Rockmite][-10 (ver 3) Power and Efficiency Modification

W5USJ Drawing 14 Nov 2014

This mod starts with an RM][-20 v3 kit. All the same up to the Q6 output circuits

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

Includes 28 MHz crystals

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 = 332 nH 9 turns #26
L3 = 273 nH 8 turns #26 Measured
Spread or squeeze turns as needed
Strip insulation close to core

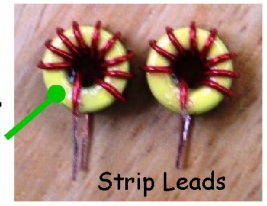
All Capacitors MLCC 5% C0G

C15 = 68 pF (680)
C16 = 10 pF (100)
C17 = 150 pF (151)
C18 = 27 pF (270)
C19 = 56 pF (560)

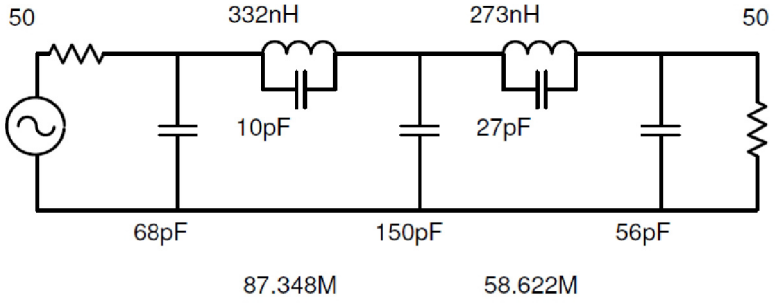
Q6 = 2N3866
Alt = 2N3553

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.

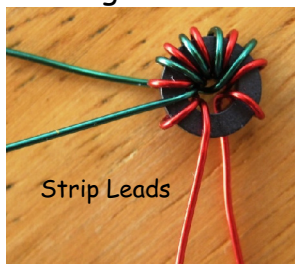
9 Turns 332 nH
8 Turns 273 nH



Elsie Design LPF Schematic

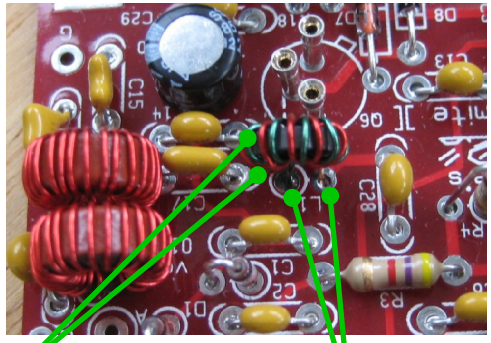


Matching Transformer



RM][PCB ver 3

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

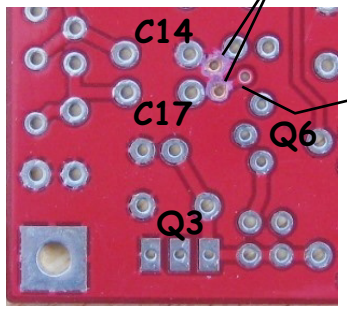


Connect secondary leads, to two S pads at ends of C14 and C17 pads

Connect primary leads in place of L1.

Gently scrape the solder mask from these two pads

Figure 1



Cut this short trace