Rock-Mite Dual Crystal Input Filter Modification

W5USJ Drawing 11 Jul 2010

Change this...
Existing circuit

Compare to schematic

...to this.
Dual crystal filterr

C2 Removed

CxLx = Capacitors to raise center freq
Inductors to lower center freq
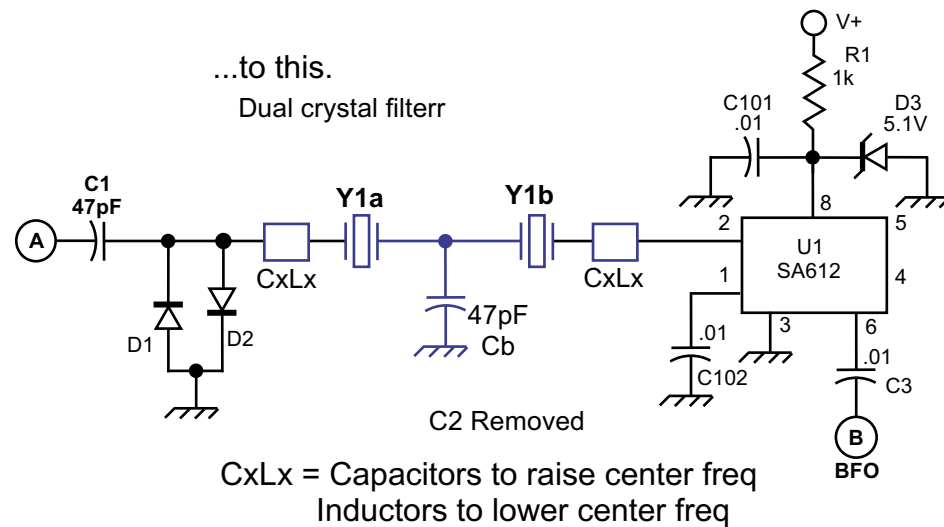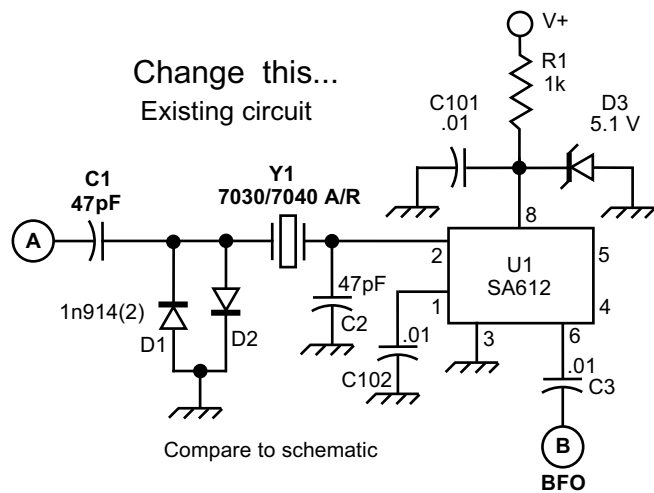
RM-40 mounted in a PCB U-frame chassis
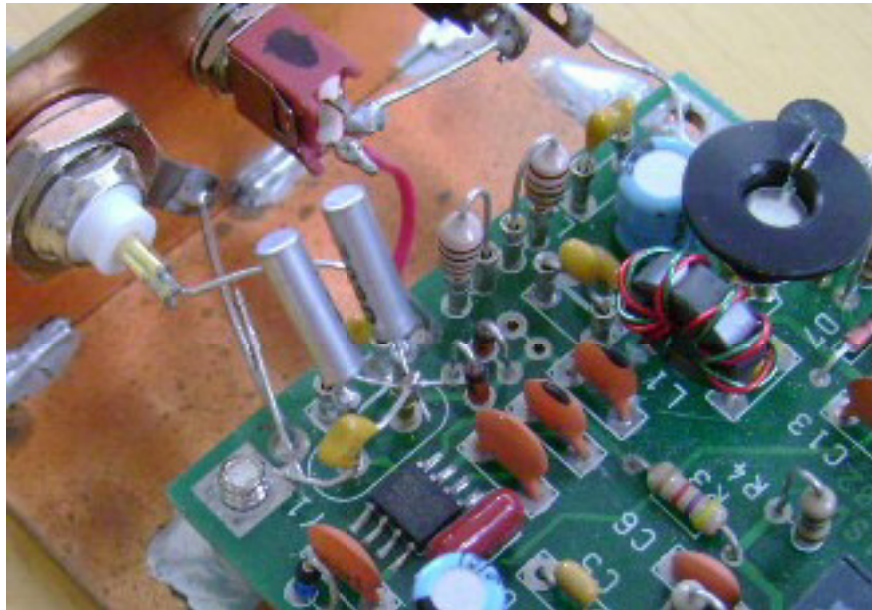
Dual crystal input filter mod installed in a RM-40. This mod is similar to one I did on an early verrsion of a 20m HiMite. Replaced the transformer with the dual crystal filter to minimize the BCI, SWBCI interference. It worked quite well. SWL later incorporated the dual crystal into the HiMites. Get copies of the HiMite documentation for added reference information.

Notes:
Use of machined DIP or SIPP socket pins facilitates the mod and revisions.

The center frequency starts out high because there is no loading on the crystals. Use inductors to lower the center frequency and capacitors to raise it. The center frequency of the mod shown using 7038 crystals is about 7039 or so. To lower the frequency I'd start with 10uH.

The mod could be assembled using the pins and make the filter a plug-in module. I soldered the crystal into DIP pins and plugged those in to DIP pins used as a crystal socket.

The bandwidth of the filter is wider with a smaller value at Cb, or narrower with a larger value. Change in small increments.

You can measure the bandwidth using an RF probe attached to U1 pin 2. Adust the input to the rig with attenuators as needed for an adequate signal level. But not clipped by the diodes. I use my FT-817 as a signal generator and plot multiiple points. Find the highest value then sweep each side for the half voltage points.