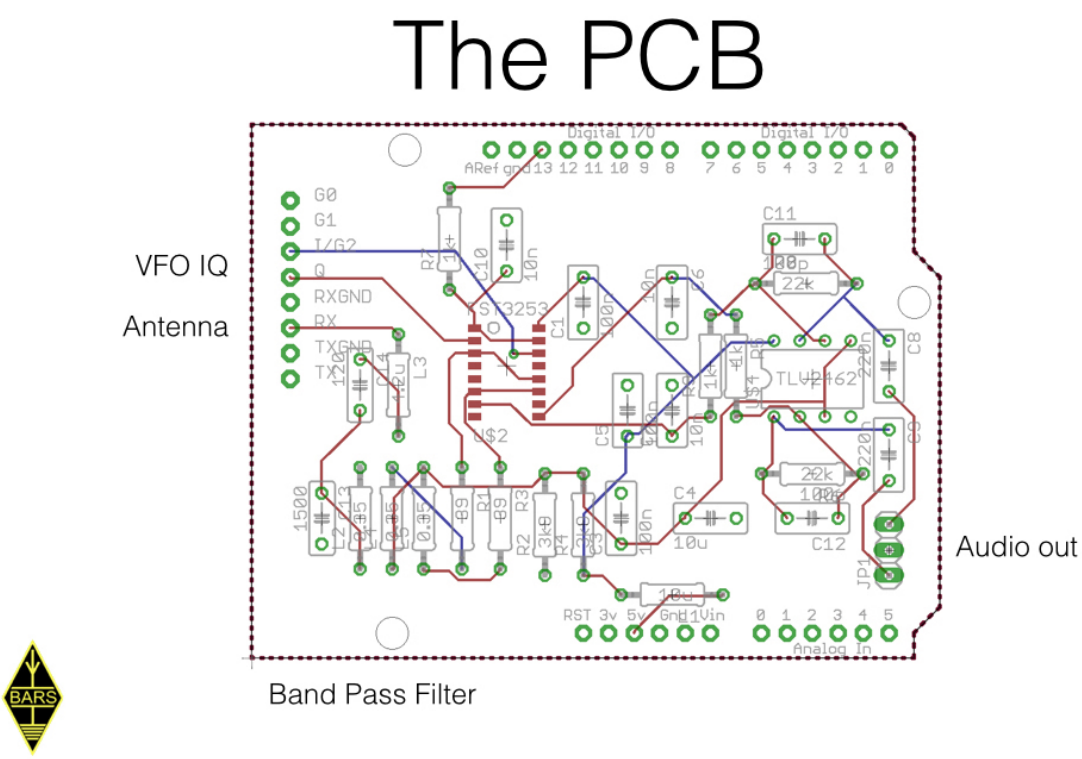
**Concept Session 7 - SDR Kit Build**
**Course Notes**

The SDR is build on a single Arduino shield.




The RFbus is at the left carrying the VFO IQ signals and the Rx Antenna input. The pin D13 carries the RX enable signal and the audio output to the DAC is on the right. The 5V supply is filtered by a 10uH inductor.

When building the shield remember that the FST3253 is a CMOS part, earth your soldering iron and build on an earthed conductive mat.

# Wind the coils

- T30-6 cores (0.3” Yellow)
- 4.2uH = 34 turns
  - 50cm of 28 swg wire
- 0.35uH trifler = 3 x 10t
  - 60cm of 28swg wire
  - cut into 3 and twist together

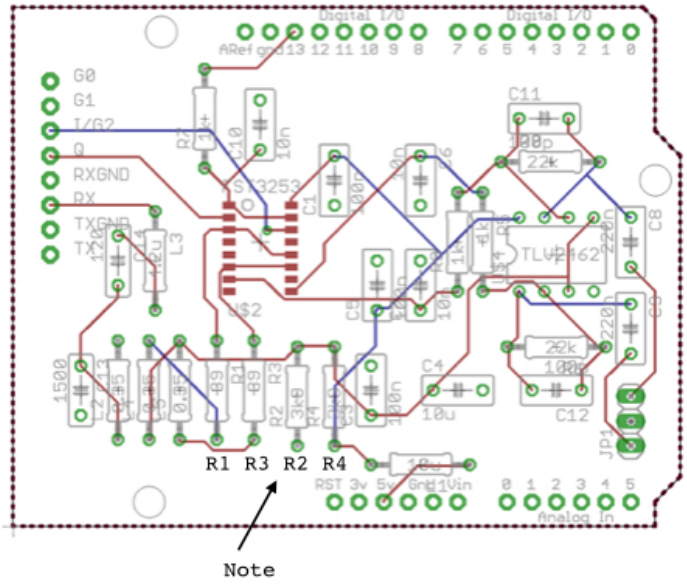
4.2uH 3 x 0.35uH

The first steps is to wind the toroids, the single 4.2uH with 37 turns and the trifilar 0.35uH with 10 turns, both on T30-6 (yellow) cores.

Next mount the resistors and capacitors - check the value of each before soldering!

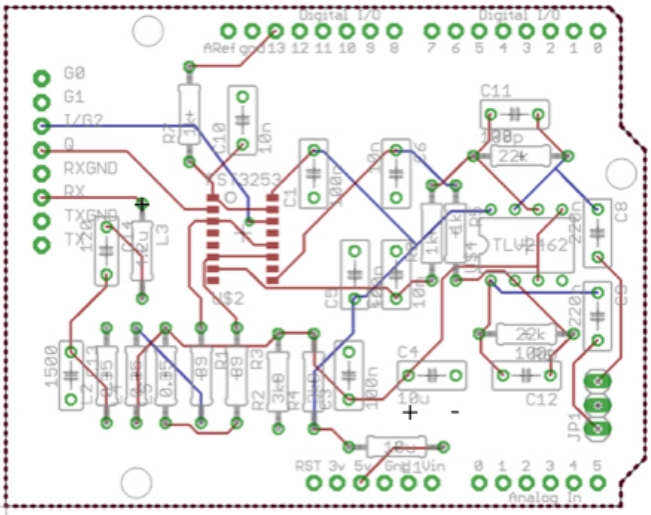
# Mount resistors

| Name | Value |
|---|---|
| R1 | 39 |
| R3 | 39 |
| R2 | 3k9 |
| R4 | 3k9 |
| R9 | 1k |
| R5 | 1k |
| R7 | 1k |
| R6 | 22k |
| R8 | 22k |

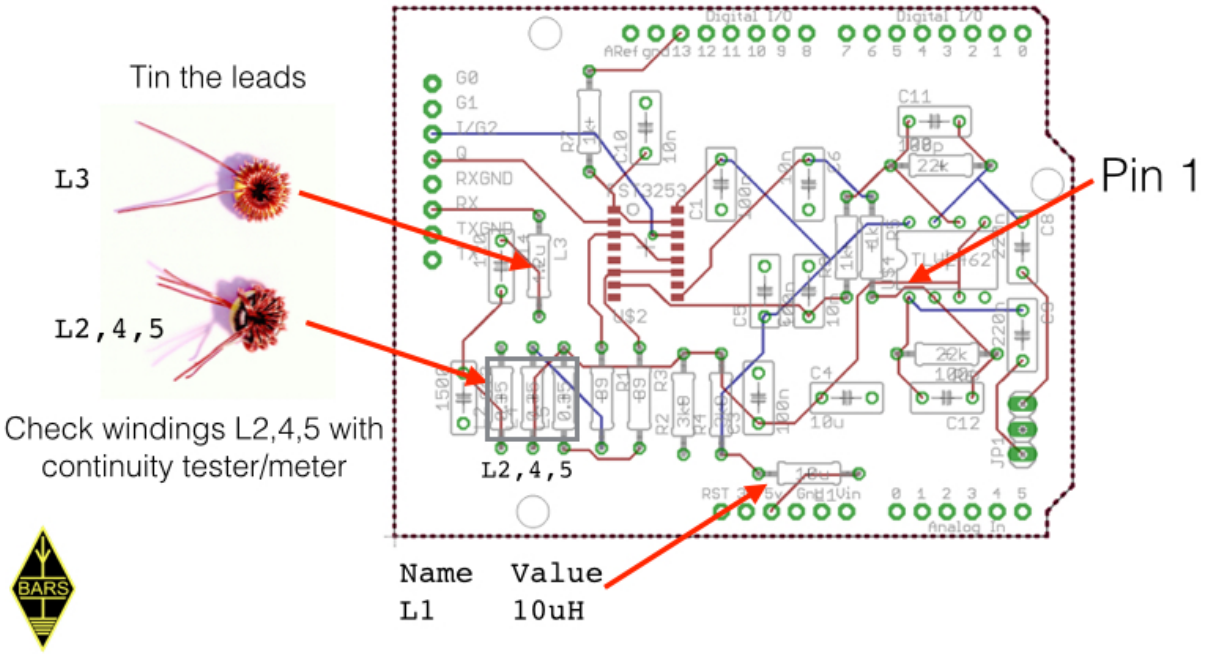



# Mount capacitors

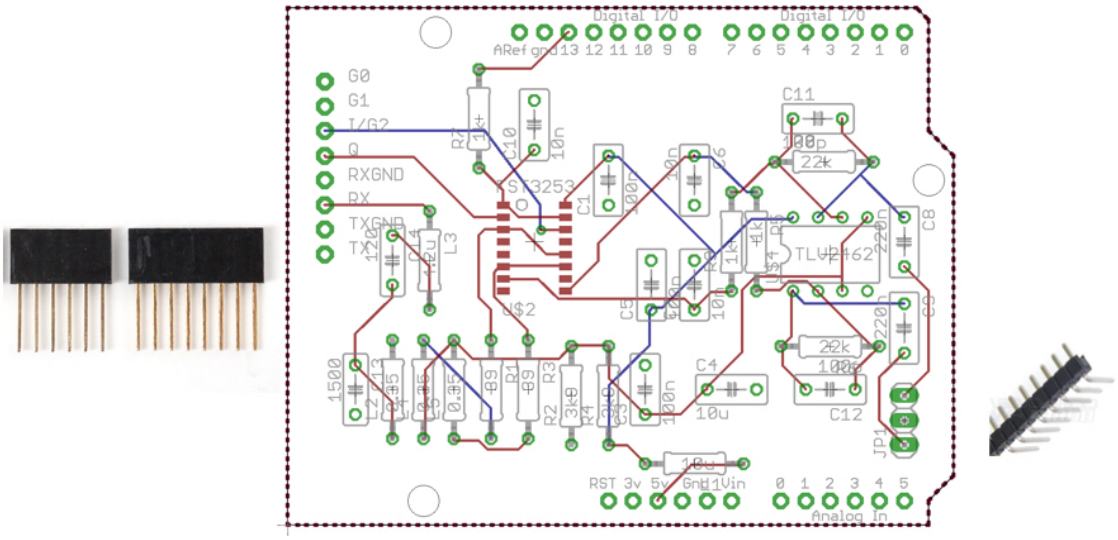
| Name | Value | |
|---|---|---|
| C13 | 1500p | 152 |
| C14 | 120p | 121 |
| C10 | 10n | 103 |
| C1 | 100n | 104 |
| C5 | 100n | 104 |
| C3 | 100n | 104 |
| C7 | 10n | 103 |
| C6 | 10n | 103 |
| C4 | 10u | +left |
| C11 | 100p | 101 |
| C12 | 100p | 101 |
| C8 | 220n | 224 |
| C9 | 220n | 224 |



# Mount coils & TLV2462



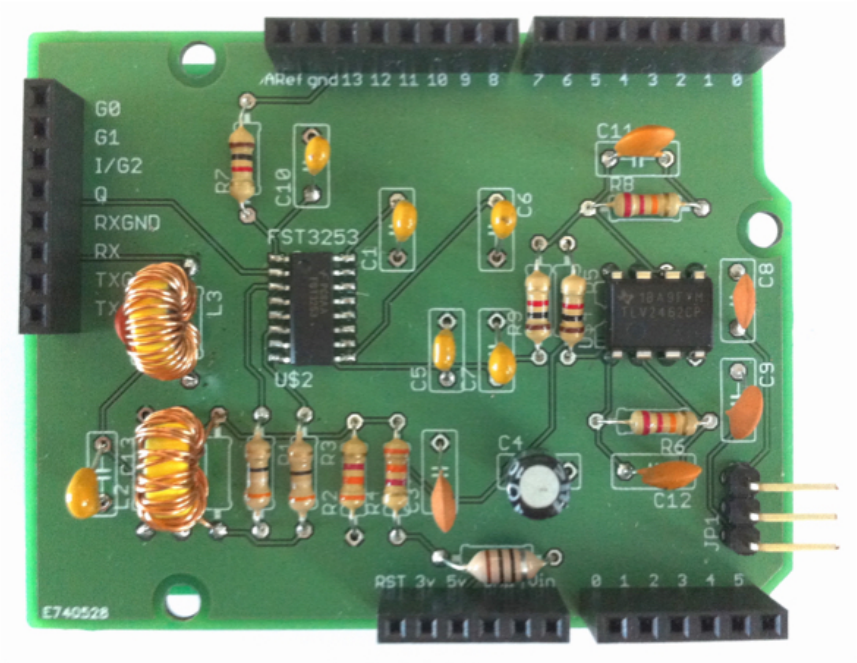

# Mount headers



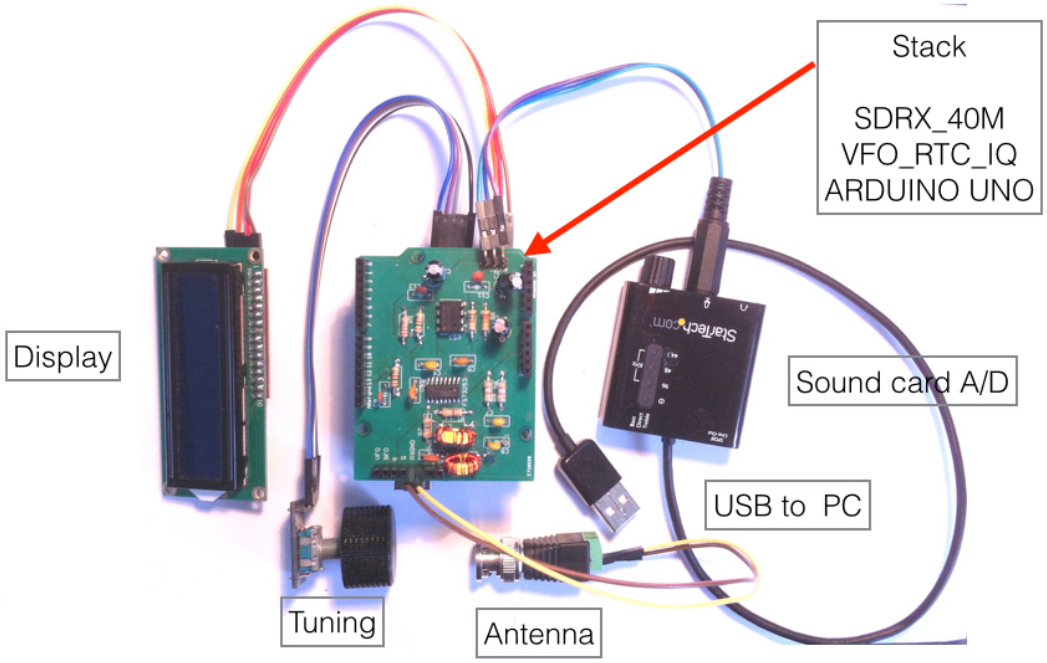
To get them vertical, plug in a board above

Now mount the 6 & 8 pin headers, followed by the 3 pin right angle header. Make sure to get the square to the board so they plug into the VFO shield easily.

# Final shield




# Connect it up




These are the connections. The Arduino is supplied by an external 9V battery (6 x AA suggested as the current drawn will quickly discharge a 9V cell). The output is connected to a suitable DAC or to your PC soundcard Mic input. The antenna is connected to the RFbus

pins RXGND and RX.

You can chose your favourite SDR program. The SDR has been tested most successfully with HDSDR running both on Windows and under Wine on Mac OSX.