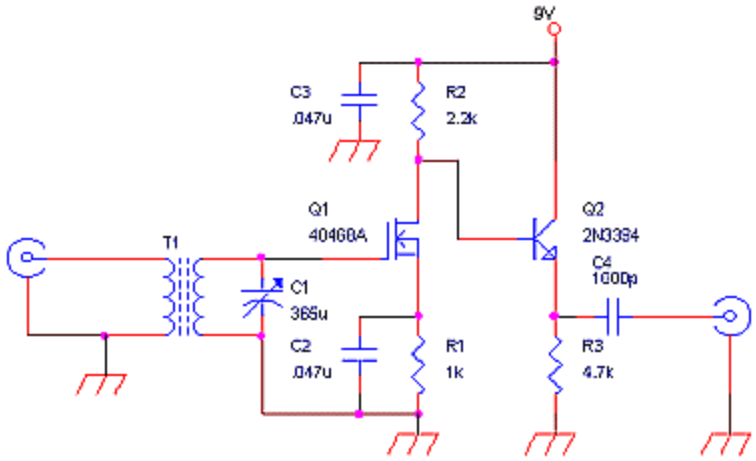
Add-on loop amplifier
by Bruce Carter
Simple, easy to build amplifiers for your antenna signals, be it from a loop or long wire antenna, is becoming increasingly difficult to find.
Here are two versions, based on articles from around 1970. The amplifiers was done by different authors, but describe an almost identical circuit, shown below:



AM radio RF Amplifer
(click here for larger photo)

The first version had a 3PDT switch that not only acted as a power switch, but also allowed the user to bypass the amplifier. This would be very useful for areas with strong stations, to avoid overloading the receiver.
The second version utilized a ferrite bar antenna, which severely compromised sensitivity. It did, however, include PCB artwork.
I would suggest that this RF amp would be most helpful when used with the AM loop antenna. In this case, simply delete T1, which is mounted off the board anyway. C1 will serve as the tuning capacitor for the loop.
If a long wire antenna is used with (or without) a coupler, you will need T1. T1 is an AM RF transformer, and is a type that is becoming increasingly difficult to find. An AM loopstick antenna could probably be substituted, with the smaller number of turns being used for the secondary. I would suggest using a small ferrite slug, or breaking off the excess length of ferrite.
I have no idea whether the RCA 40468A FET is still available or not. It came in a 4 pin metal can - with the 4th pin connected to the substrate. I have successfully substituted other N-channel devices, such as the HEP-802 - which comes in a plastic TO-92 package. Simply ignore the substrate connection.
Other good quality N-channel FET's can probably be used as well.
Both articles stressed handling precautions for FET's. Even though FET's today are much better protected than in the past, static can still damage them. Use a wrist strap and grounded soldering station during assembly.
I cannot give enough praise to this design. It provides about 40dB of gain, and the main problem you will encounter is overloading.