RF_AMP_2078 debug V306

FIRST: preparation for installation

1、 13.8V 10A or higher power supply. It is better to have the function of current-limiting protection.

2、 50Ω 100w dummy load(the load should meet the requirement ①the port of SMA maybe connect with the linker of SMA② the function of heat radiation is good)

3、 The radiating flange have good function of heat radiation for the power board (the recommended size: no less than 100*70*50mm).

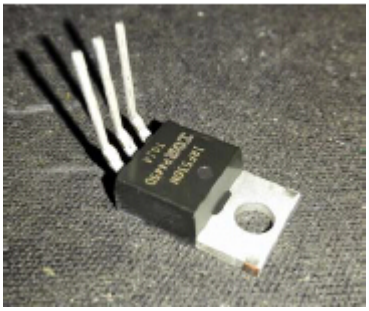
4、 The multimeter includes the 10A scale.

5、 Oscilloscope has at least 20MHz scale.

6、 The signal generator can output the signal of 20MHz@7dbm(just like the load of 50Ω has 1.4Vpp).

Second: welding installation

1、 Before the pin has preliminary treatment, three TO220 packaging component should not be installed. It should look like the following illustration: the pin has bending treatment, and not be cut.



2、 L1 should not be welded, has no treatment.

3、 If C96, C95 uses the 5R6 resistor, the disadvantage is that the output power will drop, the advantage is that the system will be more stable, if the use of 0.1uF capacity to increase output power.

4、 C4 and C29, C30 is compatible with the design, you can use C29 can also use C30, C4, both need to install one of them can be

5、 The J9 at the bottom of the PCB is connected to the solder by soldering.

6、 The welding way should be correct, no mistake, and no missing.

7、 The VCC_PA Voltage of the electrical source is not above of 15V, when the other system doesn't connect.

8、 The transformer should be winded according to the instruction in the document.

9、 RV1 should be anticlockwisely rotated to the end, RV2 should be clockwisely rotated to the end.

10、 The Power supply’s electrical resistance value to the earth is non-zero.

Third: Installation of the heat radiator

1、 Give an opening in shell of the heat radiator corresponding position of TO220, tap, screw hole which diameter is 3.0mm.Clean the radiator, and don’t leave any metal chips to avoid short circuit.

2、 Put the felt pad corresponding to the position.

3、 Put the TO220 component.

4、 Put the felt pad cap to the screw hole of TO220, and screw up the screw which 3.0mm diameter.

5、 Install the circuit board which is welded, and weld the pin of TO220.

6、 Check the electrical resistance between the circuit board and the heat radiator, the electrical resistance value tends to infinity if the operation is correct.

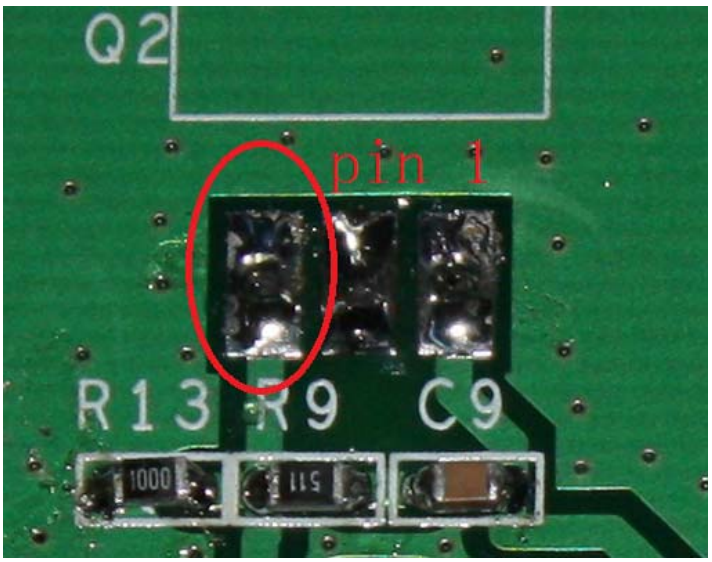
Warning: Installation of the heat radiator is very important. If the function of the heat radiator is not very good, the power tube will be damaged in a short time, please keep in mind.

Fourth: Power on

1、 Connect the dummy load of 50Ω to the point of J1, the heat radiating function of the dummy load should be very good.

2、 Install according to schematic diagram, if the R16 measured value of voltage to earth is from 0.3V to 0.6V, the adjustments shouldn't be made.

3、 Install according to schematic diagram, if the voltage of the pin 1 of Q2（2sc1971） to earth is about 2V, the adjustments shouldn't be made.



4、 Connect the Oscilloscope to L1, make sure Oscilloscope is at 10A tap position. Adjust the RV2 according to the anti-clockwise slowly until the Current profile of the Oscilloscope is between 25 and 30mA. Adjust the RV1 according to the clockwise slowly until the Current profile of the Oscilloscope is between 50 and 60mA.

5、 Install L1.

6、 The adjustment of power amplifier quiescent current is done.

Fifth: Input signal

1、 Put the oscilloscope to 20V/div, and check the dummy load, the oscilloscope doesn't output any signals Under the circumstances of there doesn't input any signals.(If it has the signals, there is the phenomenon of self-excitation, the power must be off right now).

2、 Input 14Mhz 0.2V signal

3、 Oscilloscope will show 20-30V Amplitude signal. As the incoming signal is increasing, the range of the oscilloscope should be more than 120V, and then the result is right. If not, you should check problem that the welding way of the component is right or not, the Winding of the transformer is right or not and so on.

Postscript: Pay more attention please, because of the discreteness of component, the initial conditions may be not the optimization. In order to make discharge waveform best, experienced worker can make adjustments. In practical use, you must insert low pass filter after outputting, and filter the higher harmonic.

Sixth: Advanced debugging

1、 The size of feedback quantity will affect Gain flatness. In brief, power amplifier can work in a wider range, the greater the feedback, gain of passing band will be more flat. The smaller

the feedback, gain of passing band will be instable. You should weigh yourself. The feedback channel resistance parameter on Current configuration is 0.01uF+220Ω 3W.Take care of the Bearing power of feedback resistance.

2、 The quiescent operation point will Influence the gain of MOS tube, and change the discharge waveform. The current Setting point is around 30mA. According to your own needs, you can Increase or decrease.

3、 T3 output transformer’s ratio of winding is set up to 2:4. In order to improve output power, ratio of winding can be adjusted to 2:5. Need to pay attention to that, you should not change Output transformer parameters unlimitedly. It will increase heat quantity sharply, and make power amplifier instability.