

902 MHz 18 Watt LDMOS Power Amplifier Module

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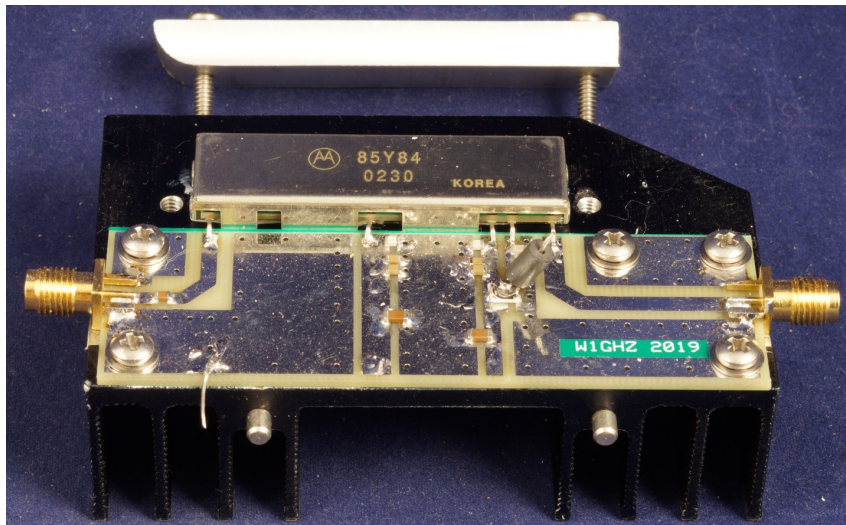
At Microwave Update 2019 in Dallas, I picked up a door prize – a bag of several interesting modules with an attached sheet titled “Motorola 18 Watt 700-900 MHz LDMOS Power Amp.” These were donated by Kent, WA5VJB. A copy of the data sheet is included below.

Soon after getting home, I did a quick layout of a small PC board and included it in the corner of another board that I was ordering. When the boards came, I put the module and PC board together on a piece of heat sink from the junk box, shown in Figure 1. Since the module has no mounting ears to attach to the heat sink, I put a dab of heatsink compound underneath and clamped it down with a scrap of ¼” aluminum – in the picture, the clamp is removed and lying behind the heat sink.

Then I fired it up at 902 MHz, since the 700 MHz end is of no use. At 12 volts and about 200 mA idling current, it had a bit over 30 dB gain and easily produced 10 watts. Pushing the voltage up to 13.6 volts gave the same gain, but now produced linear power up to 15 watts at one-dB compression, beyond which linearity suffers.

I gave another module and PC board to Mike, N1JEZ. He reports getting about 18 watts out when pushed. I expect that 20 watts is possible at 15 volts.

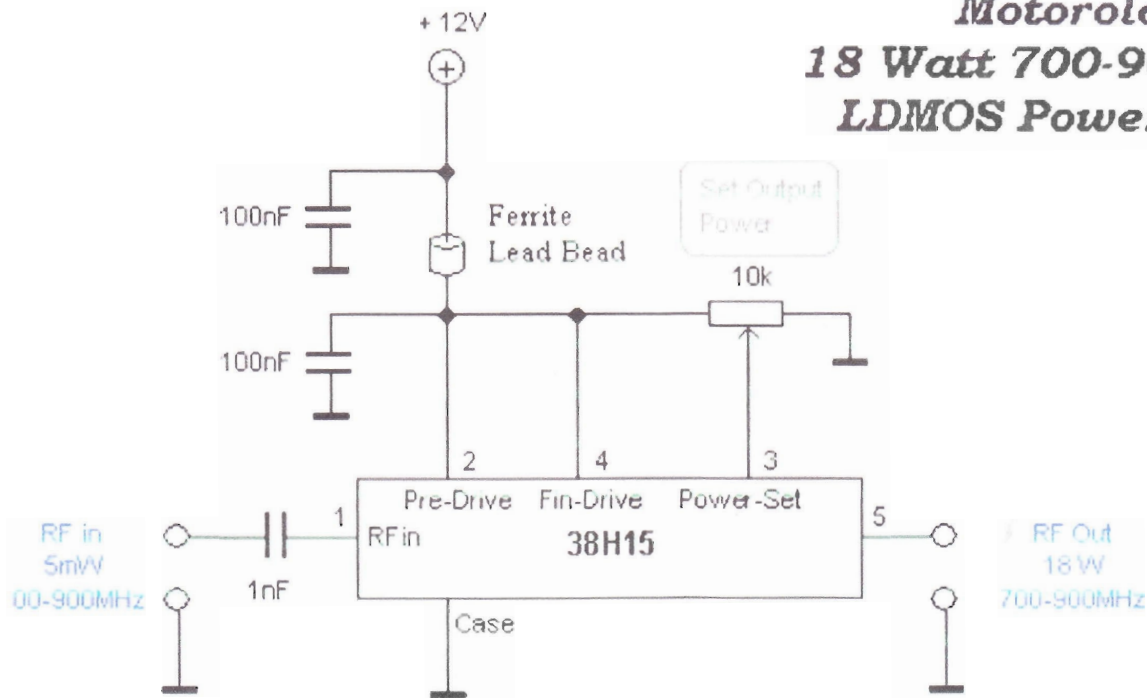
WA5VJB said he had a good number of these modules, so he kindly sent some more for NEWS Group members. I have some additional PC boards which I intended to distribute with them at the Eastern VHF/UHF Conference, now canceled. So they will be available at the next NEWS meeting. If you would like one and can't wait until then, I will mail a set if you pay the postage.



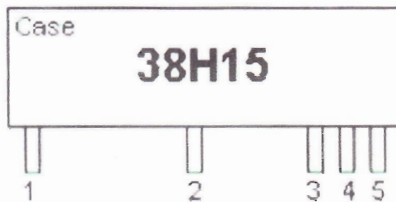
A couple of cautions:

1. Note that the pins are not numbered in order on the data sheet. The center pin is the power set (bias current) voltage, which also controls the gain with the 10K pot.
2. Kent suggests a ferrite bead on the voltage pins – put a bead on each pin and additional bypassing. I can assure you that these modules have lots of gain and will take off without the ferrite beads if the gain is set high.
3. Adequate heat sinking is important.

Motorola 18 Watt 700-900 MHz LDMOS Power Amp



Top View



This PA makes amplifiers almost too easy to build. I tested this unit with my TR1001 and also with a VCO QVC12. The drive power was about 5-10mW and I got about 15-18W out from the Amplifier. The performance was perfect!

The Ferrite Lead Bead prevents RF on the DC power line. Make sure you use a heat sink for the module since it becomes a bit warm.

