A general coverage synthesised HF transceiver Part 3

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It goes almost without saying that the transmit process is the reverse of receive. The IF board produces a fixed frequency SSB signal which is mixed with the output from the synthesised local oscillator module described in the first part of this series (January issue).

The signal, shifted to its working frequency together with an IF image, is passed through the preselector circuit where the image signal is stripped off. This leaves a low level SSB drive signal (below -10 dBm, 70mV) to drive the broadband PA strip.

I claim no originality what so ever for the PA strip used in this design. The first pass at the circuit used a couple of VN66AJ power MOSFETs in push-pull running with Class A bias driving a further pair of the same devices running Class AB in the output. The transmit pre-amp was as described here. The MOSFET design was interesting in that it used transmission line transformers throughout, and that it delivered a very low distortion output at the 10W PEP level. However, these devices weren't particularly happy at the 20W level. I therefore reverted to standard bipolar design.

Having scrapped the first attempt, I confess to making up the bipolar version with whatever components were to hand. Most of these were originally obtained at junk sales and rallies and are therefore of uncertain parentage. I suggest that it would be nearly impossible for anyone reading this to duplicate exactly what I've done myself. I could not tell you about the precise characteristics of the ferrite cores, or precise, readily available substitute devices for the BLX39 transistors used so successfully in the output stage.

What I can tell you however is that parameters such as permeability, core area, Gauss/unit core area are only important if you happen to have the data to hand. Likewise, it is almost certain that any half decent RF power transistor would perform satisfactorily in the output stage. My best advise is to suck it and see using just a few basic guidelines. More about these later.

Transmit pre-amp

This three transistor strip has two principal functions: to provide most of the voltage amplification required by the transmitter section; to provide frequency compensation (make good the fall-off in gain of successive stages towards the HF end of the spectrum). It also provides manual drive control and a CW keying facility.

Fig. 13 shows the pre-amp schematic. The dual gate MOSFET has more to do with providing gain control via the DRIVE pot connected

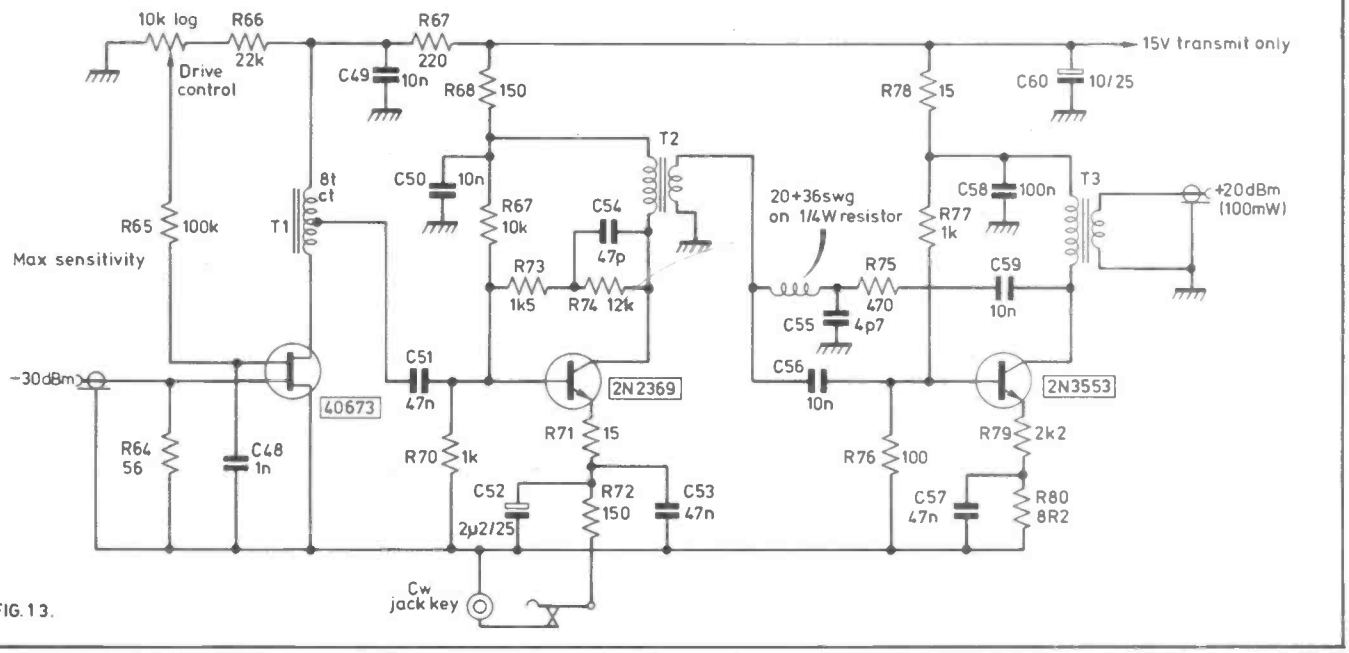

FIG. 13.