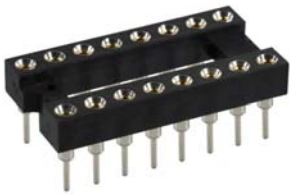


Improving the RockMite 40

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The stock RockMite 40 is rated at 400 to 500 mw output using a 2N2222A transistor as the final (Q6) and a 10 ohm resistor as the emitter resistor (R18) for Q6. The output can be increased to near 1W levels by replacing Q6 with a 2N3053 (about \$1 from Sayal in Toronto) and reducing R18 to 4R7 ohms (4R7 = 4.7 ohms in the old format). The value of R18 could probably be reduced even more if desired, but a heat sink should be used on Q6 when increasing power to higher than stock levels.

To permit experimentation with different transistors and resistor values for Q6 and R18, both of these components should be socketed.



IC DIP sockets with machined pins in a plastic frame are cheap and can be cut apart to make component sockets for transistors, resistors etc. For Q6 cut off a piece with 2 pins and a piece with 1 pin and solder into the circuit board. For R18 cut off a piece with 2 pins and solder it in.

The RockMite crystals should also be socketed to permit switching frequencies. Cut off a section with 3 pins (trim off the center solder pin as it is not used) and solder into the circuit board.

One problem with socketing the RockMite xtals and Q6 is that it will be too tall to fit into a standard Altoids mint tin. An excellent metal box for the RockMite is sold by Hendricks QRP Kits and is called the Bare Case #1 (or BC-1). This box is tall enough to fit any modifications you may want to make. For more ideas, refer to an article by W5USJ found at:

http://www.qrpkits.com/files/BC-1_es_RM.pdf

If only using 2 different frequencies (for example 7030 and 7040 KHz), instead of socketing

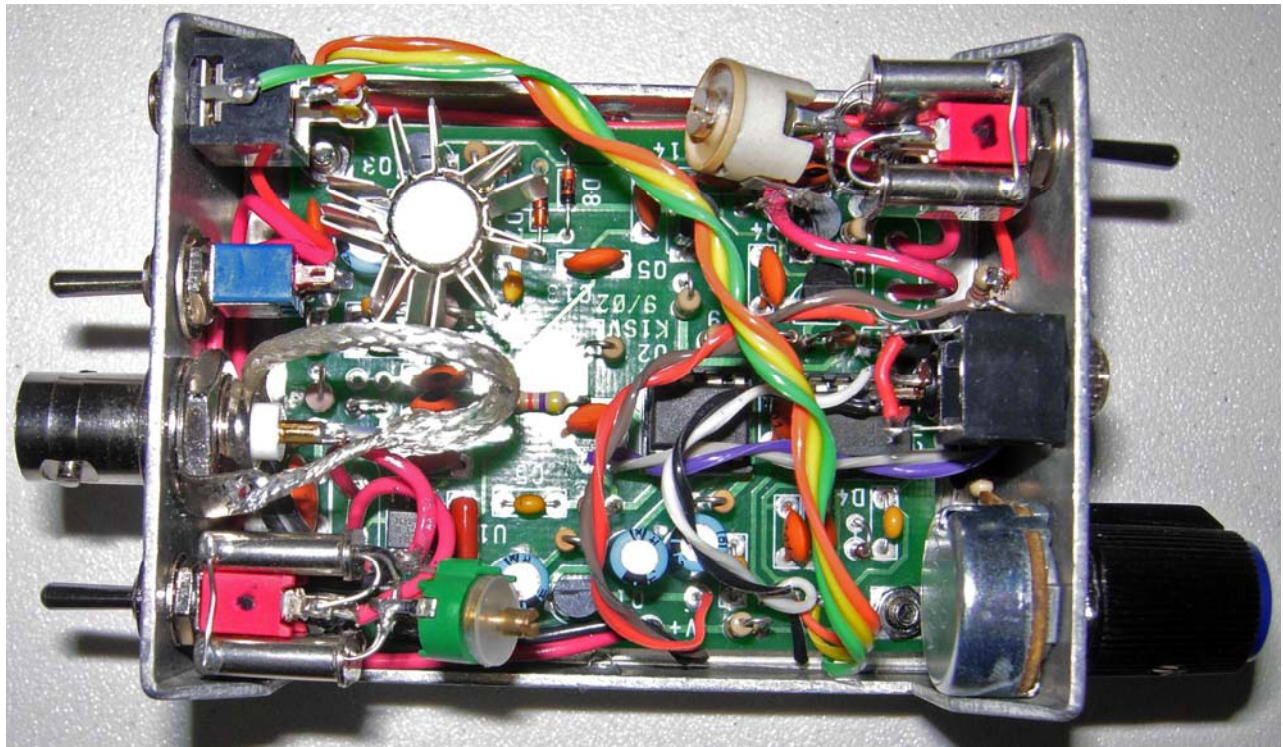


the crystals, use two toggle switches to select which frequency you wish to use. Note that the RockMite receive xtal is actually used as a band-pass filter to provide selectivity. Sensitivity drops off more than a couple of KHz off the xtal center frequency.

Use quality sub-miniature toggle switches. An article showing the completed dual frequency RockMite 40 in a Hendricks BC-1 case can be found at:

http://www.barriearc.com/Files/RockMite40_in_a_BC-1_Enclosure.pdf

Due to circuit design, the RockMite 40 will end up approximately 2KHz lower than the xtal frequency. This means that if uncorrected, it would be transmitting on about 7028 and 7038 KHz. The frequency can be increased slightly by installing a capacitor in series with the crystal. If a small trimmer capacitor of about 12 to 40 pf range is installed between the common xtal tie point and the wire going to the circuit board, it can be adjusted until the TX frequency is close to 7030/7040. The RX crystal is adjusted on frequency by connecting the RockMite to an antenna and adjusting the capacitor for the best RX audio quality on both xtal frequencies and also on both frequencies selected by pressing the programming button on the RockMite.



The two local oscillator crystals (which determine the TX frequency) with the trimmer cap soldered to the common connection can be seen in the upper right. The two crystals and trimmer cap at lower left is for RX bandpass filtering. Be sure to run a ground wire from the crystal cases (solder it to the jumper holding the two xtals together) to the PC board ground point. The 2N3053 with large heatsink is located near the upper left. Rather than connecting a ground from one point to another, I scraped solder masking off small areas of the bottom of the circuit board where required so I could run individual grounds from the PC board to each connector/control. The ground and signal wires are twisted to reduce RF pickup. To get the volume control to fit, I cut off the solder lugs and soldered the wires to the rivets.



Labels were made with a Brother P-touch labeler using clear tape. The panel hole drilling template is at: <http://www.barriearc.com/Files/RockMite40 BC-1 drilling guide.ppt>

Another worthwhile modification is to replace the stock keyer chip U3 with the PicoKeyer chip from Ham Gadgets http://www.hamgadgets.com/store/product_info.php?products_id=48 .