SECTION 2

SINE WAVEFORM GENERATOR GE6/502

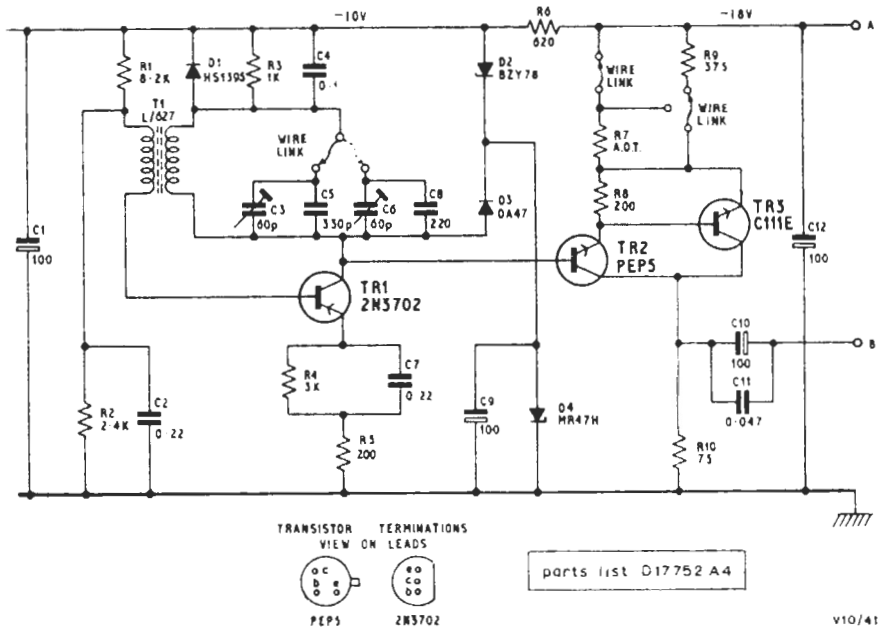

Fig. 2.1 Circuit of the GE6/502

Introduction

The GE6/502 generates an amplitude-stabilised sine waveform with a frequency of 4·43 MHz or 3·58 MHz and with a source impedance of 75 ohms[1]. The amplitude of the waveform is 1 volt p-p when the output of the generator is terminated in 75 ohms. The harmonic content of the output is low but, in applications where the purity of the waveshape is of critical importance, a suitable low-pass or band-pass filter should be used.

The generator is constructed on a printed card. The choice of operating frequency is determined by the position of a wire link. Power supplies of −18 volts at 40 mA are required[2].

If necessary, the GE6/502 can be adapted to operate at frequencies other than those specified above.

Circuit Description

A circuit diagram is given in Fig. 2.1. Transistor TR1 is an L-C oscillator, the operating frequency of which is determined by means of a wire link in the collector circuit. With the link connecting C4 to C5 the operating frequency is about 3·58 MHz and with the link connecting C4 to C6 the operating frequency is about 4·43 MHz. Adjustable capacitors C3 and C6 provide fine control of the two oscillator frequencies.

The collector of TR1 is coupled, via D3, to the junction of zener diodes D2 and D4, and this point is held at a potential of −4·7 volts. When the collector potential falls below 4·7 volts, D3 conducts and limits the amplitude of positive-going oscillations. D1 and R3, connected between the upper end of the tuned circuit and the −10 volt line, compensate for temperature variations in D3. The action of D3 stabilises the oscillator output and so the signal applied to the base of TR2 has a constant amplitude.

Transistors TR2 and TR3 form a common-emitter output stage and the output of the unit is taken from the junction of the two collectors. Resistor R7 and the wire links in the emitter circuit of the output stage are adjusted during manufacture to give a 1-volt signal either at the output of the unit or at the output of an associated filter network.

Maintenance

Routine maintenance is not required. The output amplitude should remain stable, within $\pm 0{\cdot}1$ dB with respect to 1 volt p-p, for periods of at least three months.

References to Typical Associated Equipment

1. Colour Calibrator UN2/503, Instruction V.14
2. Stabilised Power Supplier PS2/22C, Instruction G.2

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