

# Rockmite ][-40 (ver 1) Power and Efficiency Modification

W5USJ Drawing 22 Jan 2014

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

T30-2 Toroids

L2 = 1.3 uH 17 turns #26

L3 = 1.05 uH 15 turns #26

Strip insulation close to core

Measured

All Capacitors MLCC 5% COG

C15 = 330 pF (331)

C16 = 47 pF (470)

C17 = 620 pF (621)

Alt: 560+56 in parallel

C18 = 120 pF (121)

C19 = 240 pF (241)

Alt: 181+56 in parallel

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

Q6 = 2N3866

## Matching Transformer:

As seen in the LPF schematic, the input and output impedance is 50  $\Omega$ . 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.

## Matching Transformer

Secondary

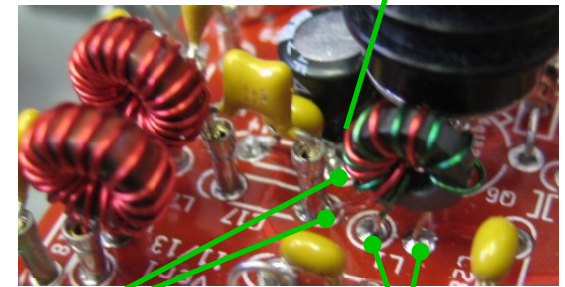


Strip Leads

Primary

First, cut short trace between Q6 C and C14

RM ][ PCB ver 1



Connect secondary leads, to end pads of C14 and C17.

Connect primary leads in place of L1.

15 Turns 1.05 uH

17 Turns 1.3 uH

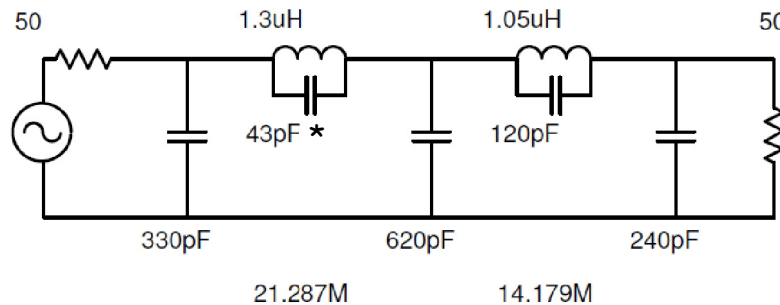
Even turns distribution  
Spot of clear nail polish on both sides



Strip Leads



## Elsie Design LPF Schematic



\* Use 47 pF, no significant difference in performance

T37-2



T30-2

T25-2

FT37-43

FT23-43

Toroid Size Comparison