

OSCILLATORS OS2/35 SERIES

Introduction

The OS2/35 series of oscillators are 23-kHz tone sources. The OS2/35 incorporates a PS2/22E power supply card to operate from a 240-V, 50-Hz supply but the power supply card in the OS2/35A is arranged to operate from an external 50-volt positive-earth supply.

The oscillator and power supply cards are mounted in a CH1/12A chassis with index peg positions 24 and 33.

Specification

Output frequency	23 kHz \pm 20 Hz
Output level	+20 dB into 600 Ω with preset adjustment of \pm 2 dB
Output monitoring level	-10.5 dB into 600 Ω
Output impedance	300 ohms
Second harmonic distortion	less than -46 dB

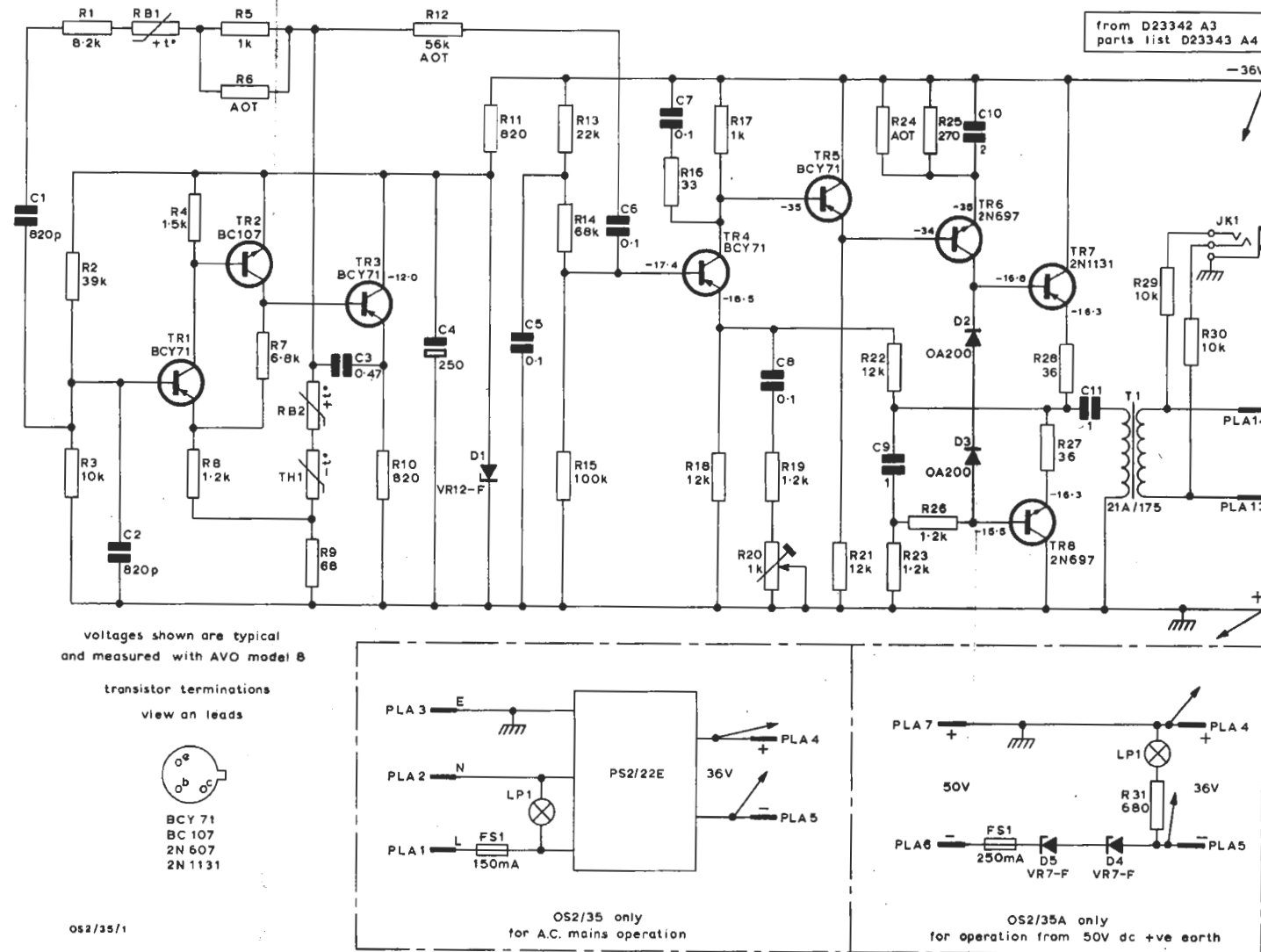
Circuit Description

The oscillator consists of a compensated Wien Bridge^{1,2} followed by a feedback stabilised amplifier as shown in Fig. 1. Direct-coupled transistors TR1, TR2 and TR3 form the phase-shift oscillator. The phase-shift network which determines the frequency of operation comprises resistors R1, R3, R5, R6 (if fitted), RB1 and capacitors C1 and C2. Feedback to maintain oscillation is taken from the output of TR3 via the phase-shift network to the base of TR1. The positive temperature coefficient resistor RB1 compensates for variations in frequency due to fluctuations in ambient temperature.

Thermister TH1 is included in a negative feedback loop to control the oscillator amplitude and RB2 compensates for variations caused by fluctuations in ambient temperature.

Resistor R12 is chosen to obtain an output of +20 dB, adjustable within \pm 2 dB, by R20. Voltage amplifier stage TR4 feeds via emitter-follower TR5 to the driver transistor TR6. Output stage TR7 and TR8 provides an output of +20 dB at PLA13 and 14. JK1 is a high impedance monitoring point.

1. Mullard Reference Manual of Transistor Circuits.
2. Appendix to Technical Instruction FTS/12.



Test Procedure

Apparatus Required

- Model 8 Avometer
- Oscilloscope
- Valve Voltmeter (ATM/1)
- Frequency Counter

1. Check that the power supplier is delivering 36 volts (PLA4 and 5).
2. Check that the voltage at the junction of R27, R28 and C11 is between -16 and -19 volts. If it is less than -16 volts adjust R24 to bring the voltage into the preferred range of between -16 and -17 volts.

3. If the frequency is out of tolerance adjust a resistor in the position R6 to produce a frequency within \pm 10 Hz of 23 kHz. Ensure that the board temperature stabilises before the frequency is measured after any soldering operations
4. Adjust R20 to produce an output of +20 dB.
5. View the waveform on the oscilloscope and confirm that it is substantially sinusoidal.