

Rockmite][-40 (ver 3) Power and Efficiency Modification

W5USJ Drawing 5 Apr 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

Cut the short trace between Q6-C and C14

T30-2 Toroids

L2 = 1.3 uH 17 turns #26

L3 = 1.05 uH 15 turns #26

Measured

Strip insulation close to core

Spread or squeeze turns as needed

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)

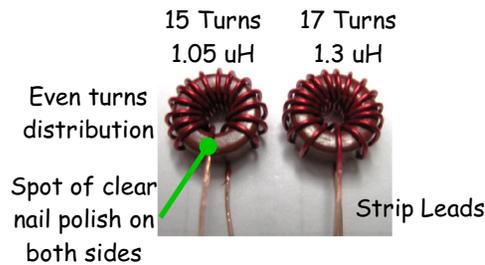
*Parallel capacitors can be connected together or tack-soldered on the PCB bottom.



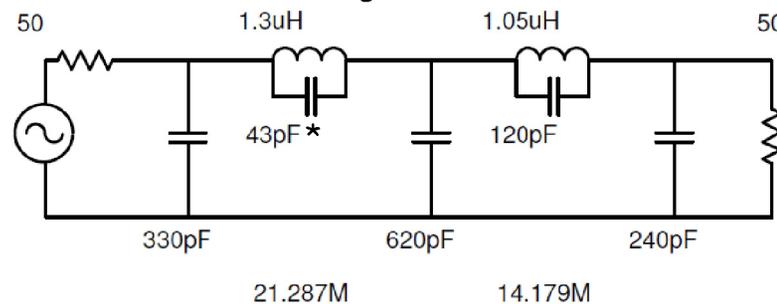
Q6 = 2N3866

Matching Transformer:

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



Elsie Design LPF Schematic



* Use 47 pF, no significant difference in performance

Matching Transformer

Secondary

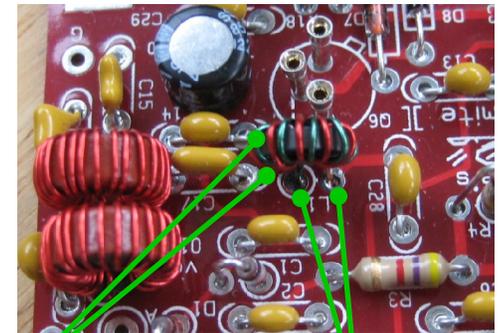


Strip Leads

Primary

RM][PCB ver 3

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

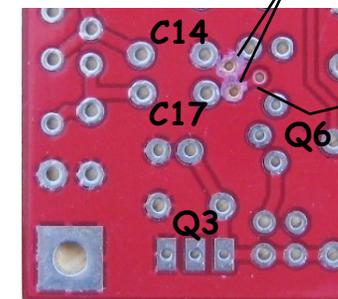


Connect secondary leads, to two S pads at ends of C14 and C17 pads

Connect primary leads in place of L1.

Gently scrape the solder mask from these two pads

Figure 1



Cut this short trace