

The internal circuit of the 4066 c.m.o.s. quad switch

rail supplies. Bandwidth is quoted at 40MHz and it is possible to strobe the control pins at up to 10MHz. Yet a third variant, the 4416, offers double-pole, double-throw (d.p.d.t.) switching by having two switches normally closed and two open. The only points to be watched with all these switches is that the voltage being switched should not exceed the supply rail voltage and of course the normal precautions should be observed for handling c.m.o.s. devices.

Circuit Description

The circuit uses the existing LFC6 filter (FL-1), which must be removed from the circuit board and the Toko MFL45501L (Cirkit) which is supplied with two matching transformers, only one of which, the red-cored one, is used. Signal is taken from the pad which was the input point for the existing filter (FL-1) and fed to the new switching board, shown in Fig. 2.1.

Here, it is coupled to pins 2 and 4 of XIC1 which are the inputs to two of the switches. The outputs of the same two switches are on pins 1 and 3 and so depending on

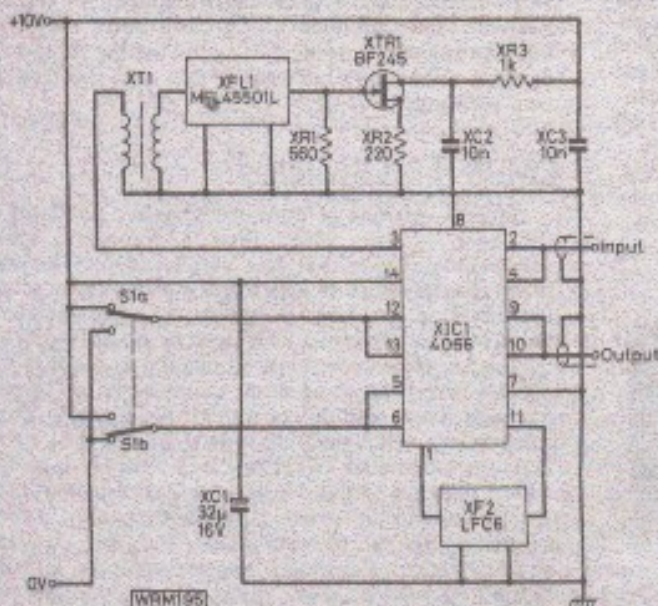


Fig. 2.1: The circuit diagram of the new switching board

which switch is on, the i.f. is passed to either XF2 or XT1. The same switching arrangement is extended to the output of XF2 and the output of XFL1 via the f.e.t. amplifier. These outputs appear at pins 8 and 11 of XIC1 and are switched to the circuit's output at pins 9 and 10, then back to the IF-AP unit to the pad that was the existing filter's connection point. The f.e.t. amplifier has been included to provide extra gain to make up for the loss through the narrow filter as this is higher than through the LFC6 (FL-1). In fact, whereas the LFC6 has only 7dB loss, the MFL455 (XFL1) and its transformer has about 12dB. The blue-cored output transformer for XFL1 has been discarded in this application as it is only necessary for the narrow filter to see about 500Ω termination and this is provided by XR1.

Construction

All construction should be done on a single-sided p.c.b. according to the layout shown in Fig. 2.2. First remove FL-1, the LFC6 filter, from the IF-AP board of the FRG-7. This should be done with care using either a proper desolder pump or de-solder wick. Minimum heat should be applied to the device or damage could result to its elements even though ceramic filters are fairly hardy.

Work on the new printed circuit board will be made easier if the filters and XT1 are fitted last. Beware c.m.o.s. handling and use an i.c. socket, only fitting the 4066 when the circuit has been finally wired into the set. The next stage involves fitting the screening and mounting panel and this is spaced from the bottom of the IF-AP board on two threaded stand-off pillars.

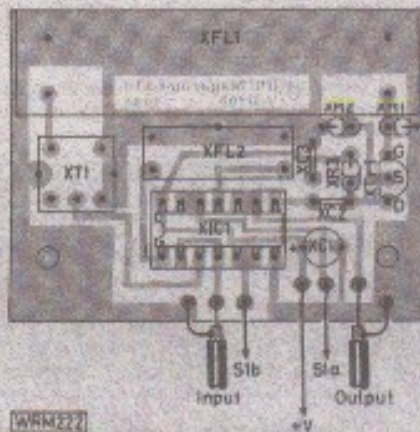
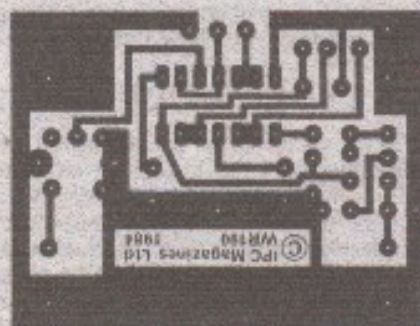


Fig. 2.2: The track pattern and component layout of the new switching board, shown full size