

# CS-series SSB Transceiver Kit Part List 7 June 2018

## Band Independent Common Parts

| <u>Part</u>                         | <u>QTY</u> | <u>Comments</u>                                |
|-------------------------------------|------------|--|
| <b>Resistors</b>                    |            |  |
| 10 $\Omega$                         | 4          | BRN-BLK-BLK-GLD-BRN                            |
| 27 $\Omega$                         | 1          | RED-VIO-BLK-GLD-BRN                            |
| 51 $\Omega$                         | 1          | GRN-BRN-BLK-GLD-BRN                            |
| 120 $\Omega$                        | 1          | BRN-RED-BLK-BLK-BRN                            |
| 220 $\Omega$                        | 1          | RED-RED-BLK-BLK-BRN                            |
| 220 $\Omega$ 1W                     | 1          | RED-RED-BLK-BLK-BRN, Big Size                  |
| 330 $\Omega$                        | 1          | ORG-ORG-BLK-BLK-BRN                            |
| 680 $\Omega$                        | 1          | BLU-GRY-BLK-BLK-BRN                            |
| 1.5 k $\Omega$                      | 7          | BRN-GRN-BLK-BRN-BRN                            |
| 3.3 k $\Omega$                      | 3          | ORG-ORG-BLK-BRN-BRN                            |
| 10 k $\Omega$                       | 3          | BRN-BLK-BLK-RED-BRN                            |
| 10 k $\Omega$ trimmer               | 1          | 103. Blue and White. 3-pin                     |
| 10 k $\Omega$ potentiometer         | 1          | B10K marking for GAIN                          |
| <b>Capacitors</b>                   |            |  |
| 2 pF NPO                            | 2          | 2. Ceramic or monolithic.                      |
| 27 pF NPO                           | 1          | 27 or 270. Ceramic or monolithic.              |
| 47 pF NPO                           | 7          | 47 or 470. Ceramic or monolithic.              |
| 68 pF NPO                           | 1          | 68 or 680. Ceramic or monolithic.              |
| 0.01 $\mu$ F                        | 6          | 103. Ceramic or monolithic.                    |
| 0.1 $\mu$ F                         | 33         | 104. Ceramic or monolithic                     |
| 10 $\mu$ F                          | 1          | Electrolytic capacitor 16 V or higher          |
| 100 $\mu$ F                         | 2          | Electrolytic capacitor 16 V or higher          |
| 1000 $\mu$ F                        | 3          | Electrolytic capacitor 25 V or higher          |
| <b>Diodes, Transistors and IC's</b> |            |  |
| 1N4148                              | 6          | Glass body. Band is cathode.                   |
| 1N5820                              | 1          | Black body. Band is cathode.                   |
| C8050 or S8050                      | 1          | TO-92 transistor. 3-pin. RX muting.            |
| C3357                               | 1          | SMD 3-pin. First TX amplifier.                 |
| D882 or BD139                       | 1          | TO-126 transistor. 3-pin. TX driver amplifier. |
| IRF510                              | 1          | TO-220 MOSFET. 3-pin. Final TX amplifier.      |
| 7808                                | 1          | TO-220 IC. 3-pin. 8V voltage regulator.        |
| NE602A                              | 2          | DIP-8 IC. Balanced mixer.                      |

| <b><u>Part</u></b> | <b><u>QTY</u></b> | <b><u>Comments</u></b>     |
|--------------------|-------------------|----------------------------|
| MC1350             | 1                 | DIP-8 IC. IF amplifier.    |
| TDA2822M or D2822A | 1                 | DIP-8 IC. Audio amplifier. |
| IC Socket          | 4                 | DIP-8.                     |

### ***Inductors and Transformers***

|   |   |                                      |
|---|---|--------------------------------------|
| 4.7 $\mu$ H Solenoidal  | 1 | YEL-VIO-GLD-SLV                      |
| 100 $\mu$ H Solenoidal  | 3 | BRN-BLK-BRN-SLV                      |
| FT37-43 Toroid  | 3 | Black, for RF wide-band transformers |
| T37-2 Toroid  | 2 | Red, for low-pass filters            |
| Magnet Wire 2m for toroid winding instruction, see band dependent sections below. |   |                                      |

### ***Others***

|                     |   |   |
|---------------------|---|---|
| IF Crystals         | 7 | 8.4672 MHz, HC-49S  |
| Black chassis screw | 8 | For front and rear panels.                                      |
| Chassis Feet        | 4 | 14 mm tall.   |
| Thermal insulator   | 2 | For IRF510 and D882, as insulator between chassis and plate     |
| TO-220 washer       | 1 | Small and white, for IRF510, as insulator between plate and nut |
| Silver M3x10 Screw  | 6 | For chassis feet and semiconductors.                            |
| Silver M3 Nut       | 6 | For chassis feet and semiconductors.                            |
| Phone Jack          | 1 | 3.5mm, for speaker output                                       |
| DC IN Connector     | 1 | 2.1mm type. Center positive.                                    |
| Mic Connector       | 1 | 8-pin type socket.  |
| SIP5 Connector      | 1 | PCB mic connector   |
| SIP5 Cable          | 1 | Cable between Mic Connector and PCB                             |
| Black plastic knob  | 2 | For both TUNE and GAIN controls                                 |
| 9V Relay            | 4 | HK4100F-DC9V-SHG. Yellow body                                   |
| Antenna Connector   | 1 | BNC type, PCB mount.  |
| Chassis             | 1 | Black, aluminum alloy material                                  |
| PCB                 | 1 | Main board,   |
| Panel               | 2 | black front panel and rear panel                                |
| Jumper cap          | 1 | For UNBAL jumper short  |
| Quick Guide         | 1 | Printed one-page guide.   |
| Chassis Foot Screw  | 1 | Self-Taping foot screw  |

## Band Dependent Parts

| <u>Part</u> | <u>QTY</u> | <u>Comments</u> |
|-------------|------------|-----------------|
|-------------|------------|-----------------|

### 75/80-meter Band Dependent Parts

|                         |   |                                   |
|-------------------------|---|-----------------------------------|
| 27 pF NPO               | 4 | 27 or 270. Ceramic or monolithic. |
| 820 pF NPO              | 4 | 821. Ceramic or monolithic.       |
| 3.8M IFT/ shielded coil | 4 | DIY7-3.8                          |

Toroids winding:

8 bi-filar turns on 3 pcs of FT37-43 black toroids

22 turns on 2 pcs T37-2 red toroids.

### 40-meter Band Dependent Parts

|                       |   |                                   |
|-----------------------|---|-----------------------------------|
| 27 pF NPO             | 4 | 27 or 270. Ceramic or monolithic. |
| 470 pF NPO            | 4 | 471. Ceramic or monolithic.       |
| 7M IFT/ shielded coil | 4 | DIY7-7                            |

Toroids winding:

5 bi-filar turns on 3 pcs of FT37-43 black toroids

15 turns on 2 pcs T37-2 red toroids.

### 20-meter Band Dependent Parts

|                        |   |                                   |
|------------------------|---|-----------------------------------|
| 15 pF NPO              | 4 | 15 or 150. Ceramic or monolithic. |
| 270 pF NPO             | 4 | 271. Ceramic or monolithic.       |
| 14M IFT/ shielded coil | 4 | DIY7-14                           |

Toroids winding:

5 bi-filar turns on 3 pcs of FT37-43 black toroids

11 turns on 2 pcs T37-2 red toroids.

### 15-meter or 17-meter Band Dependent Parts

|                        |   |                                   |
|------------------------|---|-----------------------------------|
| 15 pF NPO              | 4 | 15 or 150. Ceramic or monolithic. |
| 150 pF NPO             | 4 | 151. Ceramic or monolithic.       |
| 21M IFT/ shielded coil | 4 | DIY7-21                           |

Toroids winding:

5 bi-filar turns on 3 pcs of FT37-43 black toroids

8 turns on 2 pcs T37-2 red toroids.

### Other parts supplied with Kit options – see additional parts list.

- 1) Option 1 – Base Radio – Standard CS-Series Radio – Standard Sandwich.
- 2) Option 2 – Base Radio plus OLED Display
- 3) Option 3 – Base Radio plus Small OLED Display
- 4) Option 4 – Base Radio plus Dual Band

| <b><u>Part</u></b>  | <b><u>QTY</u></b> | <b><u>Comments</u></b>                       |
|---|-------------------|--|
| <b><u>Option 1 – Standard Sandwich</u></b>                  |                   |  |
| 330 Ω   | 3                 | ORG-ORG-BLK-BLK-BRN                          |
| 1 kΩ  | 5                 | BRN-BLK-BLK-BRN-BRN                          |
| 0.1 μF  | 9                 | 104. Ceramic or monolithic                   |
| Dual color LED  | 1                 | 3mm dual color D1                            |
| Sandwich Crystal  | 1                 | 27 MHz, HC-49S X1                            |
| Rotary encoder w/button                                     | 1                 | 20 pulses per rev., for Sandwich SW1         |
| Arduino Pro Mini 3.3V                                       | 1                 | code pre-programmed, for Sandwich            |
| PCB   | 1                 | Sandwich control board,                      |
| PCB   | 1                 | Sandwich OSC board with SI5351a pre-mounted. |
| <b><u>Option 2 – Base Radio plus OLED Display</u></b>       |                   |  |
|   | 3                 | 104 capacitors                               |
|   | 1                 | Rotary encode with switch                    |
|   | 1                 | 5-volt regulator                             |
|   | 1                 | OLED Display                                 |
|   | 1                 | PCB - Control Board                          |
|   | 1                 | Face Plate                                   |
|   |                   | Assorted Header Pins                         |
| 330 Ω   | 2                 | ORG-ORG-BLK-BLK-BRN                          |
| 1 kΩ  | 4                 | BRN-BLK-BLK-BRN-BRN                          |
| 0.1 μF  | 6                 | 104. Ceramic or monolithic                   |
| Sandwich Crystal  | 1                 | 27 MHz, HC-49S X1                            |
| Rotary encoder w/button                                     | 1                 | 20 pulses per rev., for Sandwich SW1         |
| PCB Oscillator Board  | 1                 | Sandwich OSC board with SI5351a              |
| Arduino Pro Mini 3.3V                                       | 1                 | code pre-programmed, for Sandwich            |
| <b><u>Option 3 – Base Radio plus Small OLED Display</u></b> |                   |  |
|   | 3                 | 104 capacitors                               |
|   | 1                 | Rotary encode with switch                    |
|   | 1                 | 5-volt regulator                             |
|   | 1                 | Small OLED Display                           |
|   | 1                 | PCB - Control Board                          |
|   | 1                 | Face Plate                                   |
|   |                   | Assorted Header Pins                         |
| 330 Ω   | 2                 | ORG-ORG-BLK-BLK-BRN                          |
| 1 kΩ  | 4                 | BRN-BLK-BLK-BRN-BRN                          |
| 0.1 μF  | 6                 | 104. Ceramic or monolithic                   |
| Sandwich Crystal  | 1                 | 27 MHz, HC-49S X1                            |

| <b><u>Part</u></b>      | <b><u>QTY</u></b> | <b><u>Comments</u></b>               |
|-------------------------|-------------------|--------------------------------------|
| Rotary encoder w/button | 1                 | 20 pulses per rev., for Sandwich SW1 |
| PCB Oscillator Board    | 1                 | Sandwich OSC board with SI5351a      |
| Arduino Pro Mini 3.3V   | 1                 | code pre-programmed, for Sandwich    |

**Option 4 – Base Radio plus Dual Band**

Includes Option 2 as indicated above and:

**Single Board Dual Band Main Board**

Part Value Type

All Kits

|   |  |
|---|--|
| 2 | D1, D2 1N4148 or equivalent diode            |
| 2 | K1, K2 OMRON G5V-2 DC9V relay                |
| 2 | X1, X3 2-pin 22-23-2021 or similar Connector |
| 1 | X2 3-pin 22-23-2031 or similar Connector     |
| 3 | PCB  |
| 2 | Sets of Cables Filter control                |
| 1 | DPDT Mini Switch Band Switch assembly        |
| 1 | Software download/update upon request        |

**Single Mini Band Boards**

|                 | Part | Value  | Type              |
|-----------------|------|--------|-------------------|
| <b>80 Meter</b> | 1    | C2     | 2p capacitor      |
|                 | 2    | C1, C3 | 27p capacitor     |
|                 | 2    | L1, L2 | DIY7-3.8 inductor |
| <b>40 Meter</b> | 1    | C2     | 2p capacitor      |
|                 | 2    | C1, C3 | 27p capacitor     |
|                 | 2    | L1, L2 | DIY7-7 inductor   |
| <b>20 Meter</b> | 1    | C2     | 2p capacitor      |
|                 | 2    | C1, C3 | 12p capacitor     |
|                 | 2    | L1, L2 | DIY7-14 inductor  |
| <b>17 Meter</b> | 1    | C2     | 2p capacitor      |
|                 | 2    | C1, C3 | 12p capacitor     |
|                 | 2    | L1, L2 | DIY7-21 inductor  |
| <b>15 Meter</b> | 1    | C2     | 2p capacitor      |
|                 | 2    | C1, C3 | 12p capacitor     |
|                 | 2    | L1, L2 | DIY7-21 inductor  |
|                 | 2    | X1, X2 | 4 pin headers     |