

# Rockmite ][-30 (ver 3) Power and Efficiency Modification

W5USJ Drawing 24 Mar 2014

## Matching Transformer



Secondary

Strip Leads

Primary

Note: Best to make these changes before assembling the rest of the kit

Change R18 to 3 Ohms (ORN, BLK GLD GLD)

Install the transformer in place of L1

Matching transformer: 1.6:1 turns ratio

Impedance (Z) Ratio = 2.56:1 (128:50)

Toroid FT23-43

8 turns #26 primary

5 turns #26 secondary

wound between the pri turns.

Strip insulation to about 1/8 inch from core

Cut the short trace between Q6-C and C14

T30-2 and T30-6 Toroids

L2 = 894 nH 14 turns #26 **Measured**

L3 = 720 nH 14 turns #26

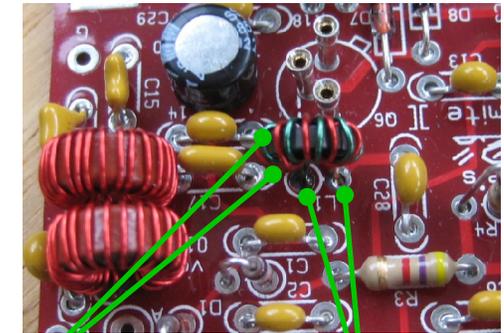
Strip insulation close to core

### Matching Transformer:

As seen in the LPF schematic, the input and output impedance is 50 Ω. Output resistance of Q6 is much higher and is a power transfer mismatch. Also, poor efficiency. So, a matching transformer can be used to even things up. The values chosen are median values between the range of Vcc (12-13.5). A 1 min keydown only warms the heatsink.

RM ][ PCB ver 3

First, cut short trace between Q6 C and C14 see illustration below



Connect secondary leads, to two S pads at ends of C14 and C17 pads

Connect primary leads in place of L1.

Gently scrape the solder mask from these two pads

## All Capacitors MLCC 5% COG

C15 = 220 pF (221)

C16 = 30 pF (300) (150+150)\*

C17 = 430 pF (431) (271+151)\*

C18 = 91 pF (910) (470+470)\*

C19 = 180 pF (181)

\*Parallel capacitors can be connected together or tack-soldered on the PCB bottom.



Q6 = 2N3866

Alt = 2N3553

Even turns distribution

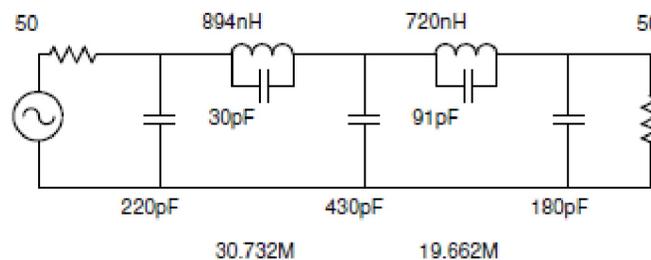
Spot of clear nail polish on both sides



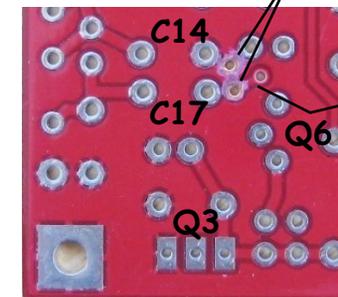
Strip Leads

14 Turns 14 Turns  
894 nH 720 nH

### Elsie Design LPF Schematic



### Figure 1



Cut this short trace