

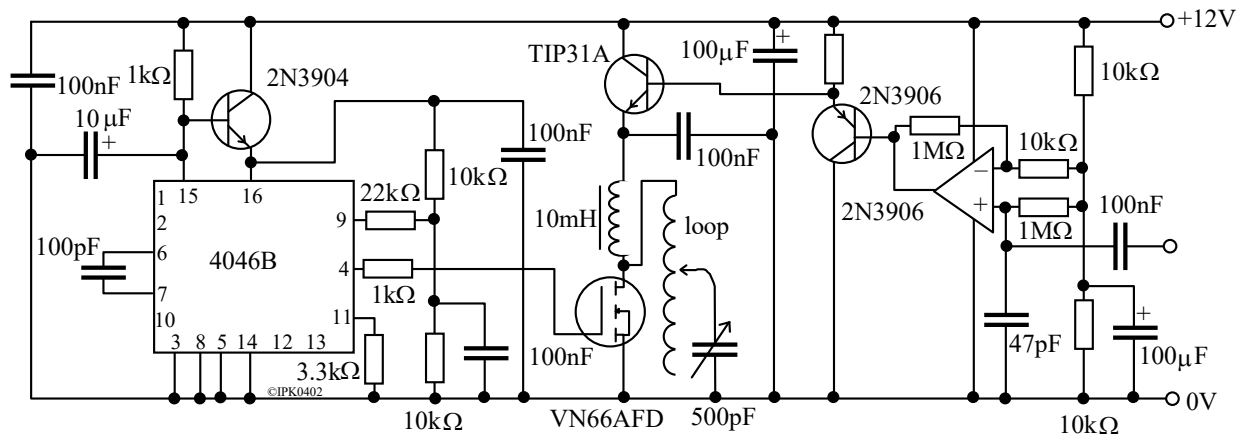
Simple Loop Transmitter



The Simple Loop Transmitter provides an easy way of generating an AM radio signal which can be used to demonstrate the principles of AM radio transmission and also provide a signal for a Simple Radio in the absence of a long wire aerial or nearby AM radio transmitter. The output power is

approximately 1W, but since no external aerial is attached, much of the energy is radiated through the magnetic field of the loop coil, and so is very unlikely to cause interference to any other radio station. The prototype was set to transmit on a frequency of approximately 700kHz.

Simple loop transmitter circuit diagram



The loop coil consists of 10 turns of 24swg wire wound onto a 35cm square former and tapped every turns.

The variable capacitor is any variable capacitor of around 500pF maximum capacitance. The prototype used a very old 500pF solid dielectric type

The 10mH inductor was extracted from an old computer power supply but a suitable device to use is a common mode suppression choke (Rapid Electronics 26-7084) with the two windings connected in series. (This increases the inductance by a factor of 4).

Both the TIP31A and the VN66AFD require small heat sinks.

The input is high impedance and so a microphone, signal generator, portable music system etc can be used to provide an audio input.

Adjustment.

Using the values shown in the circuit diagram, the frequency will be around 700kHz. To change the frequency, either the 100pF capacitor or the 22kΩ resistor can be changed.

The output is set by connecting an ammeter in series with the power supply and adjusting the variable capacitor to give the maximum current reading (around 0.2A on the prototype). It is also worth monitoring the output on an oscilloscope in order to ensure that the transmitter is tuned to the fundamental frequency and not a harmonic. A suitable way of obtaining a signal for the oscilloscope is to clip the earth connection to the probe, so forming a small loop and then placing it near to the loop coil.

Construction.

It is important to ensure that the rf section is well away from the af section in order to avoid any feedback which may make the circuit unstable.