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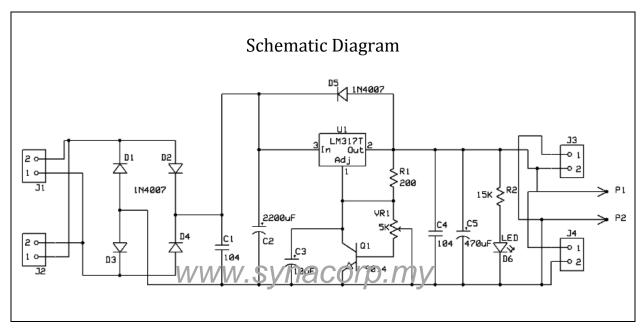
No.9, 1st Floor, Lrg 1/SS2, Bandar Tasek Mutiara, 14120 Simpang Ampat, S.Prai (S), Penang
Tel:+604.504.1617 Hunting Line: 012.4033.474 Fax:+604.502.1726
(Website) http://www.synacorp.my (Email) sales@synacorp.com.my

THE ELECTRONICS HOBBY KIT

LM317 ADJUSTABLE REGULATED POWER SUPPLY

Operating voltage: DC IN 5-35V AC IN 6-25V Output voltage: 1.25V-30V Output Current: max 1A

R1 = 200Ω R2 = $15k\Omega$ VR1 = $5K$ Potentiometer D1- D5 = $1N4007$ D6 = LED 3mm Red	$\begin{array}{c c} & & & & & & & \\ \hline & & & & & & \\ \hline & \Delta \approx 1.25 \text{V} & & & \\ \hline & & & & & \\ \hline & & & & & \\ \hline & & & &$	
C1,C4 = 104 C2 = 2200uF (50V) C3 = 10uF (25V) C5 = 470uF (50V)	LM317 Pin Arrangement	C B E C
Q1 = Transistor 9014 U1 = LM317T with HEATSINK J1 = KF-301-2P terminal block J2 = DC Plug DC-5.5*2.1 J3, J4 = 2.54 2P (Vertical connector)	23	TRANSISTOR 9014
P1, P2 = 4mm Banana Jack LED Spacer x1 Standoff and nuts x4, M3 screw x1 Knob x1	1. Adjust 3 N OUT 2 2. Vout 3. Vin	CATHODE ANODE
Banana to crocodile wire x1 PCB 69*50mm x1	Heatsink is connected to pin 2	CATHODE ANODE



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Theory Of Operation

This LM317 variable regulated power supply is ideal to adjust output voltage from 1.25V to 30V with maximum of 1A load current. A DC input voltage of 5-35V or AC 6-25V can be applied to J1 or J2 terminal and rectified by the full bridge rectifier D1-D4. C1 is a bypass capacitor and C2 is the filter capacitor. The output voltage of LM317 pin 2 depends on the voltage ADJ of LM317 pin 1. VR1 is adjust to control output dc voltage of 1.25V to 30V. The Voltage ADJ is set internally to 1.25V in between pin 1 and 2 of LM317. The Output voltage Vout can be calculated as below.

Vout = $1.25 \times \{1 + (VR1/R1)\}$

C3 capacitor is to improve the ripple noise.

D5 diode protects LM317 against input short circuit.

Q1 transistor is use as load protection. When adjusting the VR1, the poor potentiometer contact will turn on Q1 and connect pin1 of LM317 to ground thus set the Vout to minimum of 1.25V to protect the load connection.

Assembly Instruction Diagram Step



1.



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3.



4.

6.



5.