

Rockmite][-20 (ver 3) Power and Efficiency Modification

W5USJ Drawing 7 Aug 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

T30-6 Toroids

L2 = 647 nH 13 turns #26

L3 = 560 nH 12 turns #26 **Measured**

Spread or squeeze turns as needed

Strip insulation close to core

All Capacitors MLCC 5% COG

C15 = 150 pF (151)

C16 = 22 pF (220)

C17 = 270 pF (271)

C18 = 56 pF (560)

C19 = 120 pF (121)

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.

12 Turns 560 nH
13 Turns 647 nH

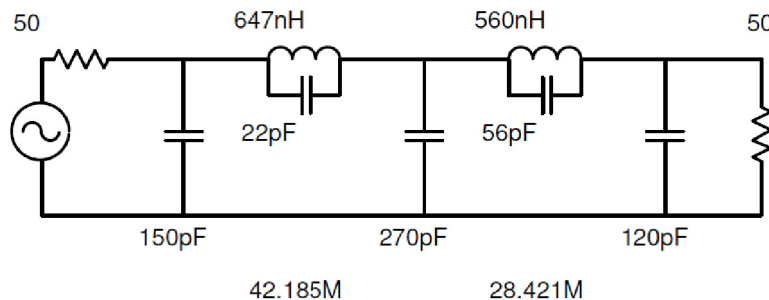
Even turns distribution

Spot of clear nail polish on both sides



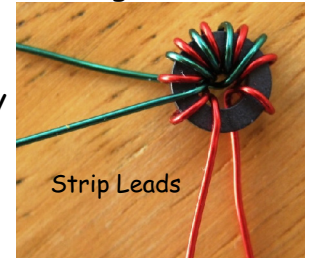
Strip Leads

Elsie Design LPF Schematic



Matching Transformer

Secondary

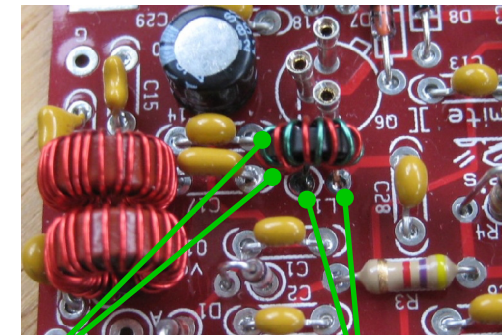


Strip Leads

Primary

RM][PCB ver 3

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

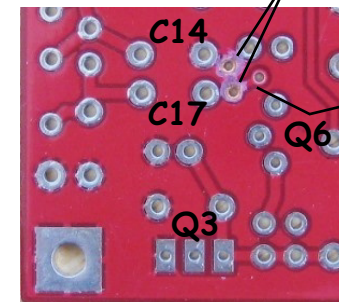


Connect secondary leads, to two S pads at ends of C14 and C17 pads

Connect primary leads in place of L1.

Gently scrape the solder mask from these two pads

Figure 1



Cut this short trace