

6L6 SE Tube Amplifier

User Manual

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INTRODUCTION

This kit employs commonly used pentode 6L6 (6L6GC/6L6GCR) vacuum tubes for the output stage of a class A amplifier with 12AX7 as input stage. The 12AX7 tubes are configured in SPRR to provide high frequency response and linearity. The output power can reach 10W for each channel. This amplifier can be configured either open loop gain or close loop gain. Optional choke are left for DIYers' preferences.



FEATURES

- Two 6L6 (6L6GC/6L6GCR) and two 12AX7 tubes.
- The input stage uses 12AX7 which is configured as SPRR.
- The output stage uses one 6L6 tube configured as class A amplifier with single-end output.
- Output power can reach 10W for each channel.
- Built-in rectifier and regulation circuitry with inductor option.
- Support either open loop gain or close loop feedback.
- Symmetrical layout design in signal paths for both channels.
- Dedicated ground and power rails layout design.
- Five large reservoir decoupling capacitors for power rails.

- Power requirements: one 260V AC (300mA) and two 6.3V AC (1.5A)
- PCB dimension: 160mm (W) x 150mm (L)
- PCB thickness: 2.4mm, double layer, 2oz copper.

SPECIFICATION

- Voltage gain: 24dB (with feedback)
- Gain flatness: 3dB for 20-20kHz
- Frequency range: 20-20kHz
- Input Impedance: 1M Ohms
- Input sensitivity: 200mV RMS
- Output transformer: 3.5K / 5K Ohms 120mA, 15W
- Output Power: 10W at 8 Ohms
- S/N Ratio: > 85dB or >93dB (A-weighted) @ 1kHz
- THD+N < 3% @ 1kHz
- Stereo single-end input and output

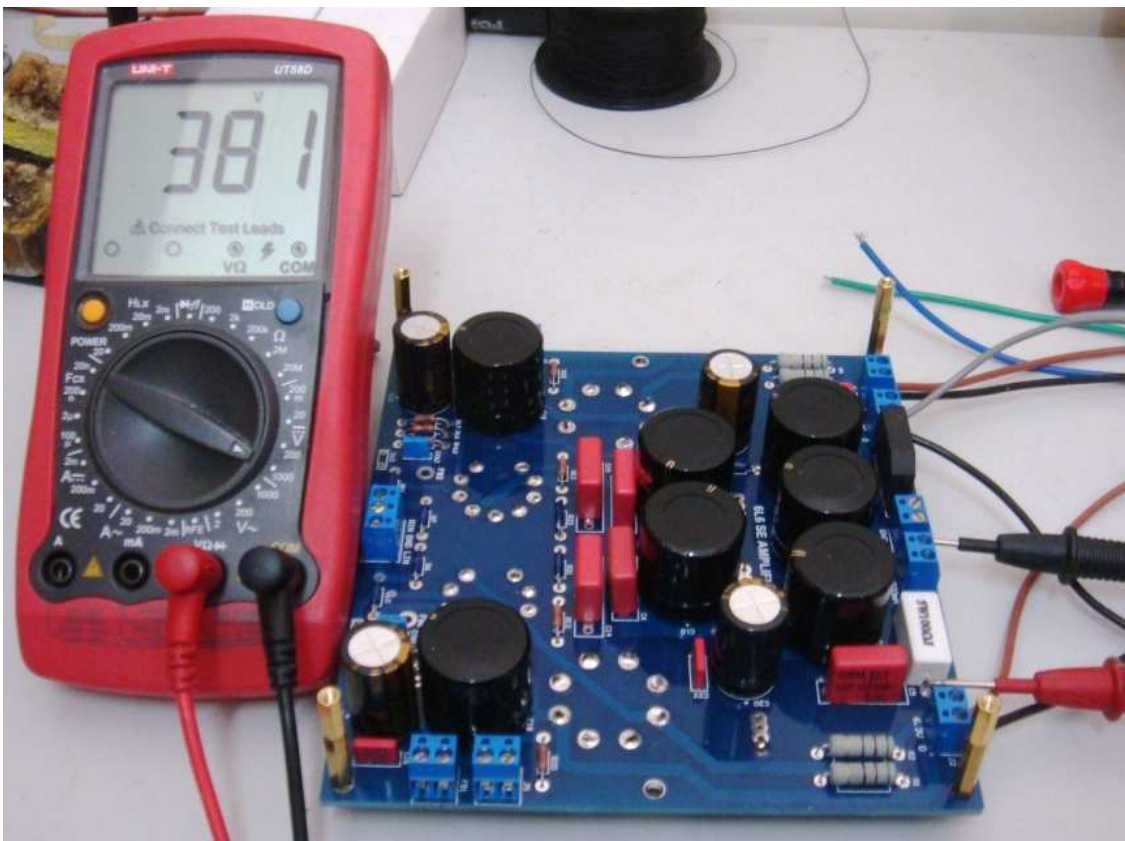
PRECAUTIONS

- Do not use any body parts to touch the metal parts of the kit after power up or power off, since the high voltage capacitors may not fully discharge. It may cause serious electric shock.
- Use a power transformer with fuse (1-3A) socket to limit the supply current in case of short circuit or incorrect assembly.
- Double check the assembled components with the schematics.
- Do not attempt to measure the voltage by multimeter with hand after power up. The probes of the multimeter should be mounted by some stands to the points of the measurement before switching on the power supply.

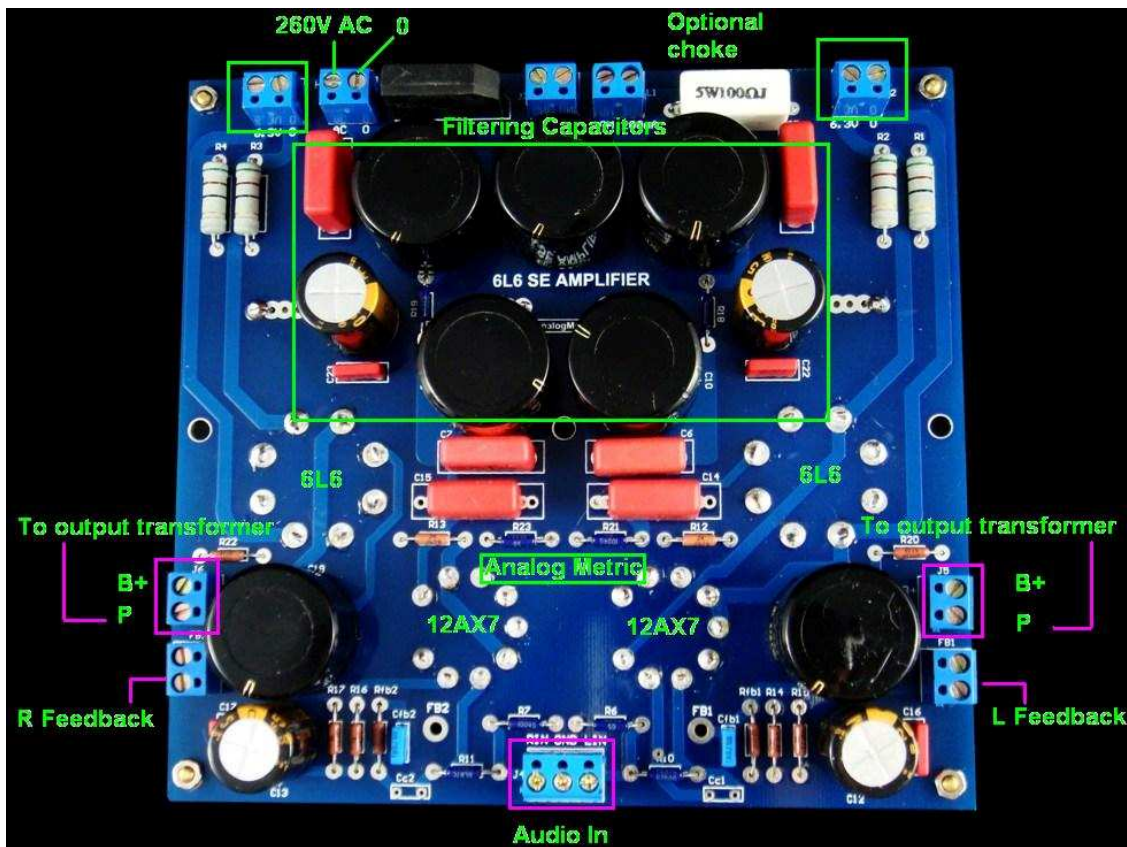
- Turn off the power supply if you observe any smokes or hear strange sound coming out from the transformer or board. If there is short circuit, the transformer will be getting very hot shortly.

PROCEDURES

1. Hook up all the components according to the schematic, part list, and photos. Notice to the polarity of the high voltage electrolytic capacitors (C1, C3, C4, C10, C11, C18, and C19). There are no polarities of the thin film capacitors.
2. Apply power supply to the board according to the following photo without plugging in the tubes. It requires one 260V AC and two 6.3V AC.
3. measure the AC voltage at JP1, JP2, and JP3, and DC voltage at B+. The voltage is ~260V AC for JP1 and 6.3V AC for JP2 and JP3. B+ has ~380V DC



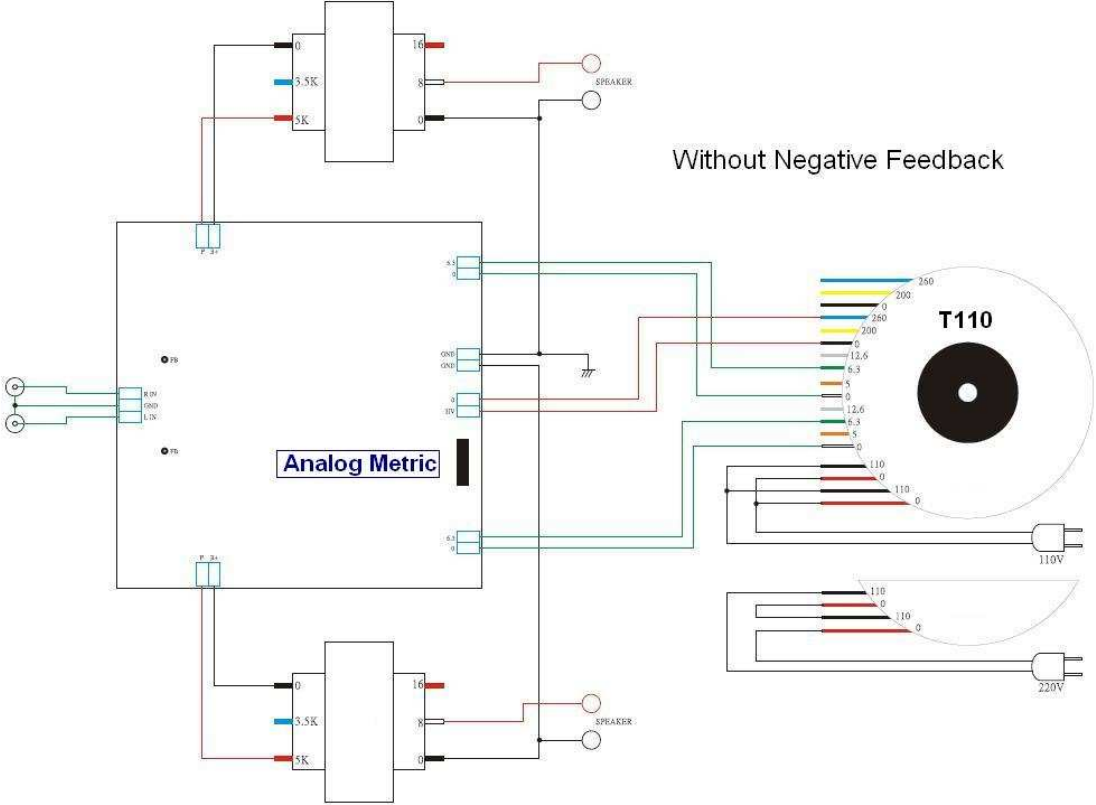
4. If the measured voltages are correct, then turn off the power supply, and wait until all the capacitors discharged, few minutes later.
5. Plug in the tubes and turn on the power supply.
6. The tubes are light up when power on.
7. If everything is worked, then connect the output transformer as the following pages: either in open loop gain or close loop gain. Lower gain will be obtained if configured as close loop feedback.



CHECKLIST

1. The polarity of the high voltage capacitors C1C1, C3, C4, C10, C11, C18, and C19
2. The supply voltages at connectors (JP1, JP2, and JP3).

If you have any problem in assembly, please contact us by email to tech@analogmetric.com



Without Negative Feedback

