

## WBA2 - A lower noise version of the G4BAO wideband amplifier

The original G4BAO wideband amplifier as described in the March 2010 Issue of RadCom gave very good gain flatness but the noise figure was never much lower than 3dB over its range and in excess of 4dB above 2.5GHz.

This paper describes a lower noise version using a PHEMT (P- channel high electron mobility transistor) modamp which achieves sub 1dB noise figure up to 1 GHz but which has poorer gain flatness.

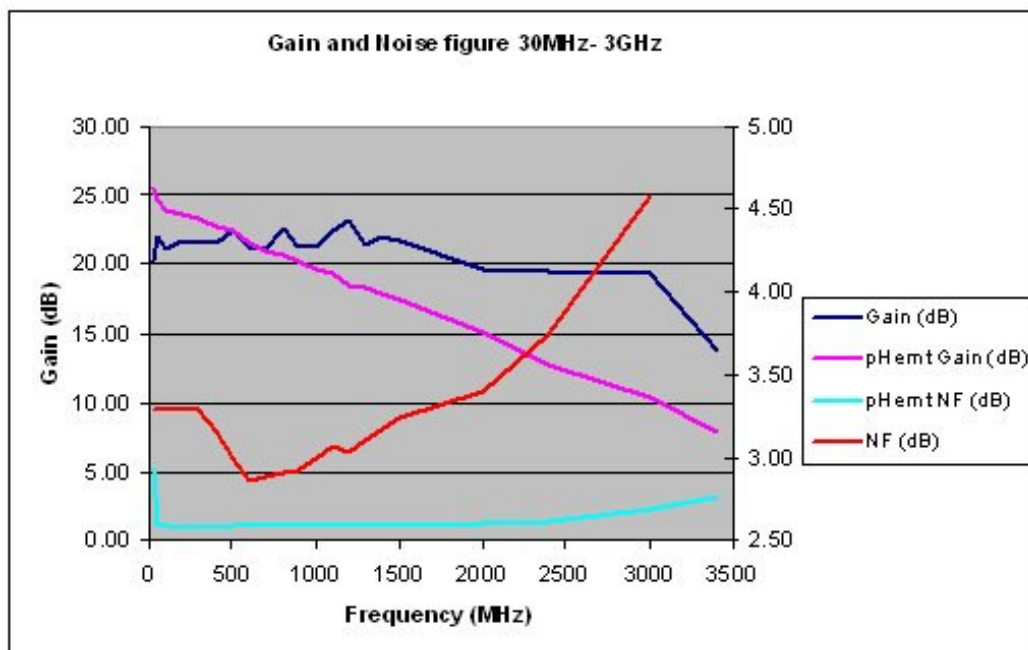


Figure 1 Comparison between the original and PHEMT amplifier

### Amplifier circuit modifications

The original modamp device is replaced by an MGA-62563 PHEMT modamp. This device is pin compatible, but it requires pin 4 to be fed from the Vdd supply via a resistor R1 which should be 2.7kohm. See Figure 2

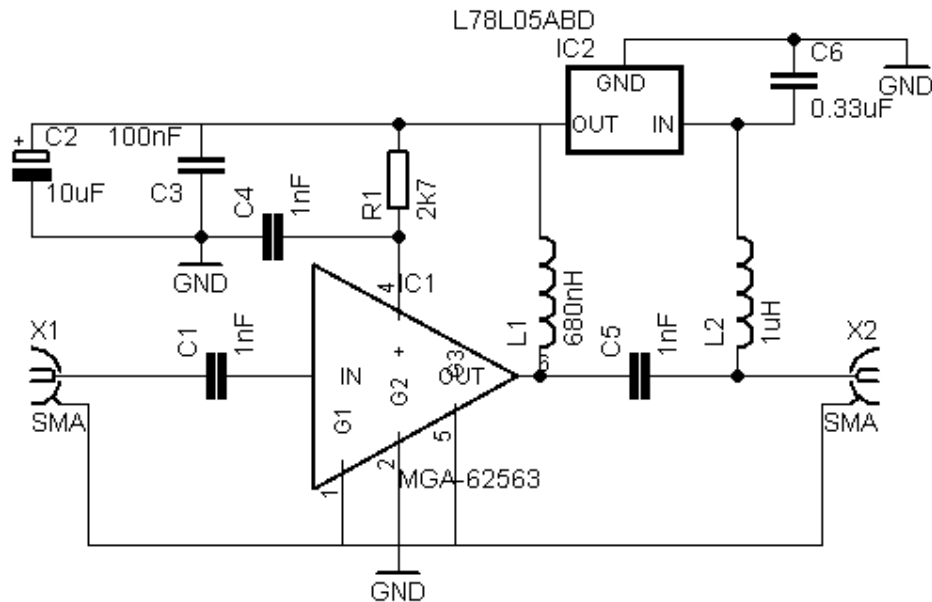


Figure 2 – Modified Amplifier Schematic

The resistor can be easily accommodated by cutting the track between C4 and the main 5 Volt rail as shown in Figure 3 - Amplifier layout

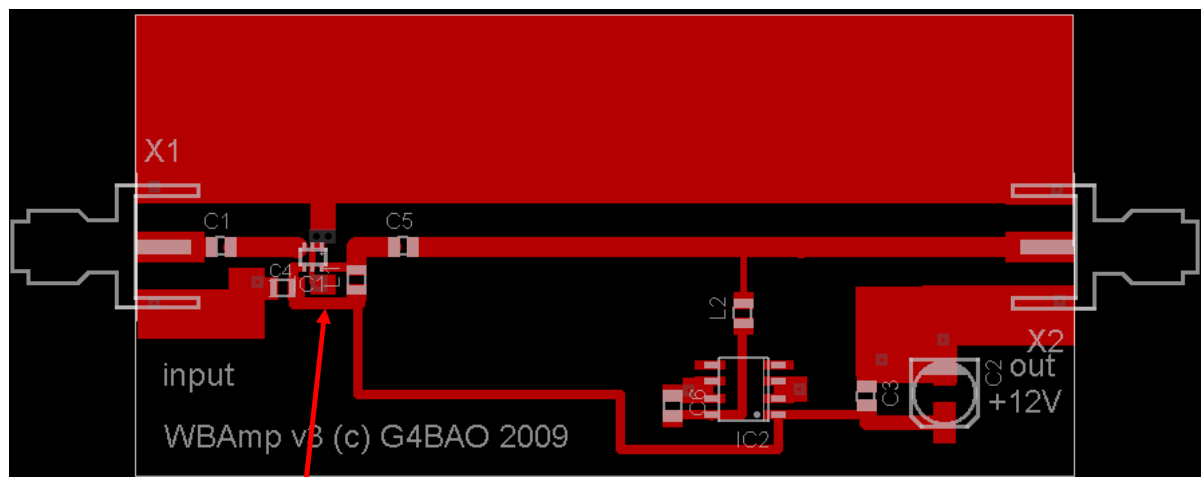


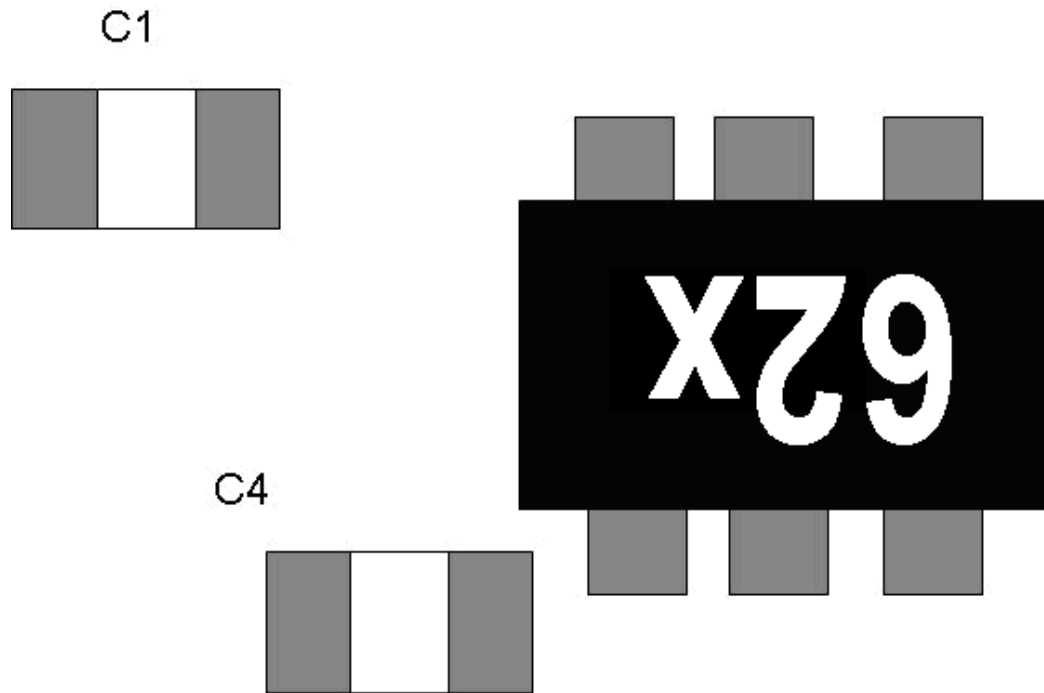
Figure 3 - Amplifier layout

Cut this track and place R1 here

The new modamp is **marked 6Hx.** (where “x” depends on the source of the device)

**This is a very small 6 pin package and requires great care in attachment. Either use a very fine (0.6mm) soldering iron bit, or a hotplate.**

Double check that you have the modamp in the correct orientation with the “6” to the right and “upside down” (Figure 4) as will only have one chance to solder it down!



**Figure 4 Orientation of modamp**