

3. class A MOSFET amplifier: provides a power gain of approximately 15.5 Db
4. bias network: causes the MOSFET transistor to operate as a class A amplifier with nearly constant bias over a wide temperature range. When the transceiver is in the receive mode (PTT bus not grounded), bias is removed from the MOSFET power transistor so that there is no power dissipation in the amplifier in this mode.
5. output matching network: matches the MOSFET power transistor output impedance to approximately 50 ohms
6. 50 ohm low pass filter: passes the carrier and modulation sidebands while attenuating their harmonics, whether the latter are present at the amplifier input signal or are created within the amplifier

Referring to the schematic (exhibit E, drawing 2101658), the -7.5 dB attenuator is a 50 ohm "pi" resistive network consisting of R1, R3 and R2 in parallel with R6. This provides for a very low input vswr, despite unit-to-unit variations in the input impedances of different MOSFETs over the frequency range 118.000 to 136.9875 Mhz.

The input matching network includes the 4:1 broadband coaxial transformer T1 along with C1, C2, C5, C6, C26 and C27. C3 is a dc block coupling capacitor.

The bias network, which operates from an external 13.5 vdc supply, consists of the 5 volt IC voltage regulator U1, bias adjust trim pot PR1, temperature compensating diode D3, plus R4 and R5. Resistor R13 is for measuring the drain current of Q1. PR1 is adjusted to set the no signal drain current to 360 ma., as indicated by a 10 mv dc voltage drop across R13. The MOSFET transistor Q2 disconnects the bias when the PTT bus is not grounded.

Q1 is the only active component of the class A MOSFET power amplifier. R7, C7, R8 and C8 are used to improve linearity and to stabilize the gain. L1 is an "RF choke" to provide a dc path for the drain current of Q1. C4 is a dc blocking capacitor.

The output matching network consists of the 1:4 broadband coaxial transformer T2 and C28.

The low pass filter is a 5-element Chebyshev type, consisting of C11, C12, L2, C13, C16, L4, C17 and C18. Note that here and at other several locations in the amplifier several capacitors may be connected in parallel to attain the desired total capacity while using standard value capacitors. Parallel connection of capacitors also provides lower and more uniform total effective lead inductances.

Both external (46 vdc and 13.5 vdc) dc power inputs are protected by fuses. Also, if the polarity of either supply is inadvertently reversed, diodes D4 and D5 will cause the associated fuse to blow, providing additional protection to the amplifier and power supplies.