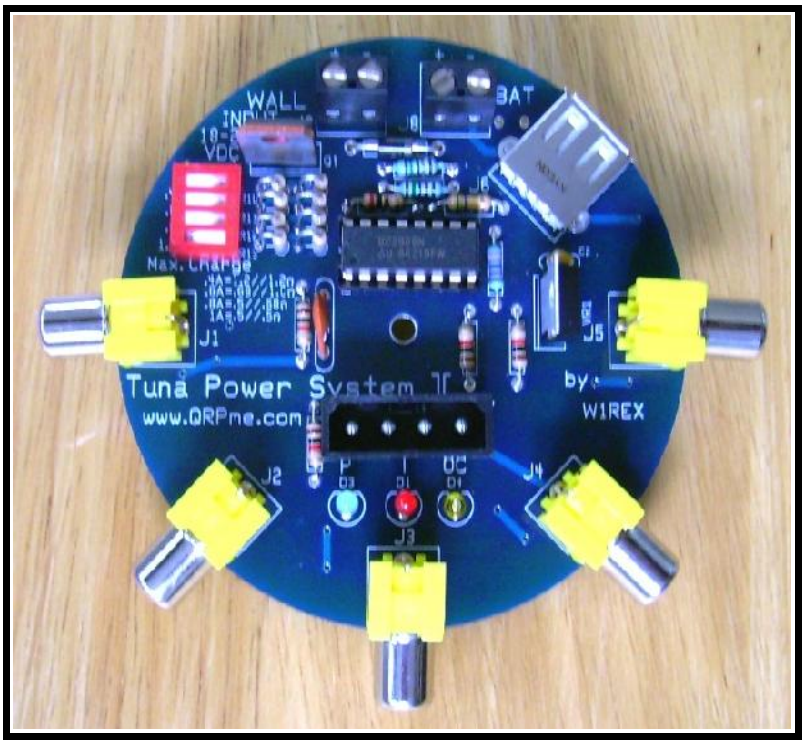
Tuna Power System][+

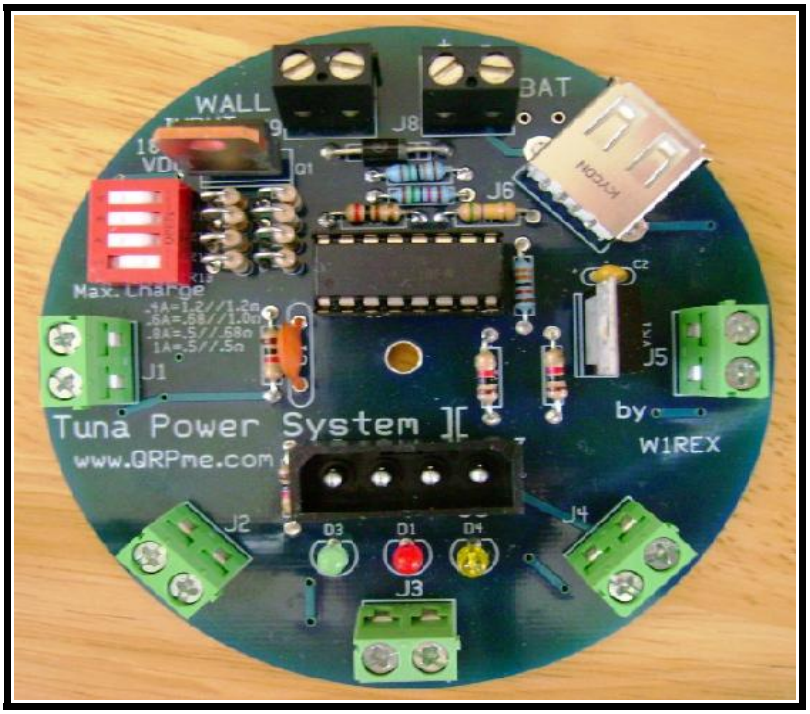
Builder's Guide
Ver.2.1

4/14/2012

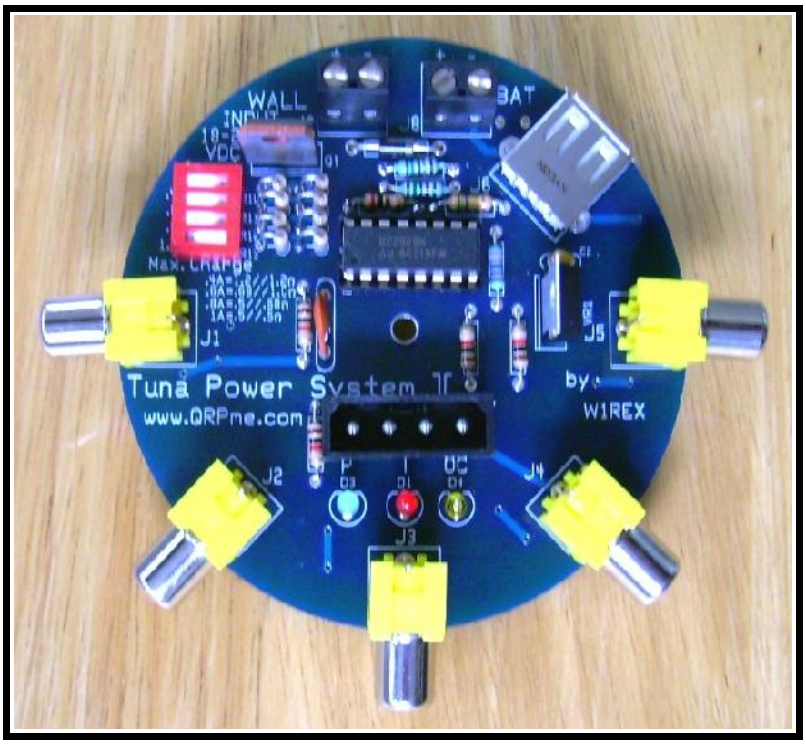
by W1REX



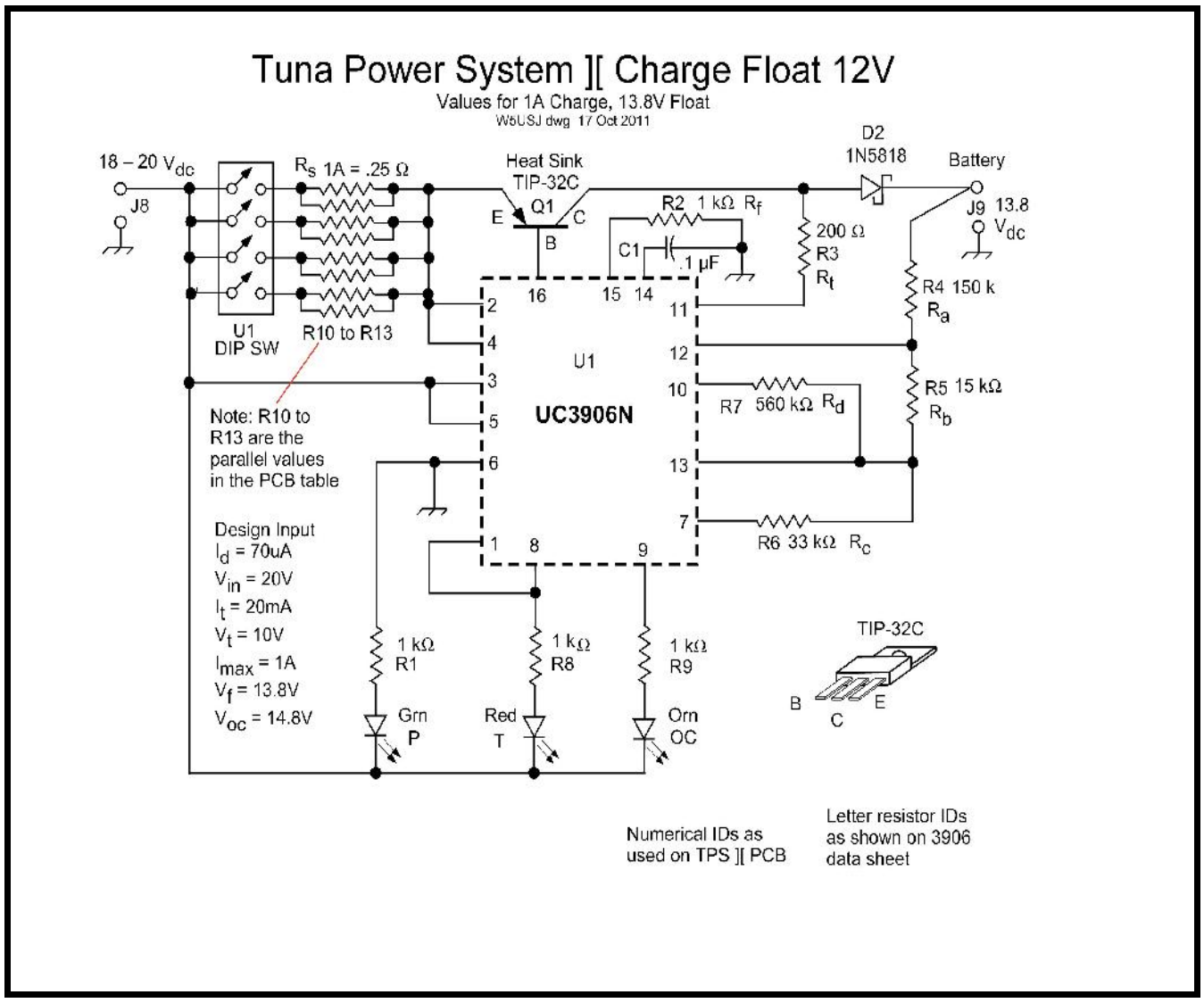
Tuna Power System with supplied RCA connectors for power connections to other QRPme kits.



Tuna Power System with optional terminal blocks for power connections to other QRPme kits.

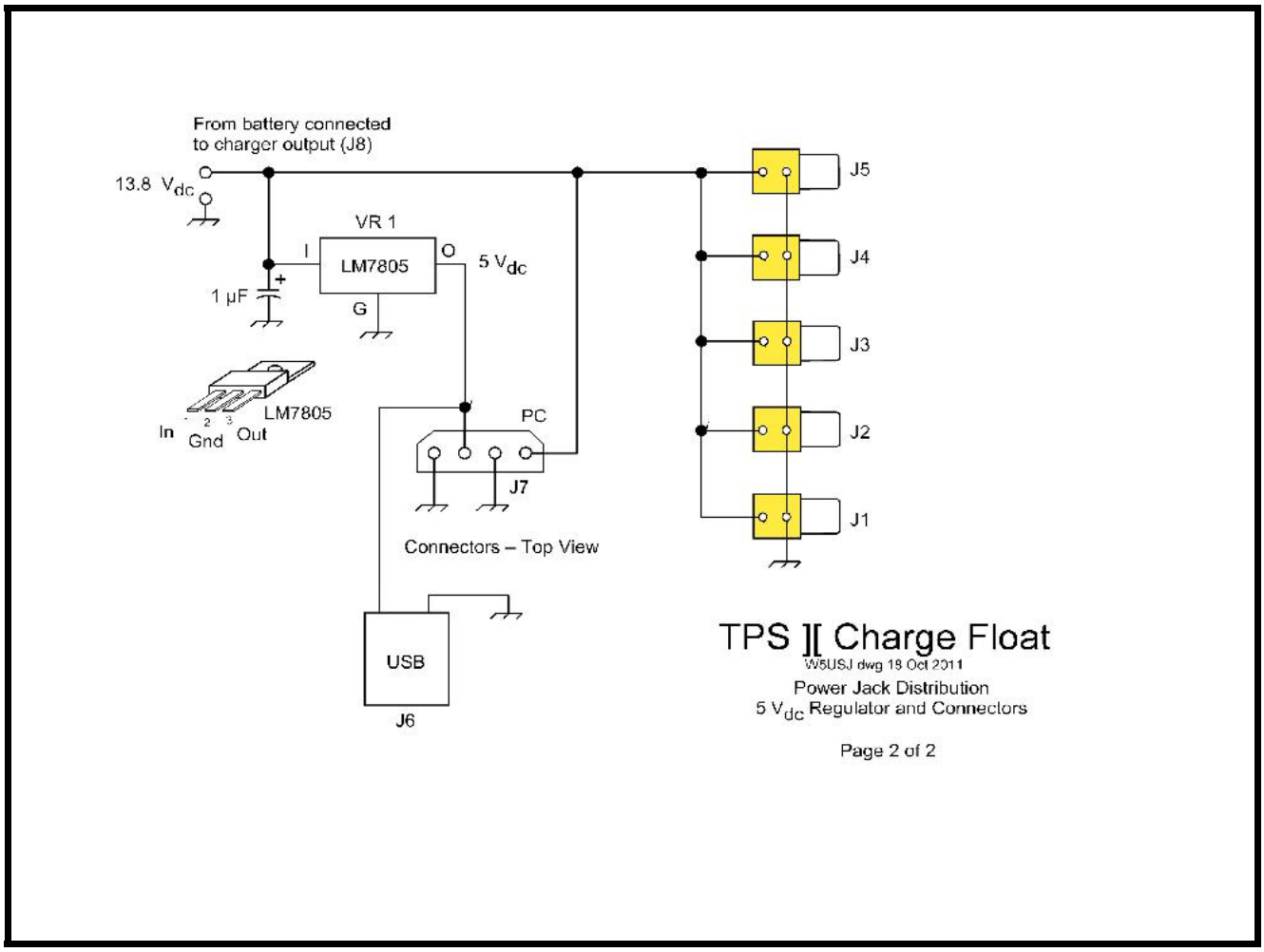


Using the supplied RCA connectors as power connectors allows you to use readily available RCA-RCA audio cables as 12volt power cables to all the 'standard' QRPme kits. Make sure you use a decent quality audio cable with heavier gauge wire for less voltage drop through the cable. The use of coax based audio cable is not advised.



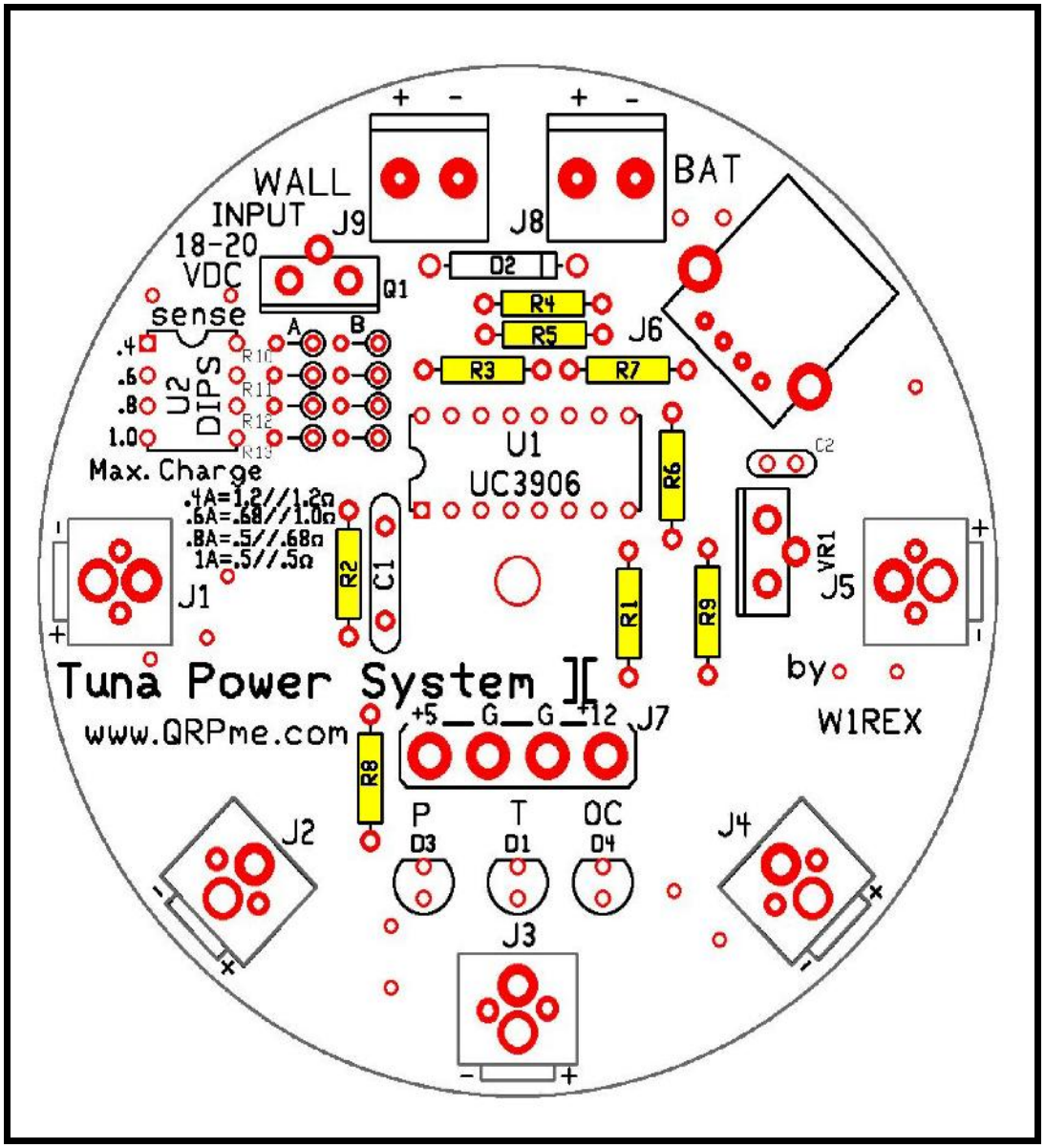
Schematic of main charging circuit for the Tuna Power System][board.

Please note: Diode D2 in the upper right of the circuit diagram is NOT a 1N5818 but a 1N4004!



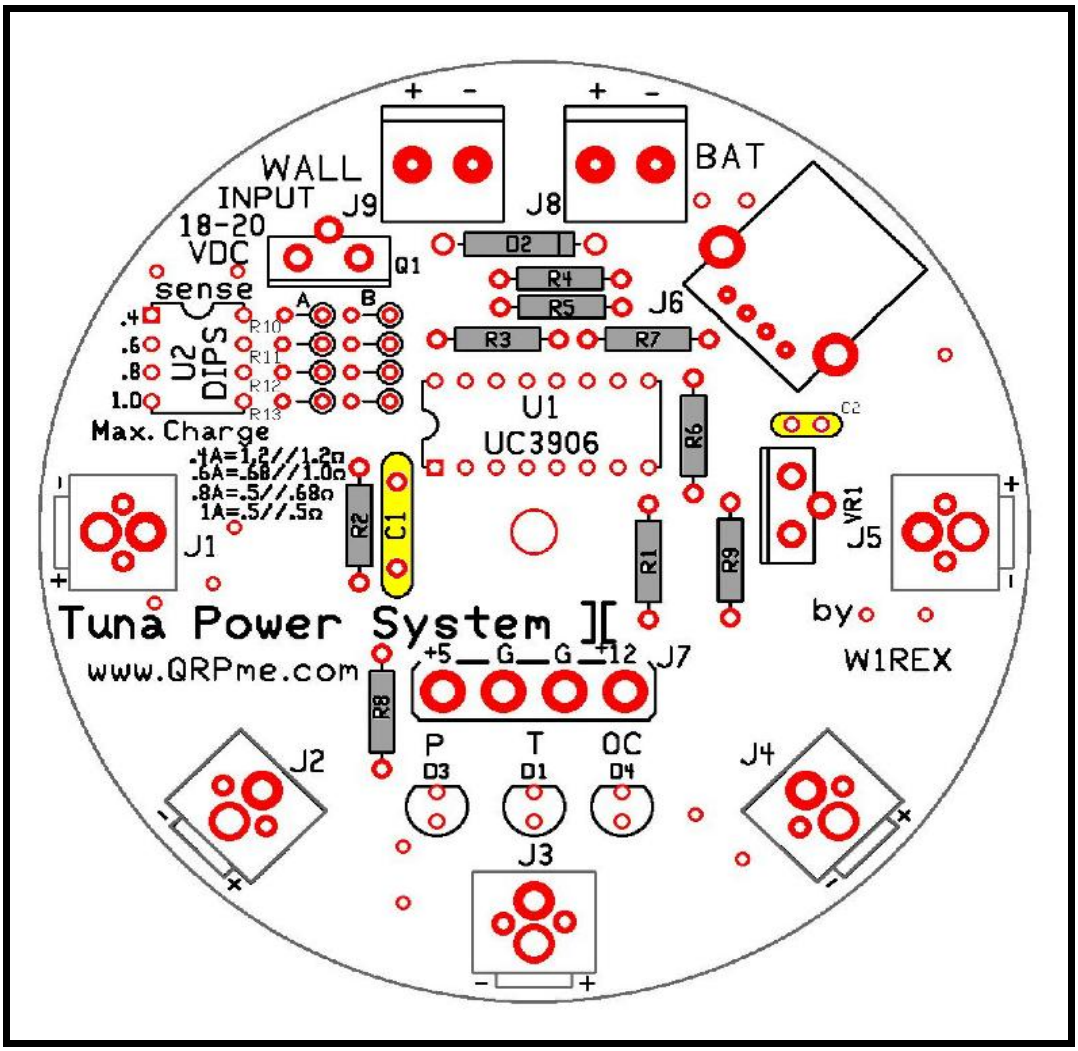
Schematic for the power distribution portion of the TPS][kit.

Please note: The voltage pinout on the Molex power supply connector is:
[+5, GND,GND,+12] from left to right
NOT the [GND,+5,GND,+12] shown in the schematic!



Install the resistors:

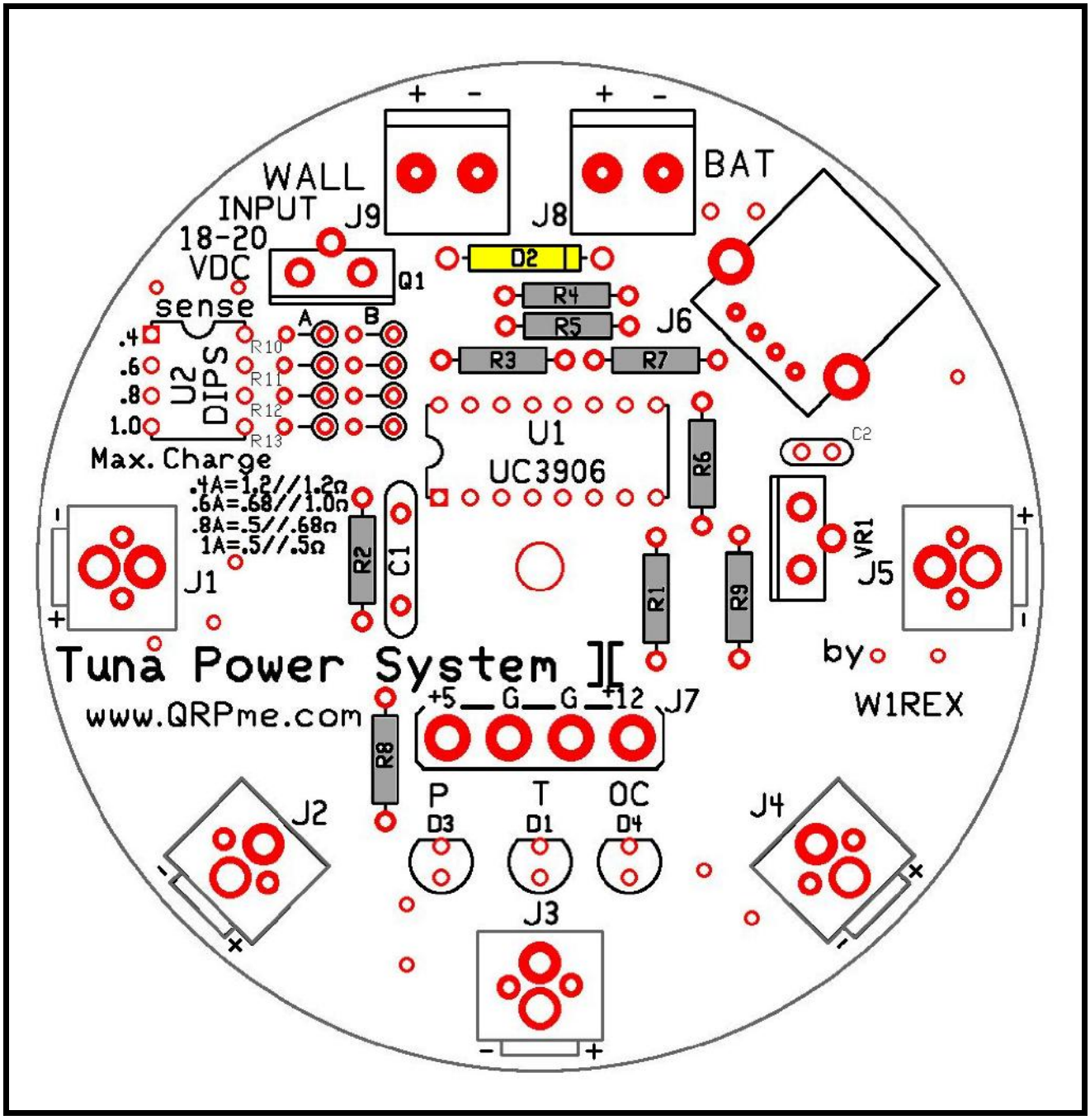
R1 = 1K = BRN-BLK-RED
R2 = 1K = BRN-BLK-RED
R3 = 200 = RED-BLK-BRN
R4 = 150K = BRN-GRN-BLK-ORG
R5 = 15K = BRN-GRN-BLK-RED
R6 = 33K = GRN-GRN-BLK-RED
R7 = 560K = GRN-BLU-YEL
R8 = 1K = BRN-BLK-RED
R9 = 1K = BRN-BLK-RED



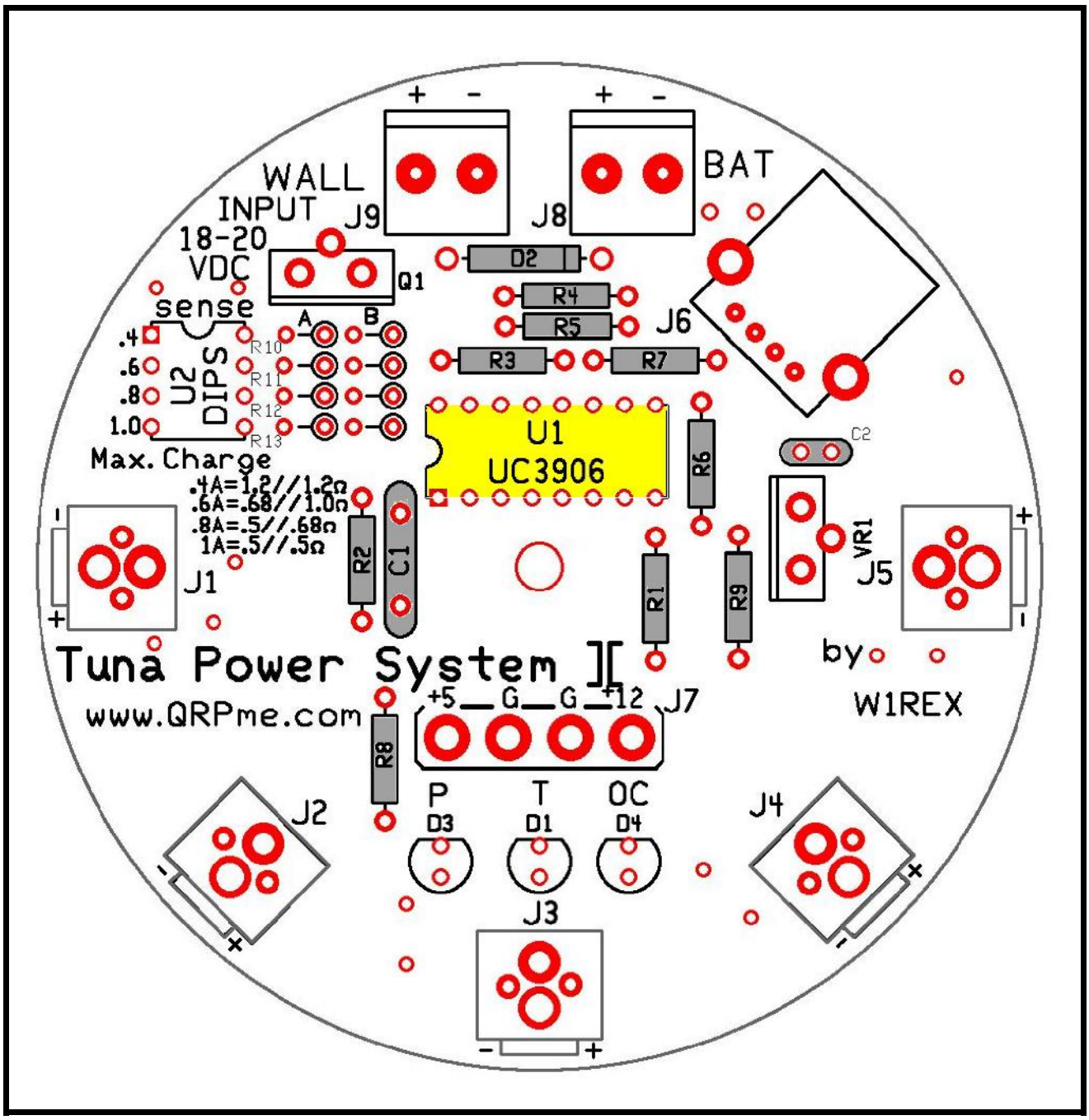
Install the capacitors:

C1 = .1uf = 104

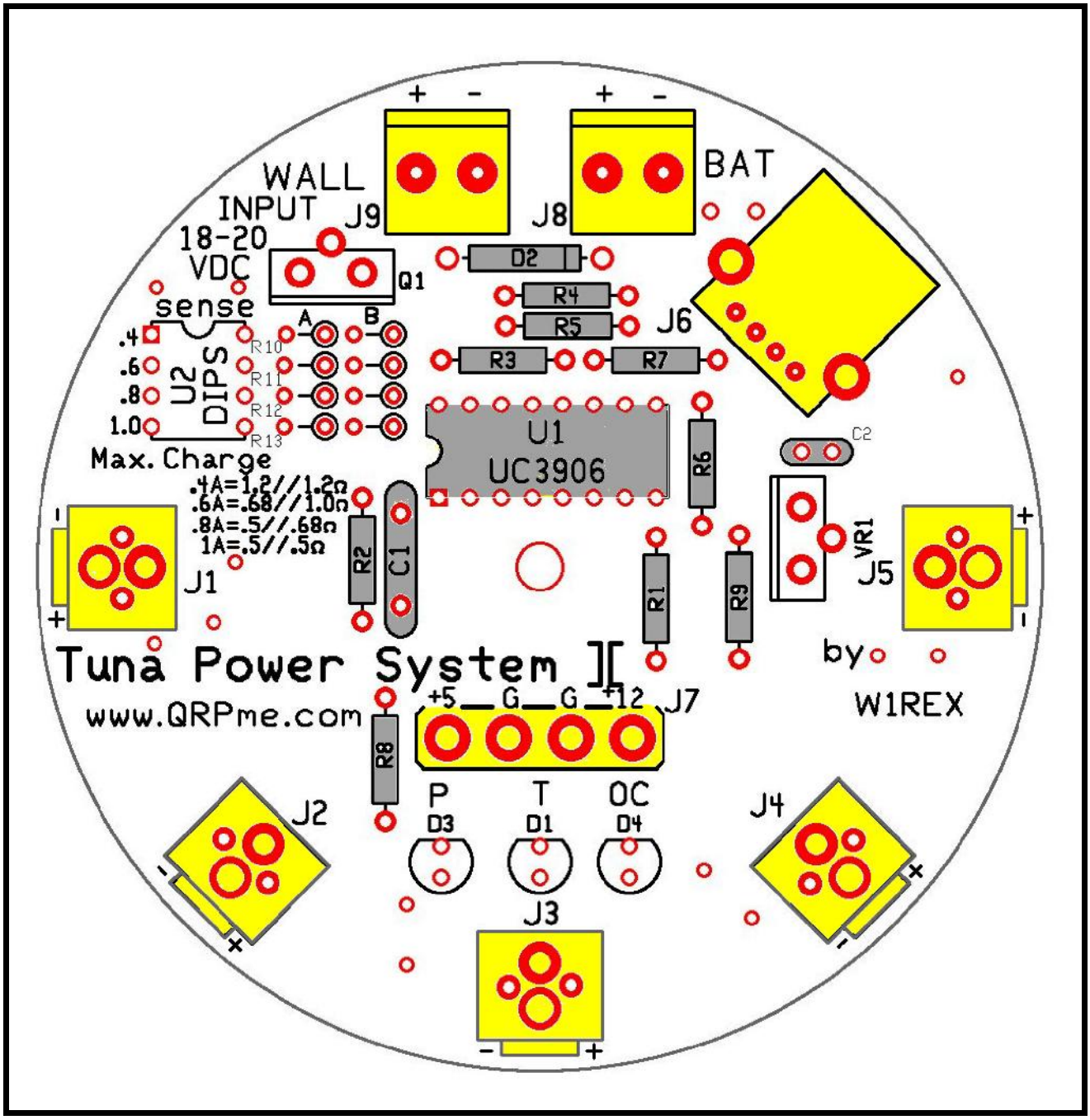
C2 = 1uf radial lead



Install diode D1 = 1N4004

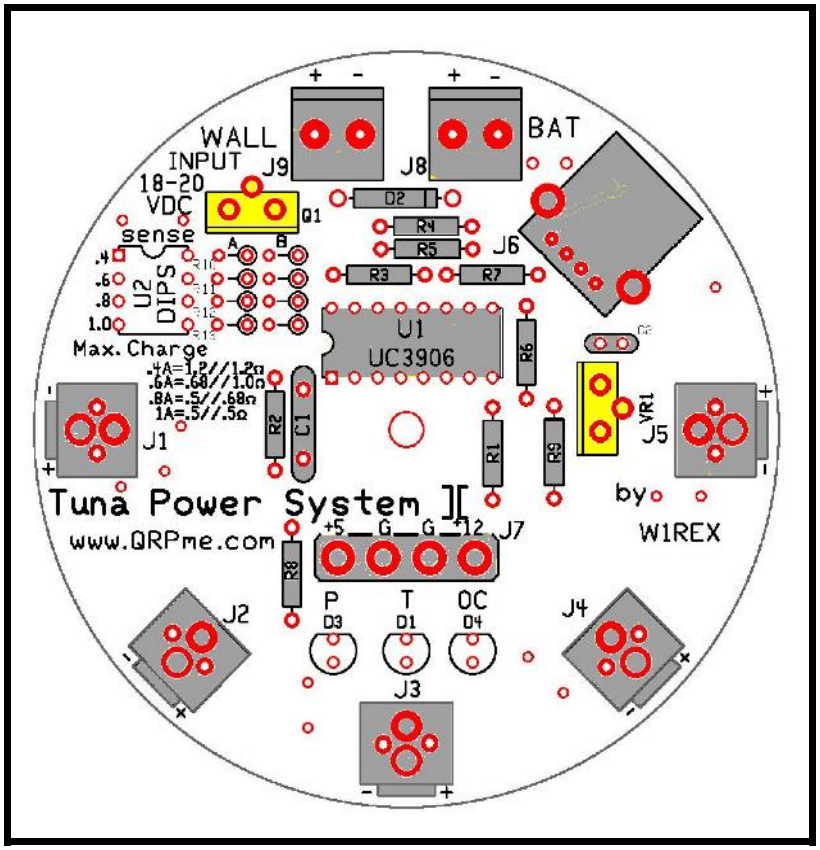


Install the IC socket at U1. Install the IC after everything is built and the board is installed on top of the tuna can.

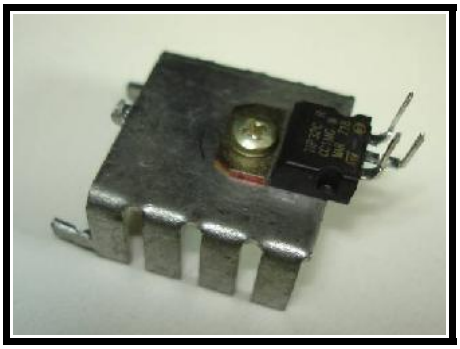


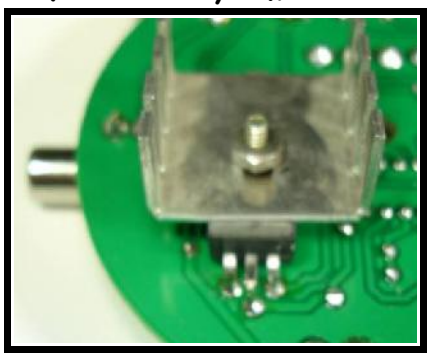
Now install the connectors:

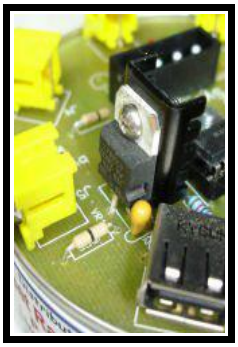
5 RCA connectors at J1, J2, J3, J4 & J5
USB socket at J6
4 pin power supply Molex connector at J7
2 terminal block connectors at J8 & J9



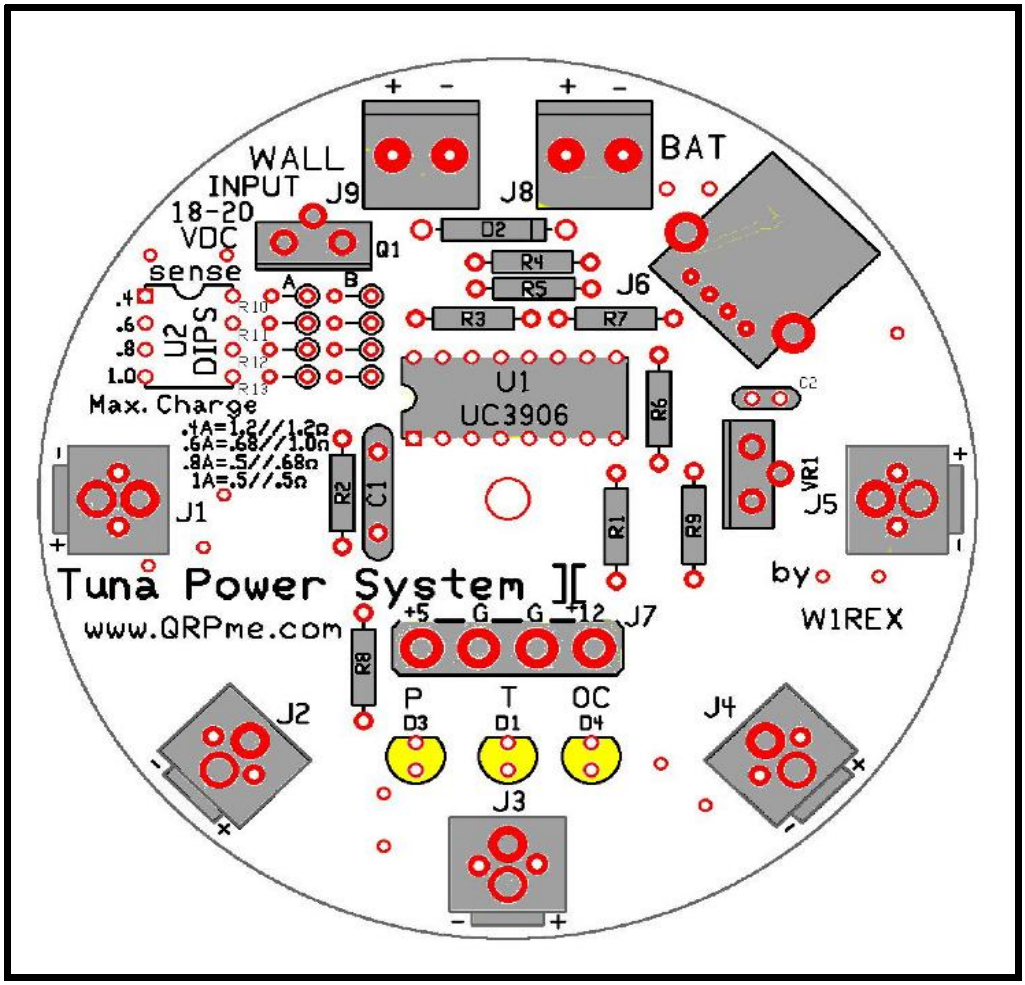
Install the TIP32 transistor at Q1. You can install the transistor above the board or below the board. Installing it above the board, the transistor and heat sink are slightly in the way when installing wires into terminal block J9. I prefer to install Q1 below the board where it will be inside the can and totally out of the way of terminal block J9. You have to bend the leads of the transistor in such a way that it will align parallel to the board AND so that the orientation of the base, emitter and collector is correct.



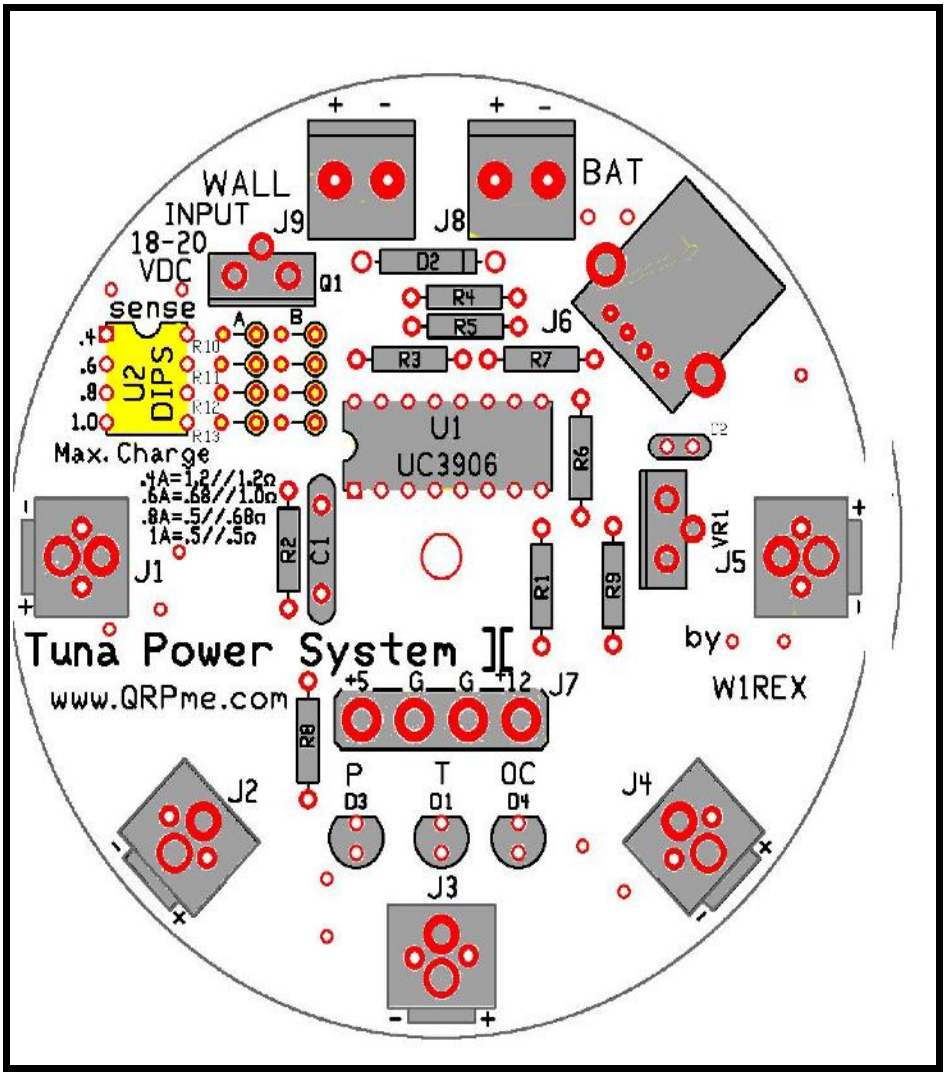




Install the LM7805 5 Volt regulator and SMALL heat sink at VR1, again observing the proper orientation of the heat sink tab.



Install the Green, Red and Yellow LEDS at D3, D1 and D4 respectively. Ckeck that the orientation of the LED is proper with respect to the flattened side aligning with the flat indicator on the silk screen.



Install the charge control components now.
4 pin DIP switch at U2

Now install all the sense resistors R10 through R12 A & B in a standing position.
Install two 1.2 ohm (BRN-RED-SILVER) resistors at R10 A & B.
Install a .68 ohm (BLU-GRY) resistor at R11A and a 1 ohm resistor at R11B.
Install a .5 ohm (GRN-BRN-SILVER) resistor at R12A and a .68 ohm resistor at R12B.
Install two .5 ohm resistors at R13 A & B.

Now you can mount the completed printed circuit board to the can using the supplied nut and bolt. The bolt is inserted through the hole in the bottom of the can and then the board. The nut is installed on the top. Do not over tighten.

FINI!

Now what do you do with it…..

- **1. Charge your portable SLA (sealed lead acid) station battery. With an appropriately sized wall adapter, you can easily charge SLA batteries up to 7AH in size. The 1N4004 diode included with the kit is rated for 1 amp so if you want to use the TPS to charge 7 AH batteries, it should be replaced with a diode rated for 1.5 amp.**
- **2. Power your Two Tinned Tunas, Sudden Storm, Tuna Keyer and other accessories easily from the same source.**
- **3. Use laptop accessories like LED notebook lights and fans at your QRP station.**
- **4. Power home brew creations with +12 and +5 using old PC disk drive power cables.**

Suggested mod:

1. There are 2 unused holes between the Battery screw terminal connector and the USB connector. You can cut the trace between the holes and add either a switch or an amp meter.