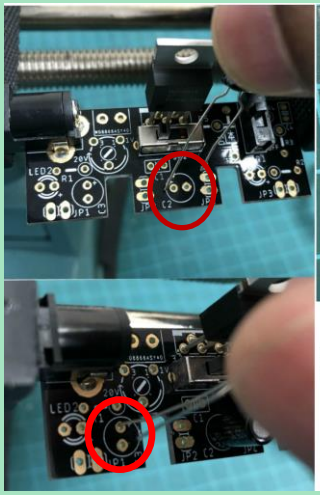
Follow up by 2.1mm power jack.
Solder it by placing board on the support Helping Hands device as shown.

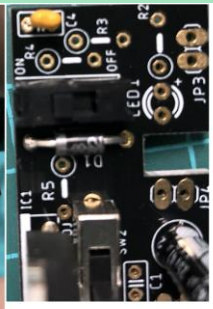


Solder the two types of switches at there respective places.
Three pin switch is on-off switch and sw2 i.e. bigger switch is output. voltage adjustable switch.

Step3: In this step solder all the capacitor and LEDs.

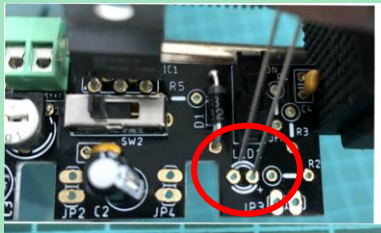
Red Led goes to LED1 and Green goes to LED2. The red indicates whether the board input power. If red LED glows, that means your board is connected to input. To get output, you need to turn on the switch first. Then, green LED glows according to the voltage chosen.





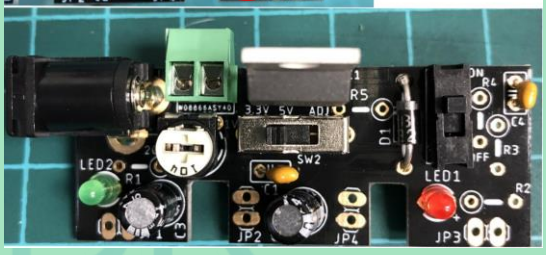
C2,C3 are 47uf capacitors
C1 and C4 are 0.1uf capacitors

- Check polarity of the capacitor.
- Long lead represents positive.
- Solder all the capacitors at their respective position.



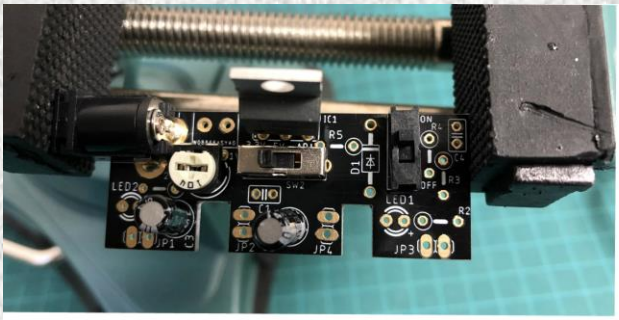
LED1: Red

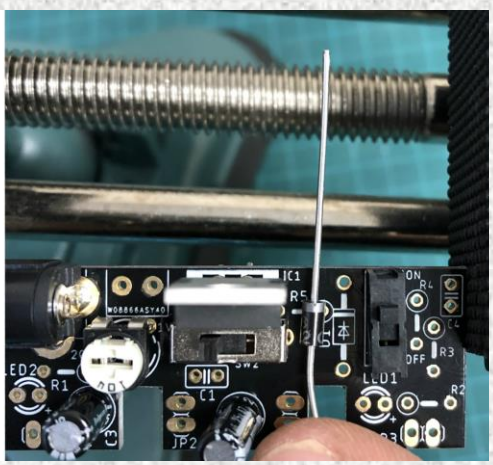
LED2: Green



- Check the polarity of the LEDs and solder accordingly.
- Bigger internal terminal indicates positive and smaller is negative.

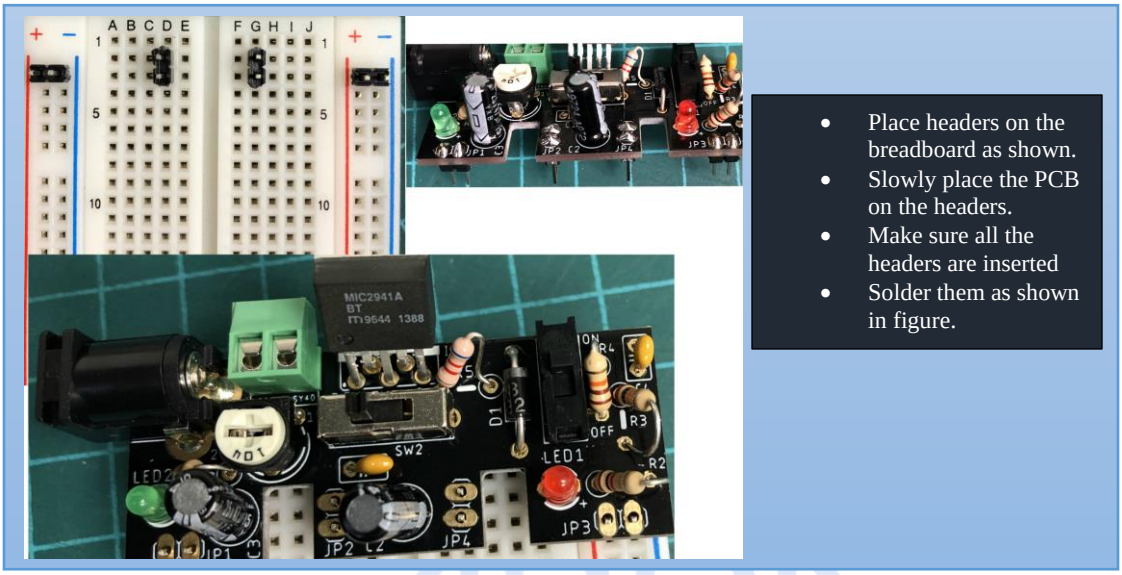
Step4: At this step solder the potentiometer as indicated in the picture, and diode. Make sure the orientation of the diode is same as per the PCB.





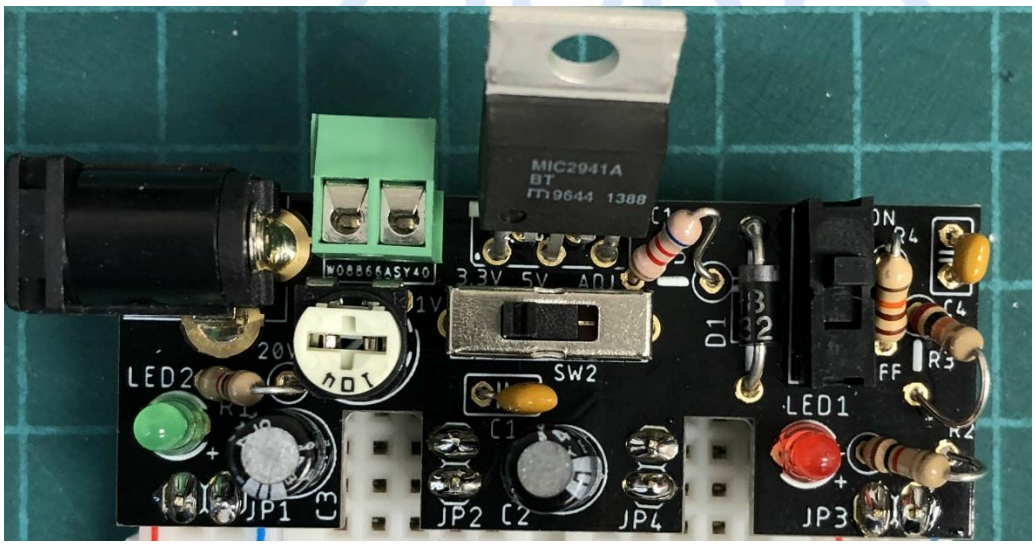
The silver coating of the diode is the negative side (i.e. point your silver line towards the arrow symbol of the diode as shown in figure.

Step5: Now the post important thing to do is soldering headers. These are very sensitive as the orientation to the breadboard may be disturbing. So, follow the tips as shown below. First, place all the headers to the breadboard, then place PCB upon it and solder.



- Place headers on the breadboard as shown.
- Slowly place the PCB on the headers.
- Make sure all the headers are inserted
- Solder them as shown in figure.

Step7: Finally, we are going to solder all resistors and terminal block.

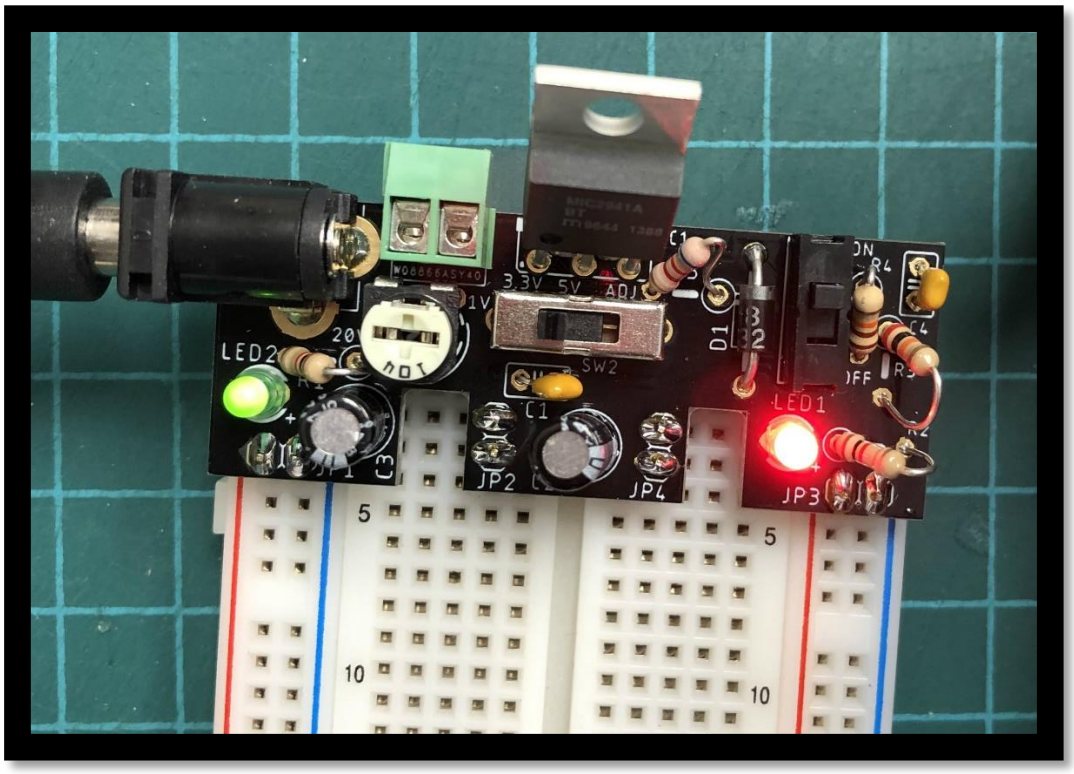


- **R1:1K, R2:1K, R3:20K, R4: 11K, R5: 6.2K**

If you are new to the soldering, please watch the videos from the link provided below.

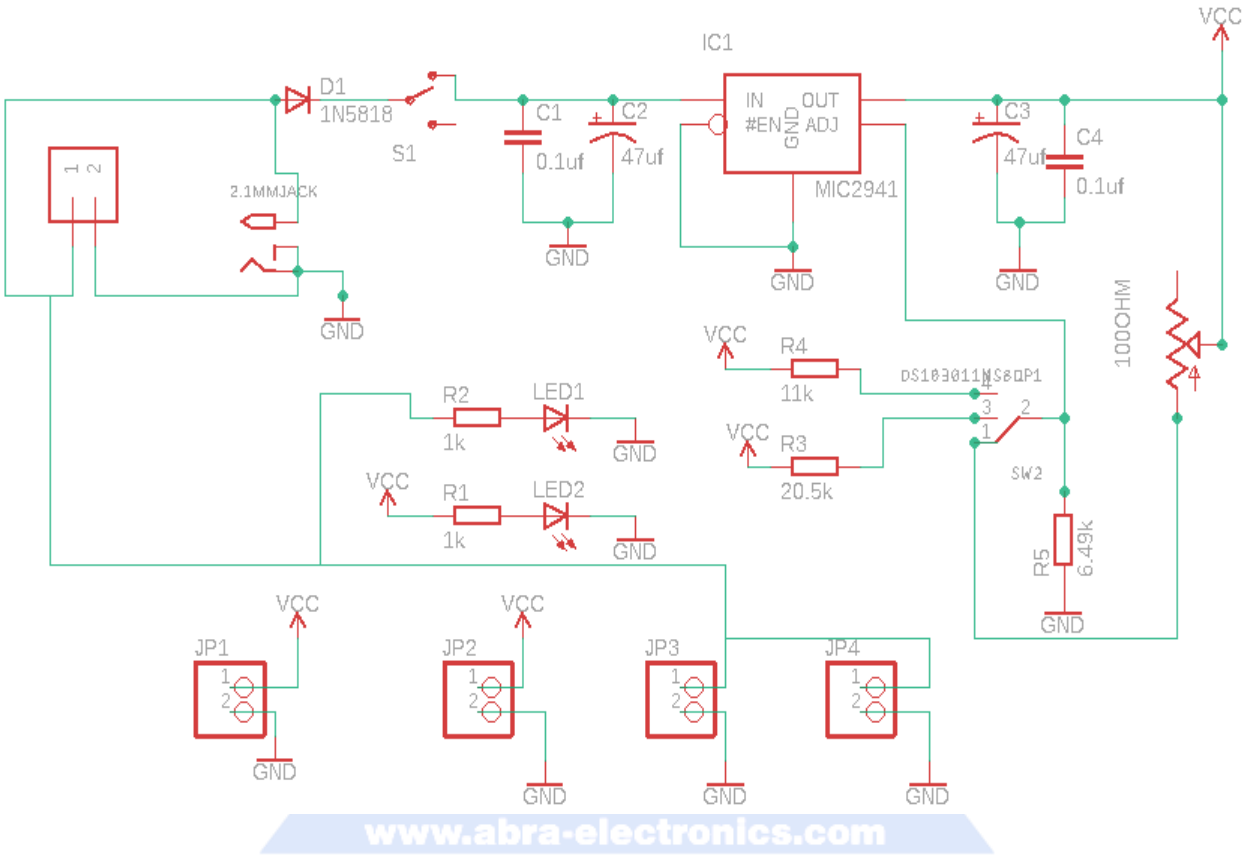
How to use

Coming to the operation of the power supply, we can get the voltage output in three different forms. 1) 3.3V, 2) 5V and adjustable. This adjustable output can be operated using potentiometer from 1V to 20V. The red LED indicates whether board is getting power or not and the green LED indicates whether board is giving output voltage or not. If output voltage increases, the brightness of the Green LED increases. Turn on for the converting or to get the output voltage, you need to turn on the switch (on-off). For voltage variation, you need to adjust using SW2 switch. It also indicated on the PCB board.



Note: If IC heats up, use heatsink on it.

Schematic



Board Layout: