

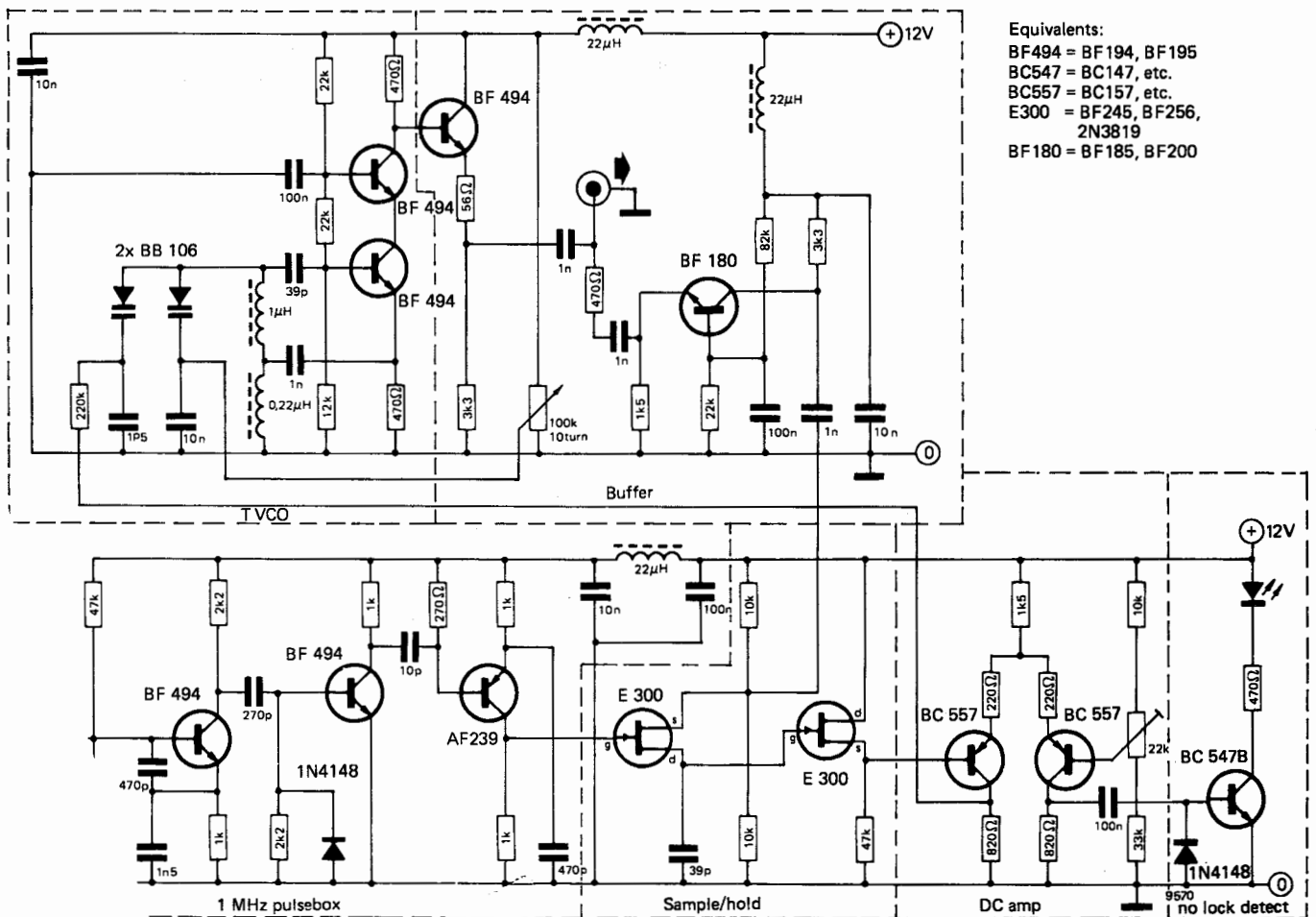
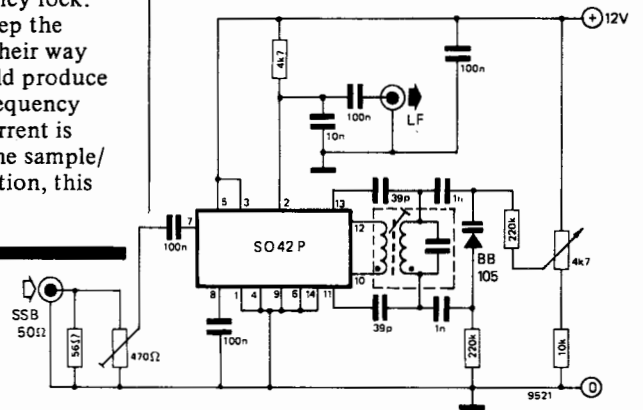
69 sample/hold synthesiser

70 single sideband adapter

69 This synthesiser is primarily intended for use in portable communications receivers which use 'up' conversion. The 100 k ten turn pot is used to set the output frequency. However, when this frequency becomes closely related to a harmonic of the 1 MHz frequency standard, the VCO locks on and gives a stable output signal. This lock occurs every 1 MHz within the tuning range of the coils. The inductor values as shown in the diagram work over a frequency range of approximately 16 to 32 MHz. By changing these coils, different frequency ranges can be covered; the maximum usable frequency will be about 70 MHz. If construction is carried out with due care and shielding is used around the different circuit blocks, spurious outputs will be more than 60 dB down. The output frequency accuracy is dependent upon the accuracy of the 1 MHz crystal in the pulse-box. The pulse-box generates the standard frequency; the output contains strong harmonics extending up to about 70 MHz. The sample/hold circuit uses a pair of E300 FETs.

The circuit efficiency can be improved by using a balanced configuration in this stage. An E420 dual FET will work well. This should also greatly reduce the influence of power supply fluctuations upon the circuit performance. The job of this circuit is to compare the harmonics from the pulse-box with the frequency of the TVCO (tuned voltage controlled oscillator) and produce a control voltage which is used to tune the TVCO. This feedback mechanism results in the desired frequency lock. The TVCO is buffered to keep the 1 MHz pulses from finding their way into the output, as this would produce undesirable side bands. If frequency lock is lost an alternating current is produced at the output of the sample/hold circuit. After amplification, this is used to light a LED.

70 It is very easy to make a good SSB adapter using the SO 42-P IC. Its output enables a symmetrical oscillator to be built with great ease. In order to minimise the influence of different source impedances, the input is terminated with a low resistance. It is recommended to limit the working frequencies to below 1 MHz. The coil in the diagram is a 455 kHz IF transformer.



- Equivalents:
 BF494 = BF194, BF195
 BC547 = BC147, etc.
 BC557 = BC157, etc.
 E300 = BF245, BF256,
 2N3819
 BF180 = BF185, BF200