

What is your full call sign?

QCX

Single Band QRP Transceiver

RSGB YOTA
summer camp
8/17 90 kits

First general
sales 8/21/17

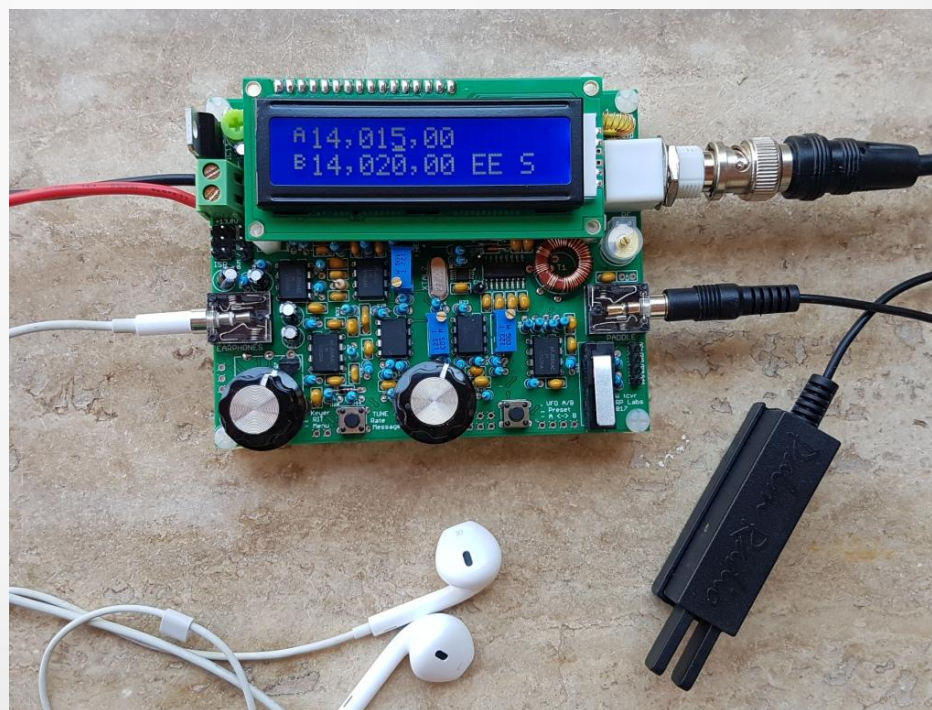
Order number
at 3000+

Price..... \$49

QCX

QRP Labs

Hans Summers



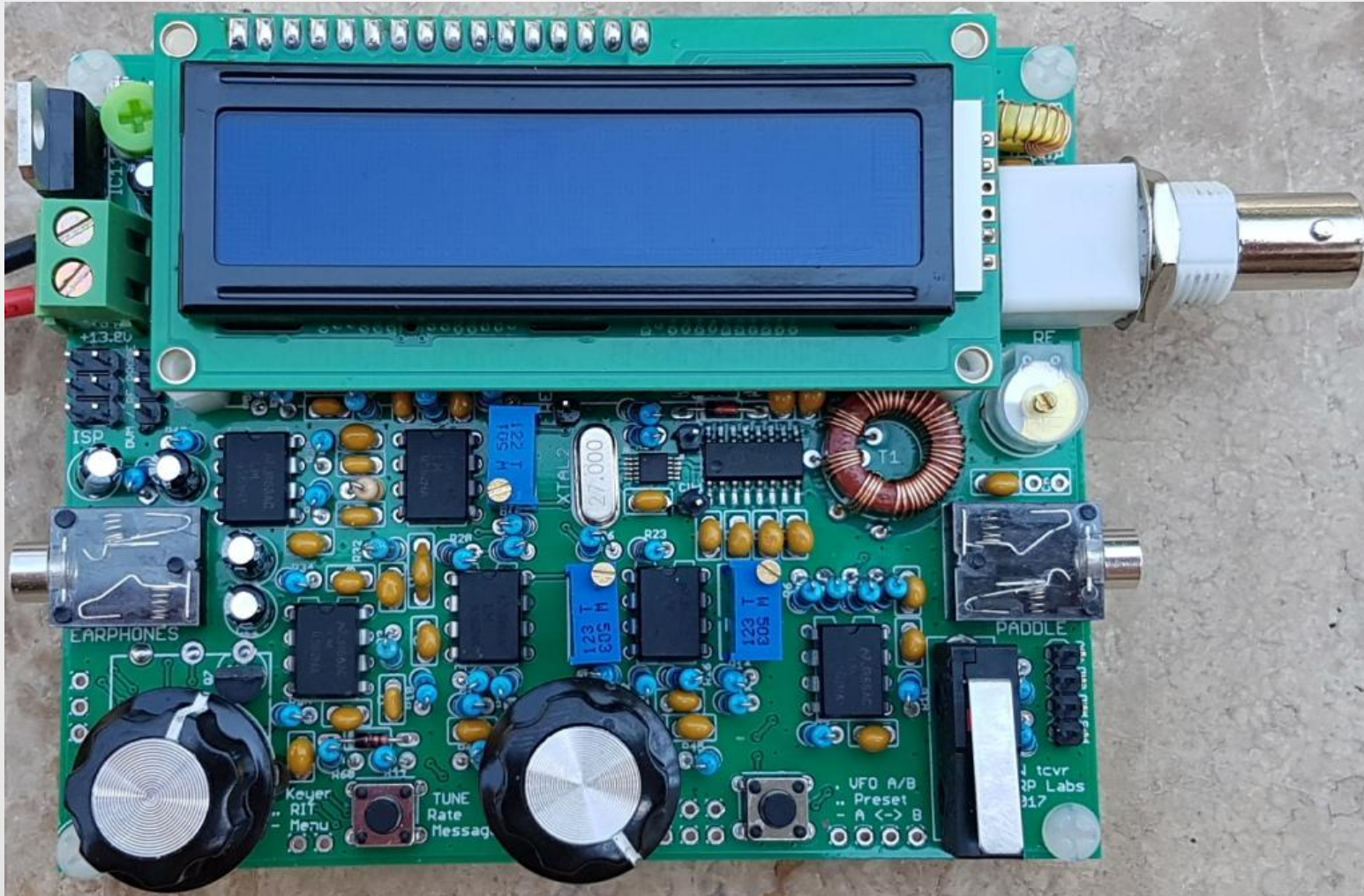
Features

- Easy to build, single-board design, 10 x 8cm, all controls are board-mounted
- Professional quality double-sided, through-hole plated, silk-screen printed PCB
- Choice of single band, 80, 60, 40, 30, 20 or 17m
- Approximately 3-5W CW output (depending on supply voltage)
- 7-16V recommended supply voltage
- Class E power amplifier, transistors run cool... even with no heatsinks
- 7-element Low Pass Filter ensures regulatory compliance
- CW envelope shaping to remove key clicks
- High performance receiver with at least 50dB of unwanted sideband cancellation
- 200Hz CW filter with no ringing
- Si5351A Synthesized VFO with rotary encoder tuning
- 16 x 2 blue backlight LCD screen
- Laminar keyer or straight key option included in the firmware
- Simple Digital Signal Processing assisted CW decoder, displayed real-time on-screen
- On-screen S-meter
- Full or semi QSK operation using fast solid-state transmit/receive switching
- Frequency presets, VFO A/B Split operation, RIT, configurable CW Offset
- Configurable sidetone frequency and volume
- Connectors: Power, 3.5mm keyer jack, 3.5mm stereo earphone jack, BNC RF output
- Built-in test signal generator and alignment tools to complete simple set-up adjustments
- Built-in test equipment: voltmeter, RF power meter, frequency counter, signal generator
- Beacon mode, supporting automatic CW or WSPR operation
- GPS interface for reference frequency calibration and time-keeping (for WSPR beacon)

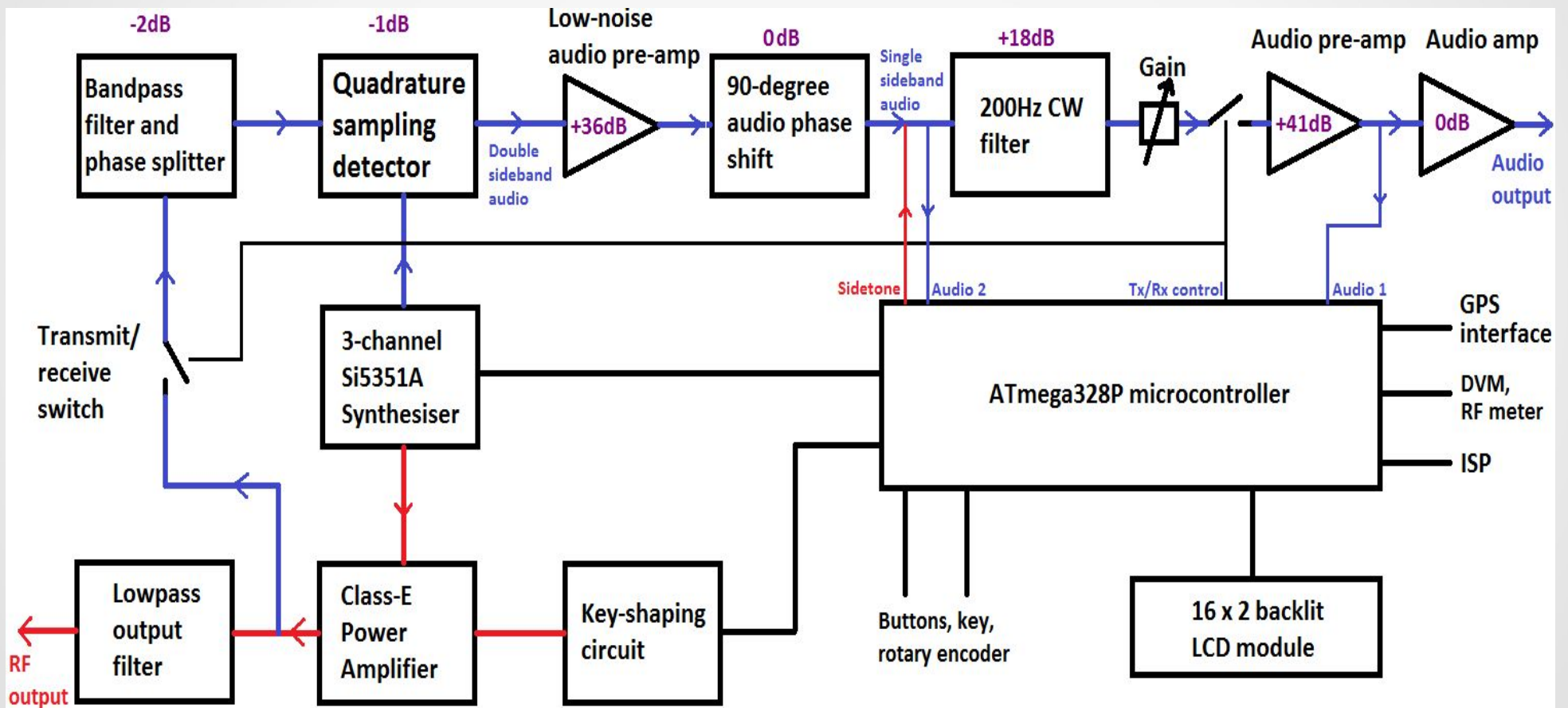
Board Views



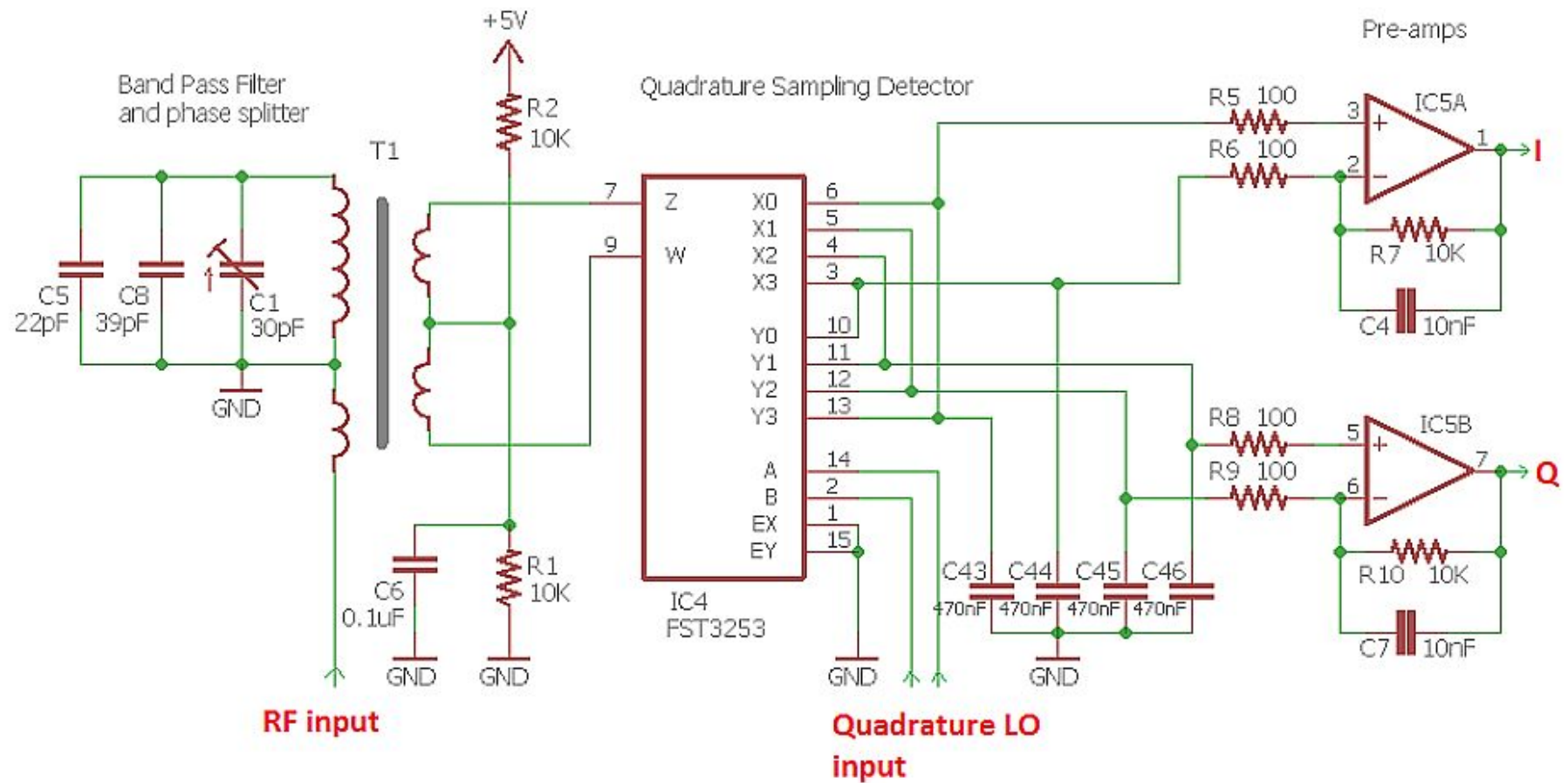
Board Views



Block Diagram



Quadrature Sampling Detector

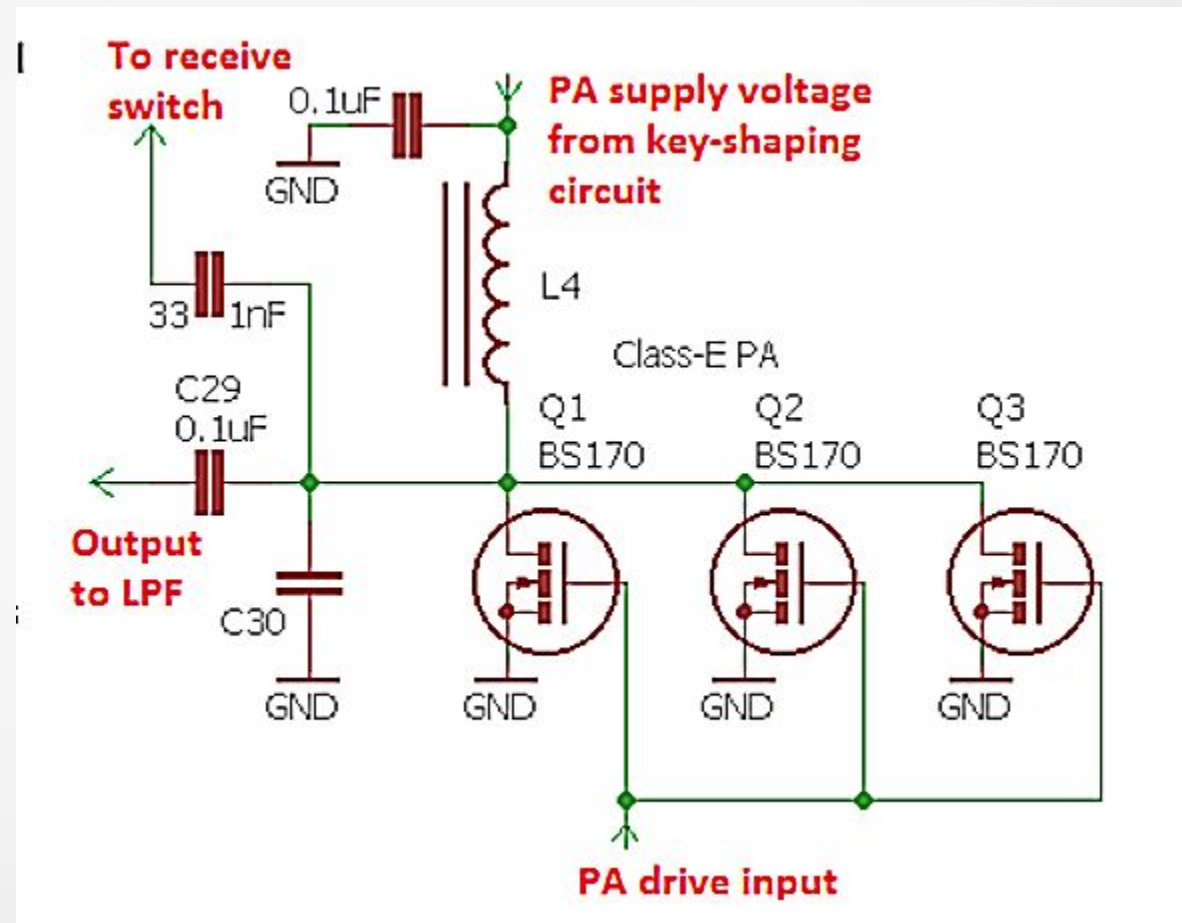


Class E Power Amp.

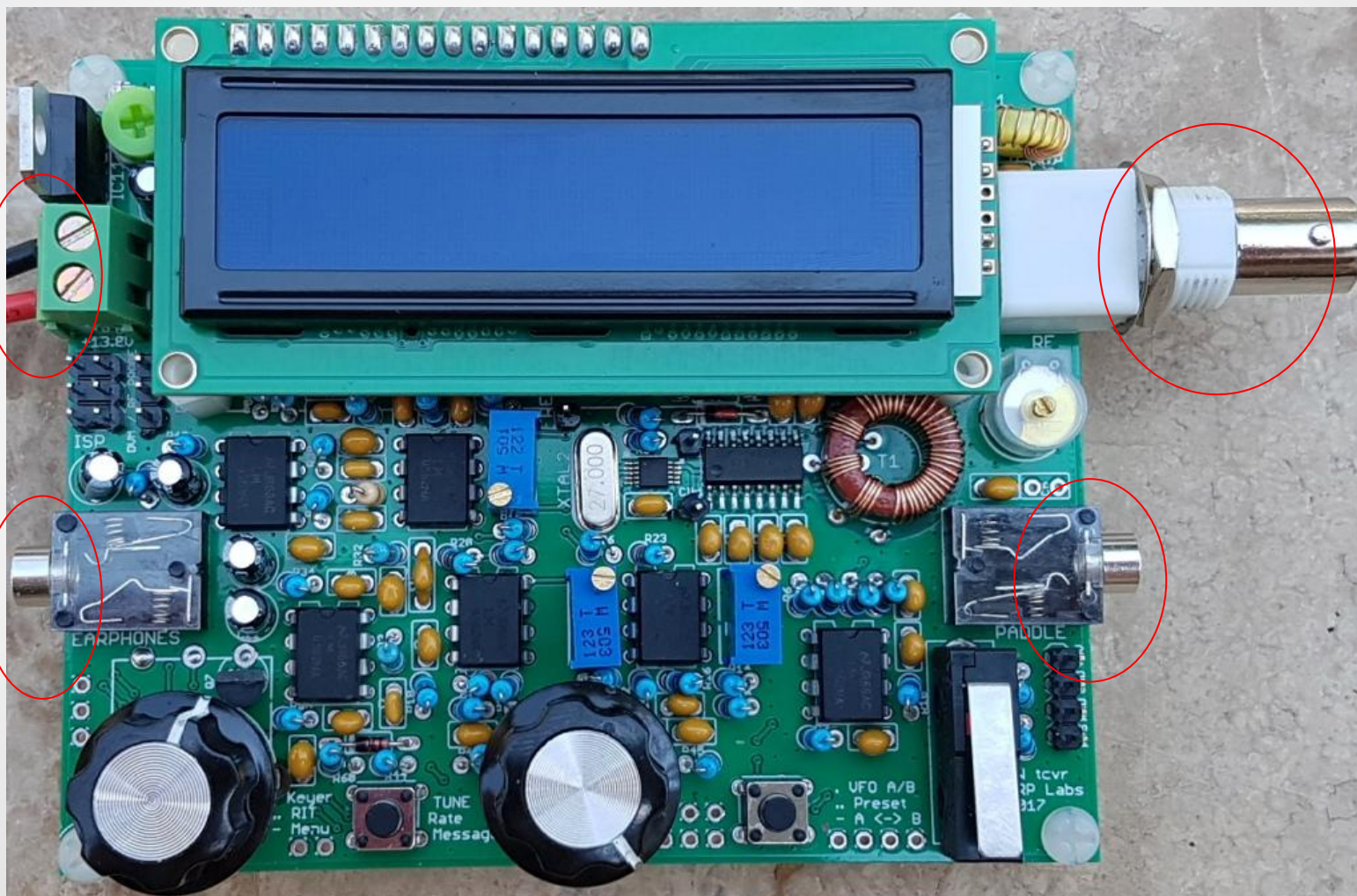
Efficiency 90%+

Heat sink requirement reduced

Less current required



Not enclosure friendly !!!!



J11HSV – Opted for traditional style





The Insides

Like my FC-1 transceiver, lots of little connectors

Board is easy to remove



Many functions, to few buttons

Controls

Two Push Switches

Encoder with push switch

Desired Functions

Keyer speed

RIT Adjust

Configuration Menu

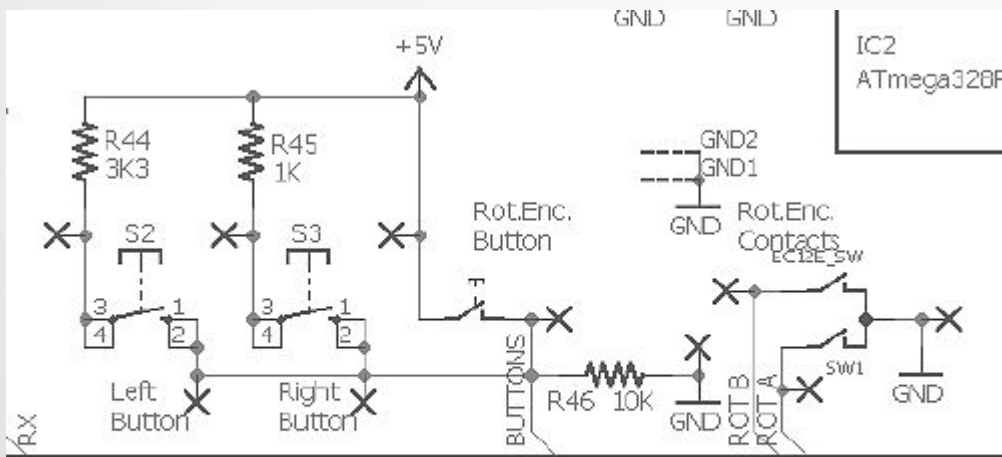
Tuning Rate

Stored Messages

VFO Mode, A, B, Split

Memory Preset

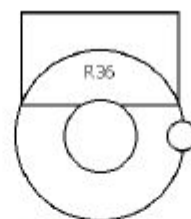
VFO A – B Swap



Single click, Double click.....Long Press !!!

8. Operation reference "cheat sheet"

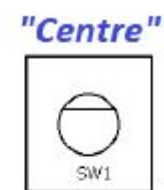
Main controls functions:



Gain



Select



Tune



Exit



Key

Left single press: Keyer speed adjust, then left again to select, or right to cancel.

Left double press: RIT adjust, then left again to select, or right to cancel

Left long press: Enter the configuration menu (see below)

Encoder turn: tuning, menu selection, editing, etc

Encoder press: change tune rate 1kHz->500Hz->100Hz->10Hz

Encoder dbl or long press: choose stored message. Then Left to send repeatedly, Centre to send once, or Right to cancel

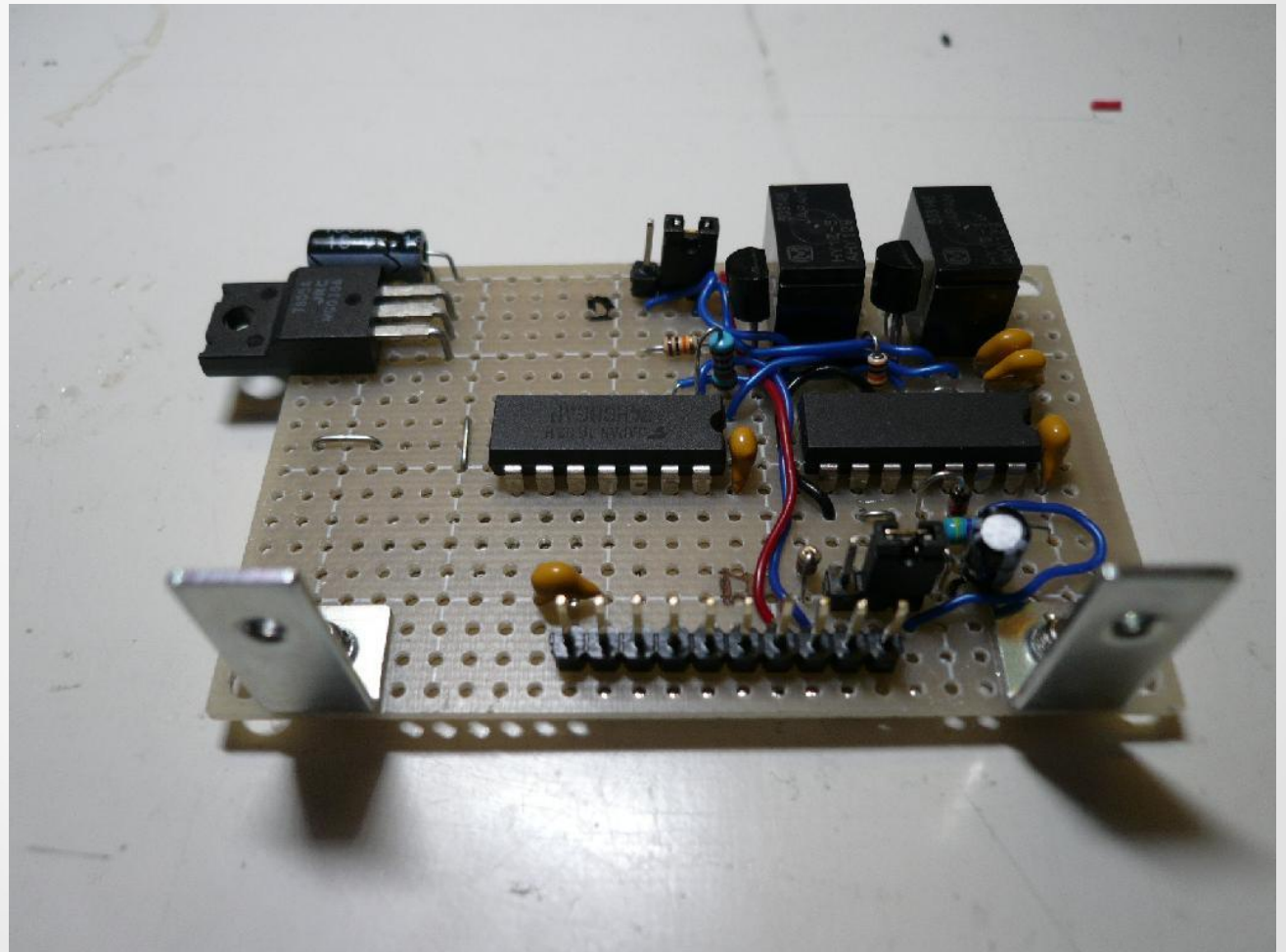
Right single press: change VFO mode: A, B, Split

Right Double press: Select frequency preset. Then press Left (save VFO to preset), Right (load preset to VFO) or Centre (cancel)

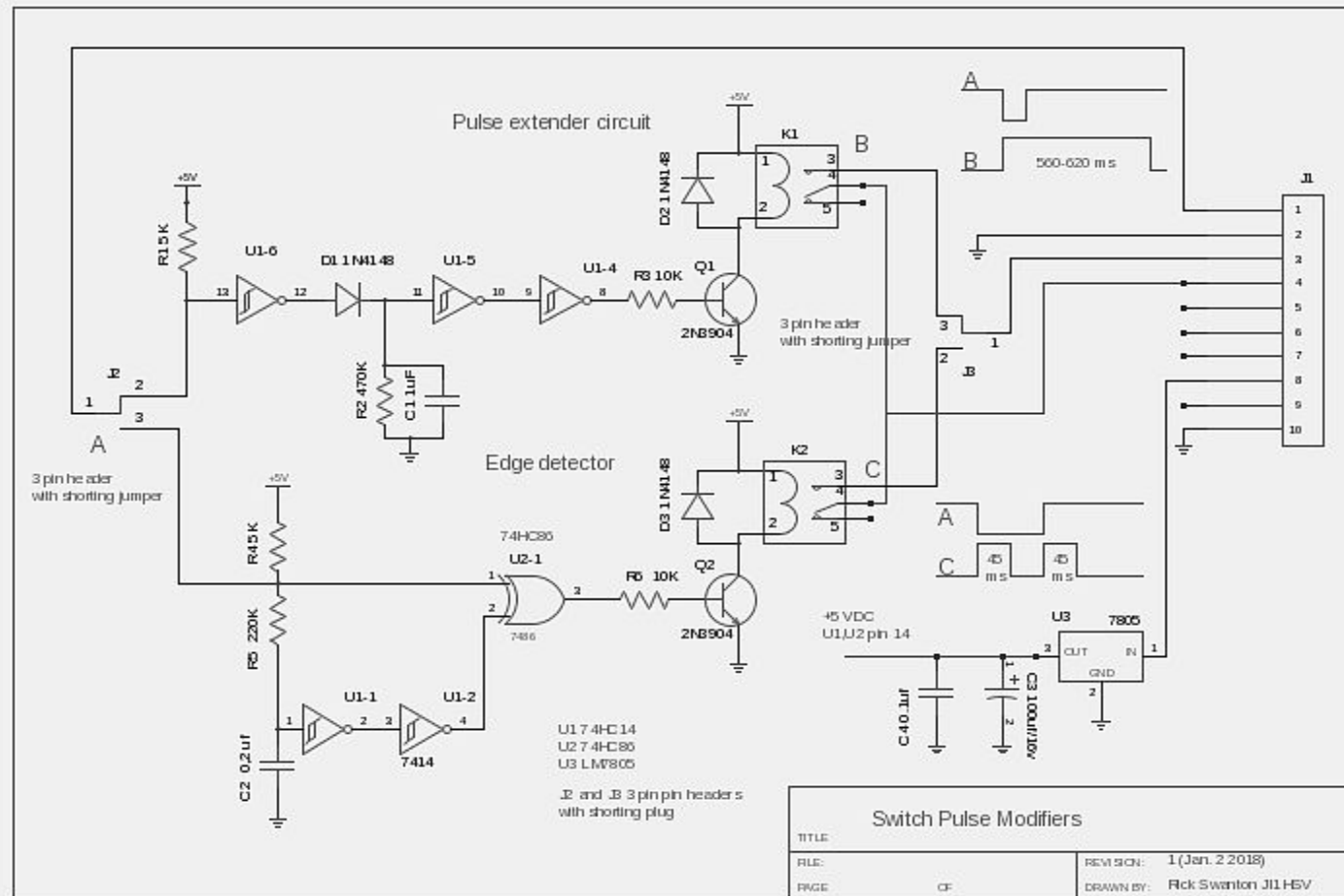
Right long press: swap VFO A and B frequencies

Adding Extra Push Switches

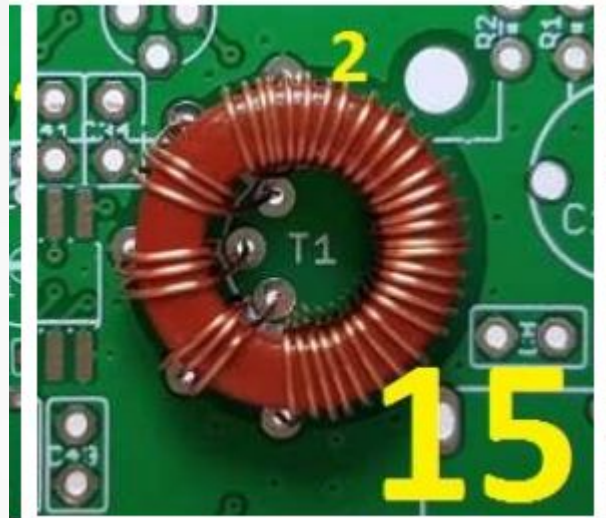
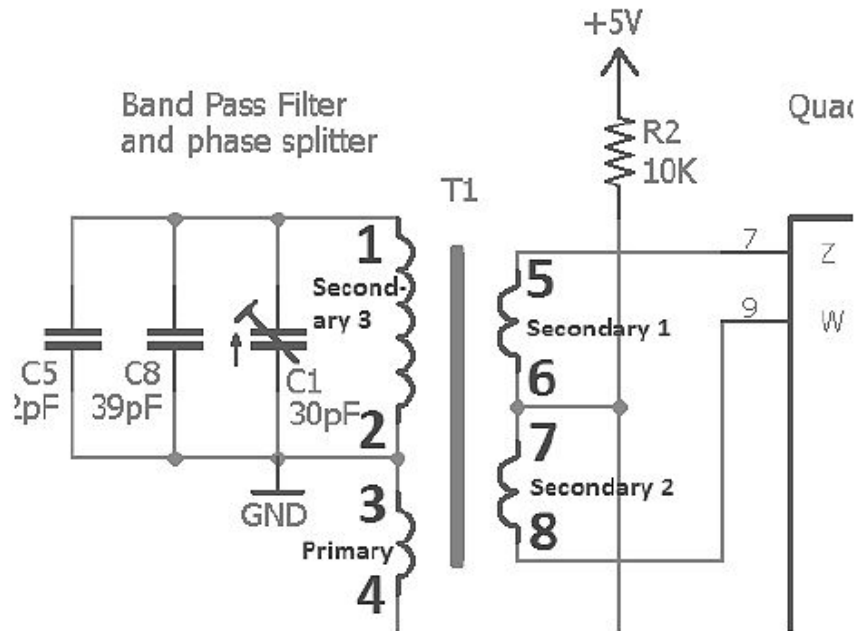
Circuit that simulates a long pulse or a double pulse



Switch Modifier circuit



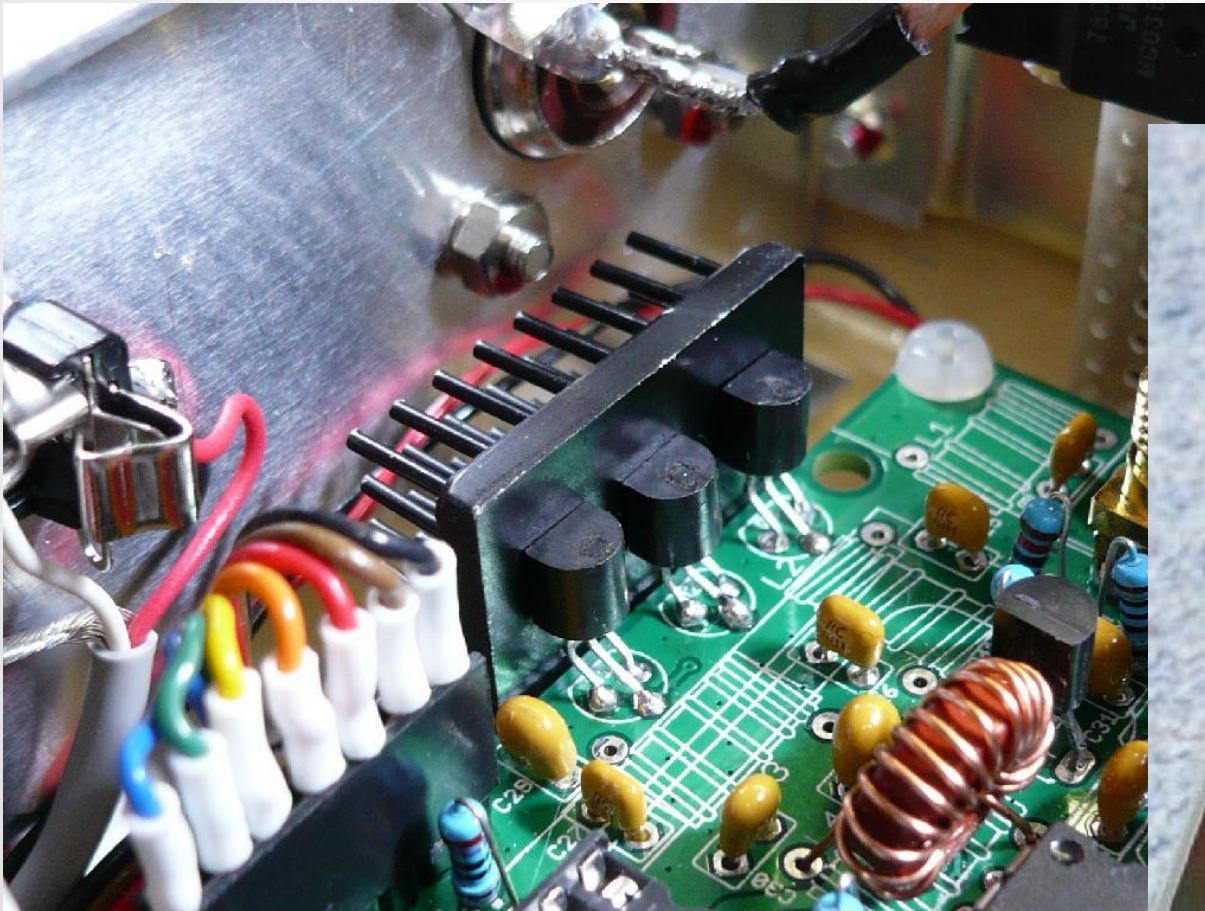
The Hard Part T1



band	primary	Sec 1	Sec 2	Sec 3
80	5	5	5	68
60	5	5	5	46
40	5	5	5	38
30	4	4	4	30
20	3	3	3	30
17	3	3	3	22

Adding Heatsinks

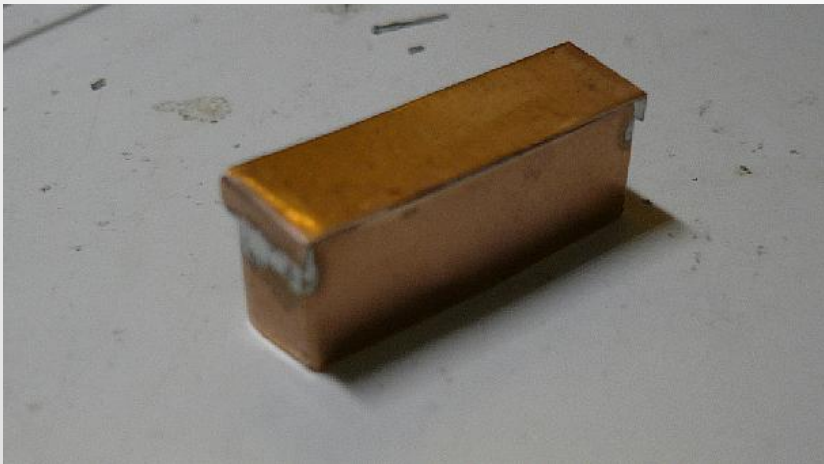
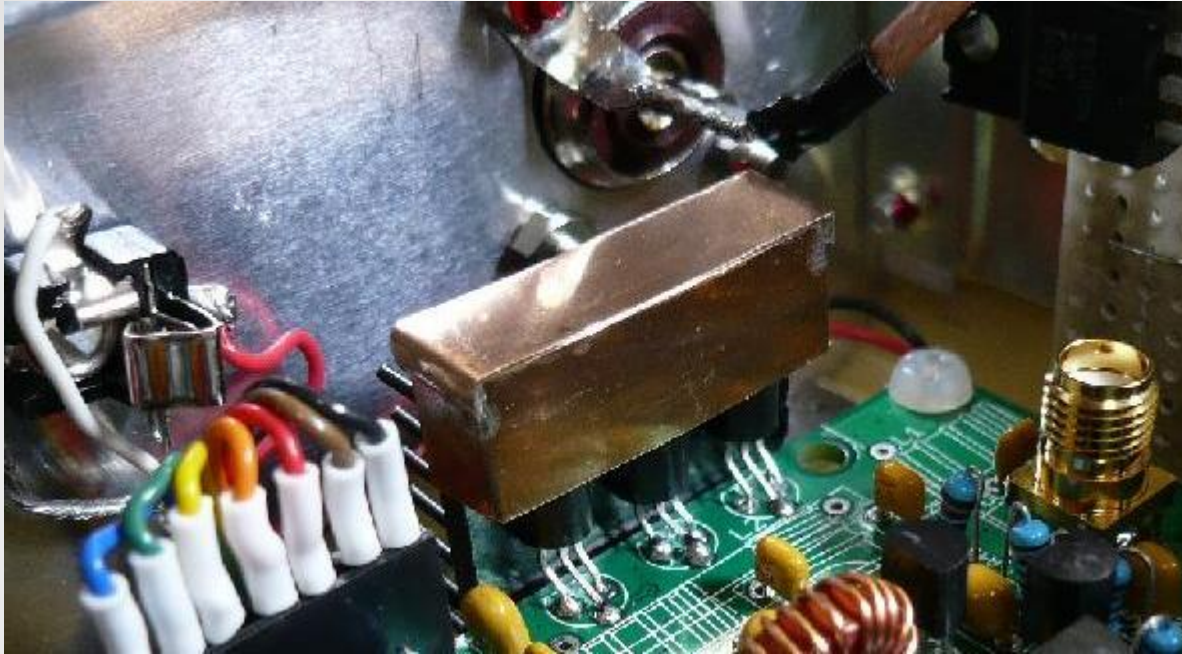
CPU heatsink
attached to case
with L bracket



Standard heat sink on
5v regulator.... With
some filing!



Holding the PA FETs in Place



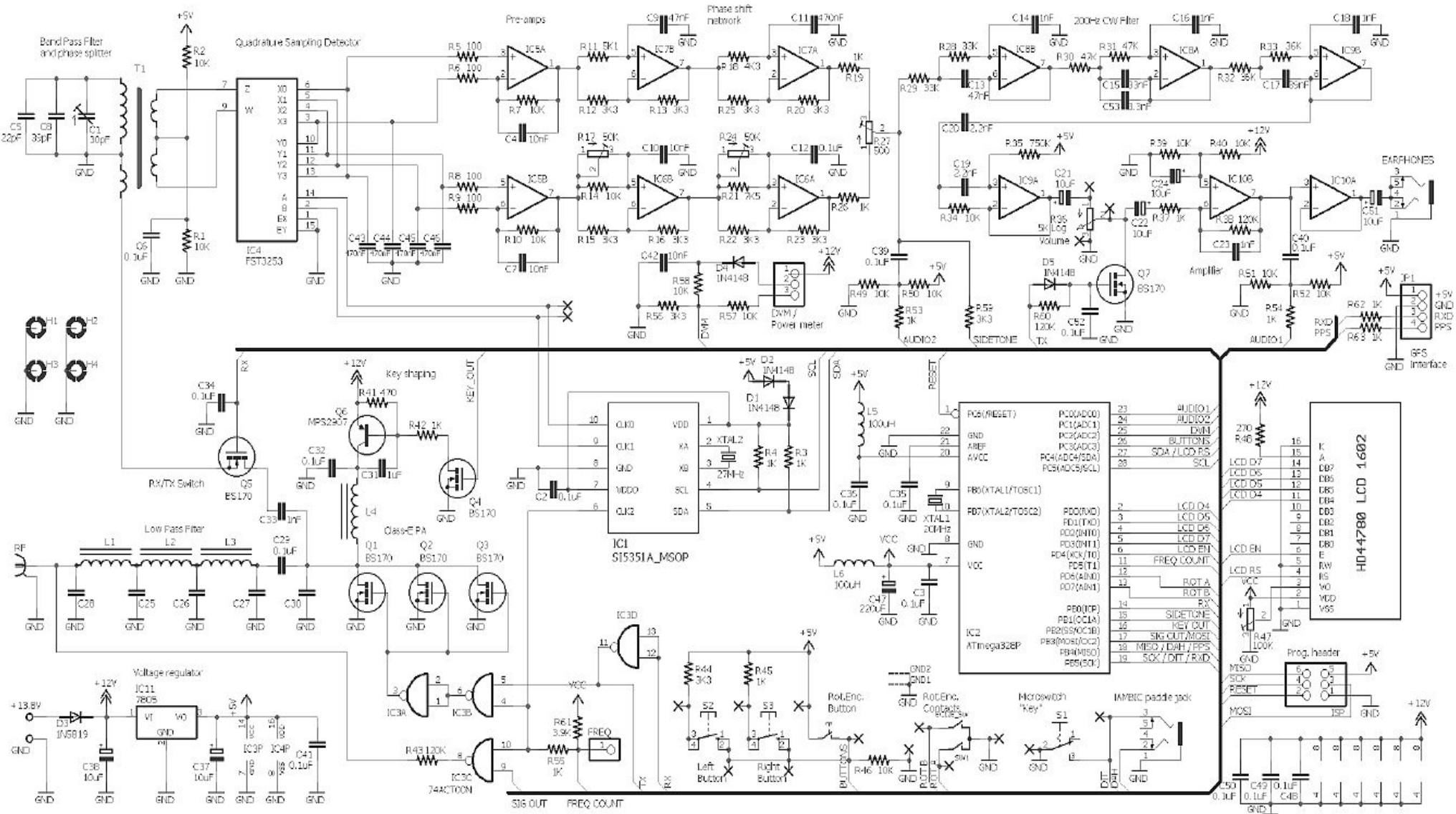
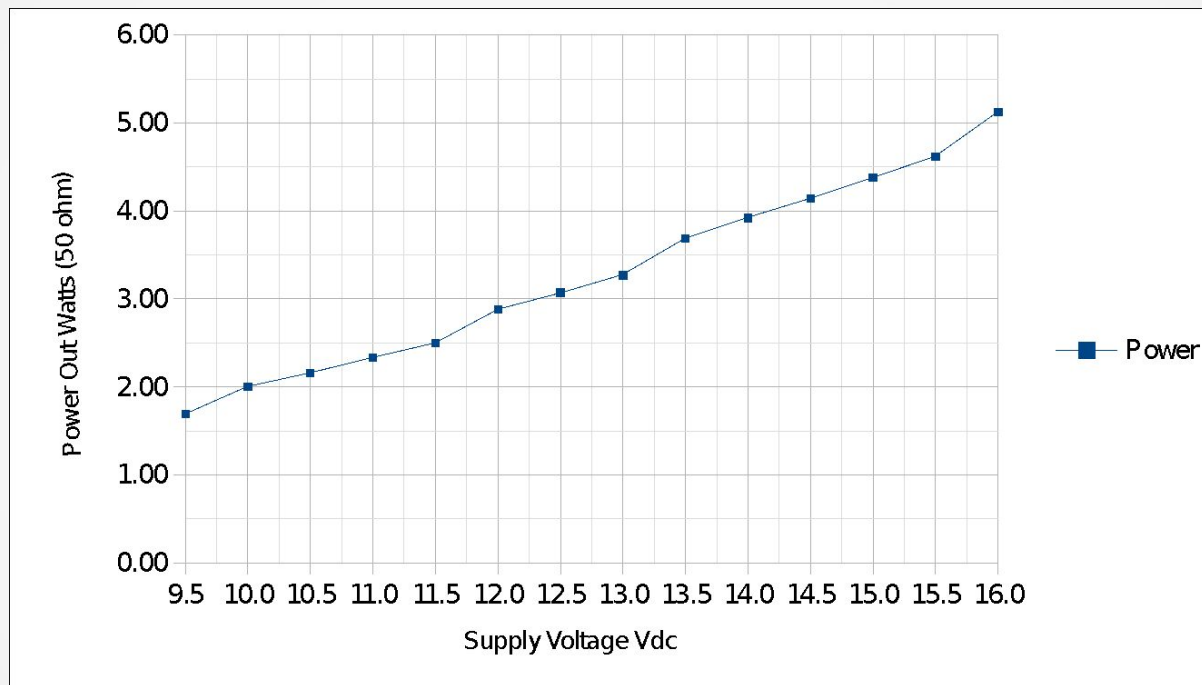


FIG. 1. Software-defined radio receiver circuit



FIG. 2. Software-defined radio transmitter circuit

Some Data



Ready to go...



FC-1 Mode Logic and Keying ... update

