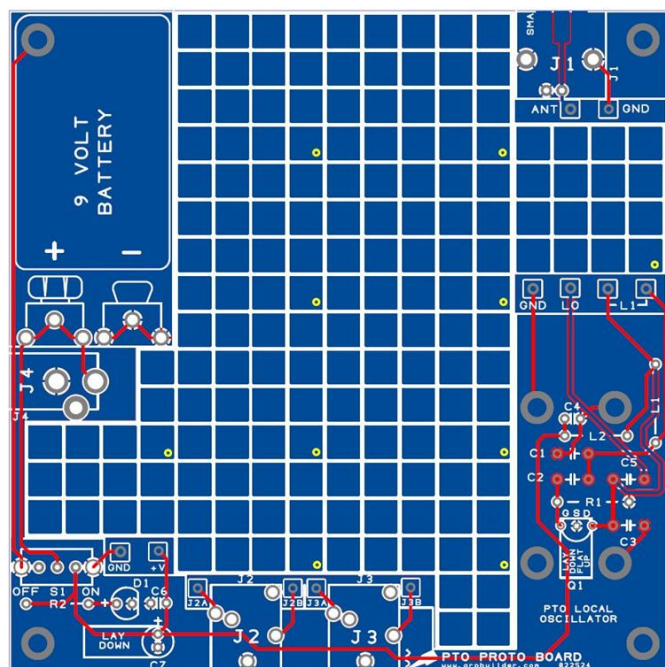
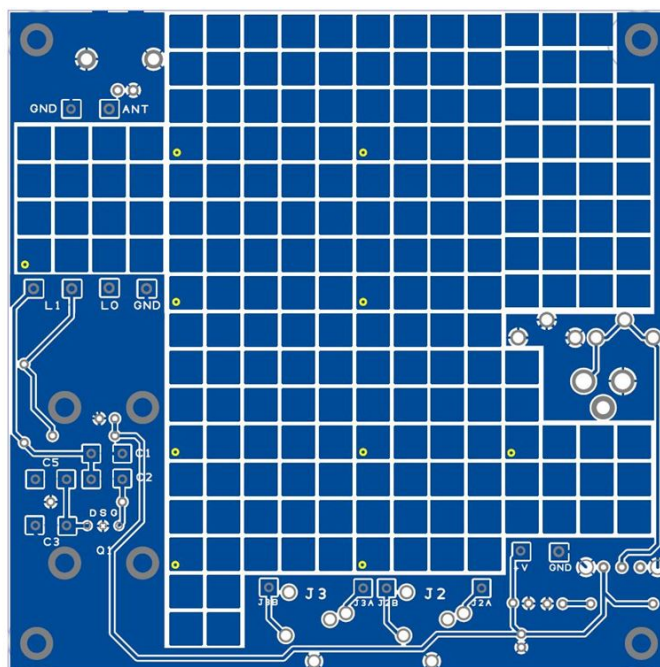




QRP Builder PTO Option 2 proto board



Top



Bottom

Common parts

- 2 - 9V pcb battery clips Mouser # 534-593 and 534-594
- 1 - DC power jack, pcb style, Tayda A-4118
- 1 - Q1, MPF102, fet transistor, or J310 fet
- 1 - L2, 22uH molded inductor, Tayda A-458
- 1 - D1, LED Tayda A-705
- 1 - R1, 100K, 1/4W resistor, Tayda A-2017
- 1 - R2, 47K, 1/4W resistor, Tayda A-2066
- 1 - Slide switch, Tayda A-659
- 1 - BNC pcb female, like eBay# 290684255066, or SMA pcb female
- 2 - 3.5mm pcb stereo jacks, Tayda A-069
- 1 - C1, 270pF, ceramic capacitor, must be C0G/NP0 dielectric
- 1 - C2, 120pF, ceramic capacitor, must be C0G/NP0 dielectric
- 1 - C3, 150pF, ceramic capacitor, must be C0G/NP0 dielectric
- 1 - C5, 4.7pF, ceramic capacitor, must be C0G/NP0 dielectric
- 2 - C4,6, 100nF, MLCC capacitor
- 1 - C7, 10uF, 16V-50V electrolytic capacitor

Band specifications from Norcal manual, $\varnothing.290'$ coil form

80m specific parts

- C8 - 470pF, MLCC capacitor
- L1 - 19.2uH
- T1 - T50-2, #28awg, 29t sec.

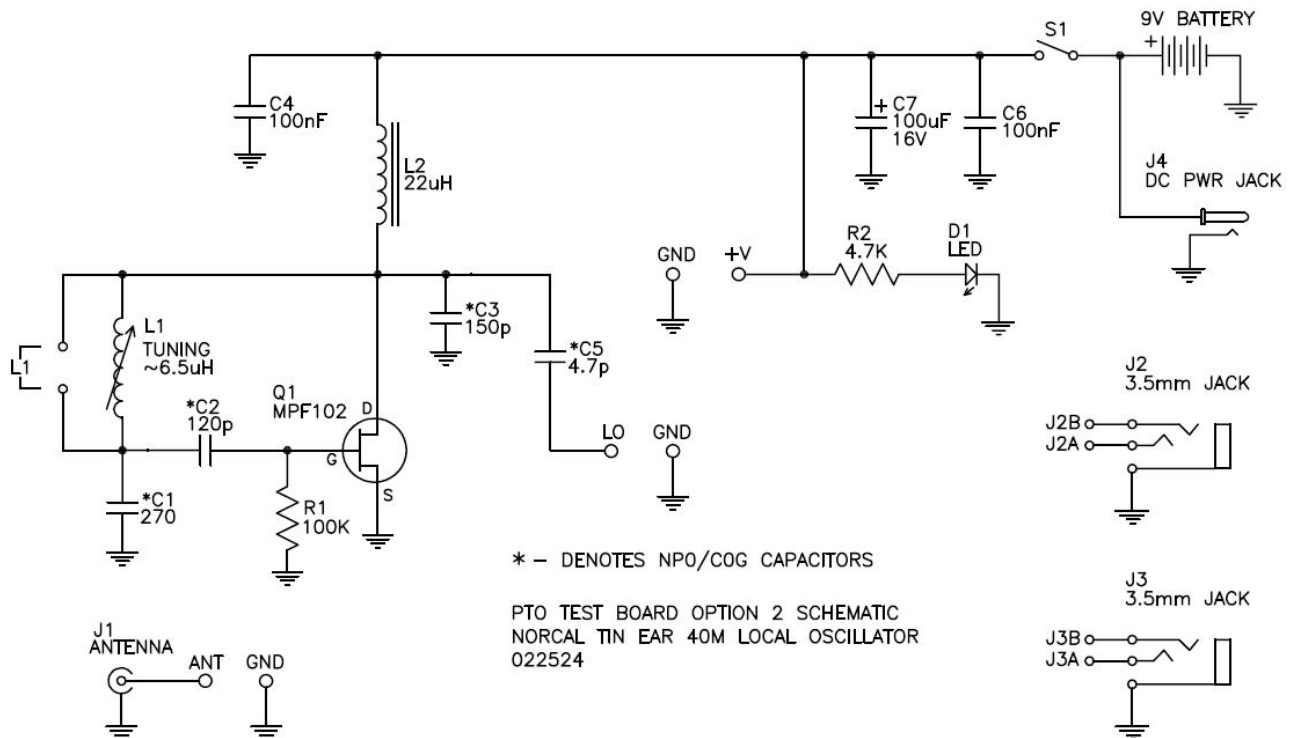
40m specific parts

- C8 - 220pF, MLCC capacitor
- L1 - 6.5 uH
- T1 - T37-2, #28awg, 24t sec.

30m specific parts

- C8 - 270pF, MLCC capacitor
- L1 - 2.9uH
- T1 - T37-6, #28awg, 18t sec.

- The board has 171 .20" sq. top pcb pads, 204 .20" sq. bottom pcb pads for prototyping, and 10 vias *allowing pass through circuit expansion* between the two layers.
- Any pads with a vias on them(10), pass through to the bottom layer of the pcb to allowing you to expand your design, all others are isolated from each other.
- The PTO oscillator circuit on this board is from the Norcal TinEar receiver. I have found it to be very stable with few components. Be sure to use NP0/C0G capacitors where shown.
- If you are experimenting with different frequencies or ranges, changing the NP0/C0G capacitors, I would suggest that you *do not use the holes*, and just tack the capacitors on the bottom side pads for your experiments. It is much easier and less stress than getting the leads out of the holes if changes are needed. All other components, FET, caps, resistor, etc. can mount on the top side, as normal.
- Remember the MPF102 FET lays down with the flat facing up.
- Power either by 9V battery or DC power jack.
- For the PTO (L1), you can use your own, the original soda straw design(Ø.290" coil form), or the PTO kit that is available at https://grpbuilder.com/pto_mechanism. With my PTO, I used the .37" dia. coil form option with 36 turns of 26AWG close wound to match the calculated 6.5uH of the original L1 from the 40m TinEar design and the brass threaded rod, ending up with 6.990-7.258 MHz coverage.
- There are L1 input pads next to the LO pad if you decide to input your own PTO design.



This schematic reflects the TinEar 40m local oscillator component values

Notes:
