

Assembly details

Frequency Counter

There are no special features when assembling the frequency meter. With the correct installation of all elements, the frequency meter starts working when it is first turned on, but nevertheless it is necessary to pay attention to the following:

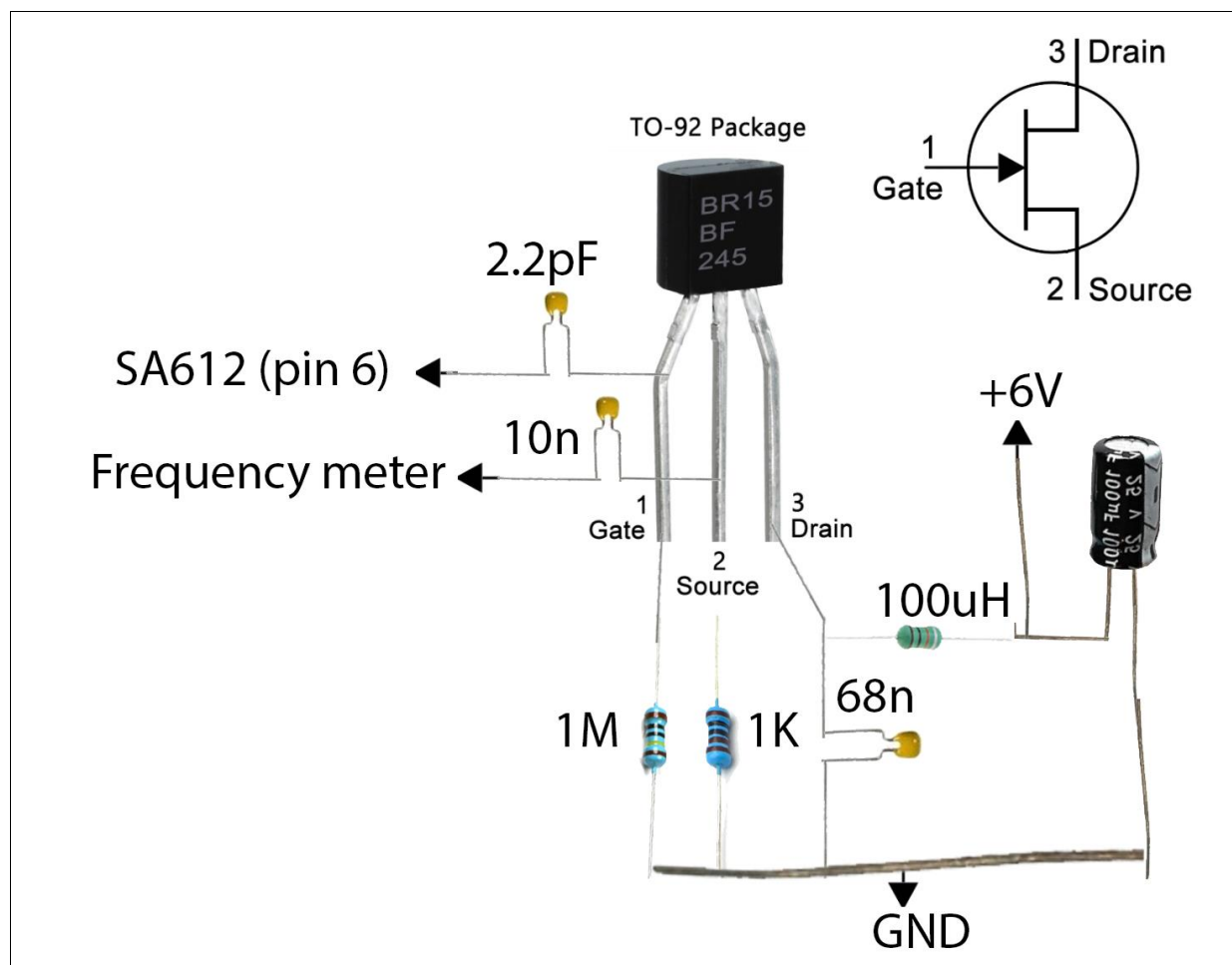
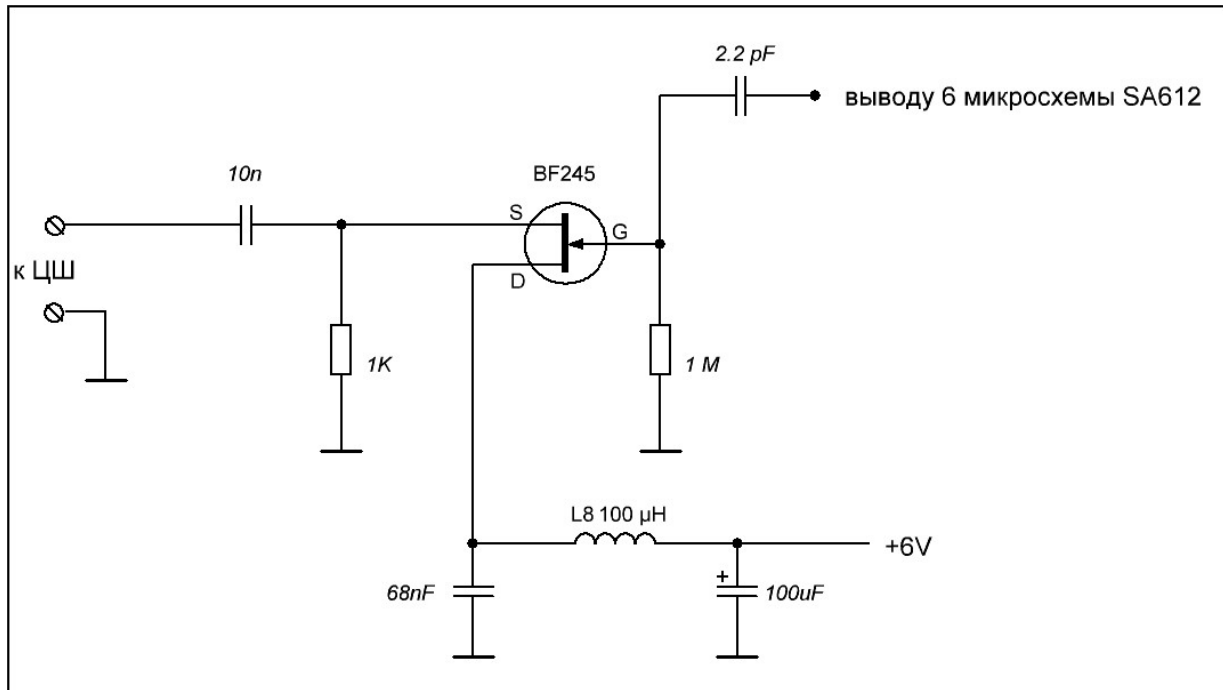
- Resistor R9 - do not install!
- Before soldering the indicator, it is recommended to temporarily fix a multi-turn variable resistor in the housing, which is located directly under the frequency meter board, and then attach the screen to the housing and try on the board. All elements should not interfere with each other, and not touch the outputs, etc. After fitting, it is recommended to install the mounting to the indicator.
- From the back of the board to pins 1, 11 and 20 of the processor, carefully solder three wires 5-7cm long (cut off from the harness). This wire will be soldered on the galette switch to switch the frequency on the screen depending on the selected range. The wire from pin 1 will be used for a range of 20 meters. The wire from pin 11 will be used for a range of 40 meters. The wire from the output 20 is a signal +5V. Before installation, note for yourself where which wire is for convenience.

Receiver's motherboard

1. We recommend that you first install small parts: resistors, inductors, diodes, capacitors and jumpers (jumpers are convenient to take from the cut ends of resistors and inductors).
2. Next, solder electrolytic and tuning capacitors, transistor and microcircuits. The jumper over the transistor VT1 can not be installed. **Attention! The LED is not mounted on the board!**
3. Assemble the L8 coil, carefully clean the ends and solder onto the board. It is recommended to glue it with hot glue to the board in order to avoid tearing off the ends when transporting the receiver.
4. If there are measuring instruments (generator and RF voltmeter), it is possible to pre-configure the input circuits of the ranges. The description and the setup procedure are in the documentation for the receiver.
5. Instead of the usual variable resistors R4 and R8, a 10K multi-turn resistor is used in the set. **Attention! instead of R4, a constant 200-200R resistor must be installed.** Also note that the center pin R8 on the multi-turn resistor is on the top pin. The remaining two outputs are soldered to the remaining places. After connecting the frequency meter, it will be possible to check which way the resistor turns (to increase the frequency when turning to the right or vice versa), and if necessary, swap these pins.
6. Connect the variable resistors R1, R8, as well as headphones to the receiver output and turn on for the first time by supplying 9-15volt power to the input. If the receiver has started, then turn it off and proceed to the next step – connecting the frequency meter and setting up the VFO. If the receiver does not start, then carefully check the installation of all elements and try again.

Connection of Frequency Counter

- It is recommended to use a buffer stage to connect the frequency meter to the receiver board. Otherwise, there is a risk that the frequency meter will work unstable. This set is represented by a simple mounted installation, but fully justifies its use. A diagram and an illustration of the installation is presented below.



Switches

1. The 3T4P (3 turns, 4 poles) switch is designed for three switches (20, 40 and 80 meters) and four groups of terminals for connection. In the first three sections, it is necessary to connect the harness from the input circuits:
 - i. The first section: Signal pin 7 + pins 1, 2 and 3
 - ii. Second section: Signal pin 8 + pins 4, 5, and 6.
 - iii. Third section: Signal pin 12 + pins 9, 10 and 11
 - iv. Fourth section: Signal wire from the frequency meter from pin 20 + Empty pin + from pins 1 and 11 of the frequency meter.
2. Please note that all pins must be connected synchronously, i.e., for example, when switching to a range of 40 meters, pins 2, 5, 10 and 11 (from the frequency meter processor) must be connected. As a rule, if you take a regular tester in diode mode, it is convenient to ring the switch contacts and understand the specifics of switching.
3. The second switch is to enable automatic gain control. The switch is installed in the gap of the HL1 LED line. This way we can control the activation and deactivation of the AGC function.

VFO adjustment

1. When the frequency meter is connected, you can observe the frequency of the VFO on the screen. The frequency of the VFO is unchanged for all three ranges, but based on the fact that the ranges are different in width, and besides we use harmonics, then the range of operation of the VFO must be reduced by 40 and 20 meters.
2. The adjustment starts from the 80m range. The frequency of the VFO is from 3500 to 3800 MHz. By tuning C32 and R5, it is necessary to achieve this interval. It is especially important that the lower limit of 3,500 MHz is precisely set, because other ranges depend on it.
3. When switching to 40 meters (range 7,000 to 7,200), we have the 2nd harmonic, i.e. the VFO is multiplied by two. In order to be in the range, you need to adjust the VFO to the frequencies of 3,500 to 3,600. If the biscuit indicator is mounted correctly, then the frequency meter should multiply the frequency by 2 and output values for the 40-meter range. The variable capacitor C32 is no longer touched, because otherwise you can bring down the settings by 80m. We turn only R6.
4. For a range of 20 meters – multiplication of the VFO by 4, i.e. the mode of operation of the VFO is from 3500 to 3575 MHz. With the tuning resistor R7, we reduce the upper limit of the VFO. When the frequency meter is connected, you can see the values of 1410 and so on. Since the indicator is 4-bit, the frequency values in MHZ divided by 10 are output, that is, 1412 will be displayed for the frequency of 14120 MHz. and so on.

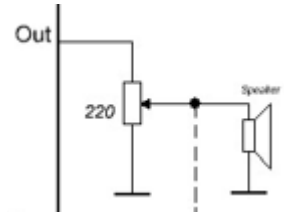
Completion of configuration and installation in the housing

1. After the receiver is fully configured, it is time to install the boards into the housing and the final installation of the remaining connectors.
2. Install the frequency meter on the front panel and mount it.
3. Paste the finishing self-adhesive faceplates on the housing
4. Install and mount all variable resistors, switches and connectors, as well as put on handles. **Attention!** On the handle for multi-turn resistors, small incisions are made in the mounting, since the shaft diameter is slightly larger. It is recommended to use

a small force to put the handle on the shaft to the end. It works. We have checked many times! This is a better solution than using a standard handle from an alternating resistor, because the standard one, in our opinion, is ugly 😊.

5. Carefully install the board on the racks in the housing.
6. Carefully check the installation of all wires before switching on, because there are cases when installing into the housing, there may be a short circuit of the wire or parts on the metal elements of the housing.
7. Installation of the Volume Control (AF) is performed at the output according to the following scheme:

ATTENTION! After installing the top cover, according to the laws of physics, a slight change in the frequency of operation of the GPA is possible. Therefore, it is necessary to switch to the 80m range and control the specified GPA range. Adjust if necessary. Next, check the remaining ranges.



8. Tighten the screws. Enjoy the radio.

If you have any questions or difficulties, please contact us by e-mail: sales@rv3yf.ru or by phone +7 926 9-911-911 (WhatsApp).