

## NOTES

To allow a variety of parts installation options, both sides of the circuit board have been silkscreened. This is to allow parts to be mounted on either side of the board. This may be useful if it is intended for the tube to protrude through the top of the enclosure. In this case, the tube socket can be mounted on the component side and all other parts on the foil/trace side. Note that **the tube socket must be mounted on the component side**. Otherwise, the pin order will be reversed.

Because both sides are silkscreened, it may not be obvious which side is the component side, and which side is the foil/trace side. The layout on this page shows the component side. Looking at the component side, the gap in the tube socket is towards the bottom of the board, and the power supply section is on the left.

Due to the wide variety of inductors and trimmer capacitors that are available, it is not possible to predict the pad spacing for the part that will eventually be used. However, there is always the option to mount larger parts external to the board, and run leads back to the solder pads.

The pad spacing for L2 is suitable for typical molded chokes.

Trimmer capacitor C8 footprint is suitable for Murata TZ03 series. Note that the ground side of C8 is to be connected to the round solder pad, and the hot side of C8 is to be connected to the square solder pad. Note that the adjusting screw of the trimmer will be connected to the ground side.

The power supply section of the board has been designed so that it may be cut away from the main board, and mounted separately. Note that the perforation holes are not sufficient for a clean break. The board must be scored on both sides before breaking. There is no electrical connection between the power supply section and the rest of the board. Jumpers must be provided as shown between pads PS+ and B+, and between pads PS- and B-.

Take care to ensure the polarity of the rectifier diodes is correct. The cathode ends are indicated on the board silkscreen. D1 and D2 have cathodes pointing towards centre of board. Diodes D3 and D4 have cathodes pointing towards edge of board.

Footprints Y1 and Y2 are provided for the crystal or ceramic resonator. Use whichever one is suitable for your crystal/resonator. The Y1 pads have the correct spacing for HC-6 and HC-36 crystals. The Y2 pads are for crystals or ceramic resonators having a pin spacing that is a multiple of 0.1 inch. When using the Y2 pads, connect one lead of the resonator or crystal to the square pad, and the other lead to any one of the round pads. A socket for Y2 can be made by cutting down a standard 8 or 14 pin DIP IC socket.

Current production 9 pin tube sockets have two different pin circle diameters. The plastic sockets match the older consumer electronic size and is the size intended here. New production ceramic sockets have a larger diameter pin circle, but the pins can be bent inward to fit.

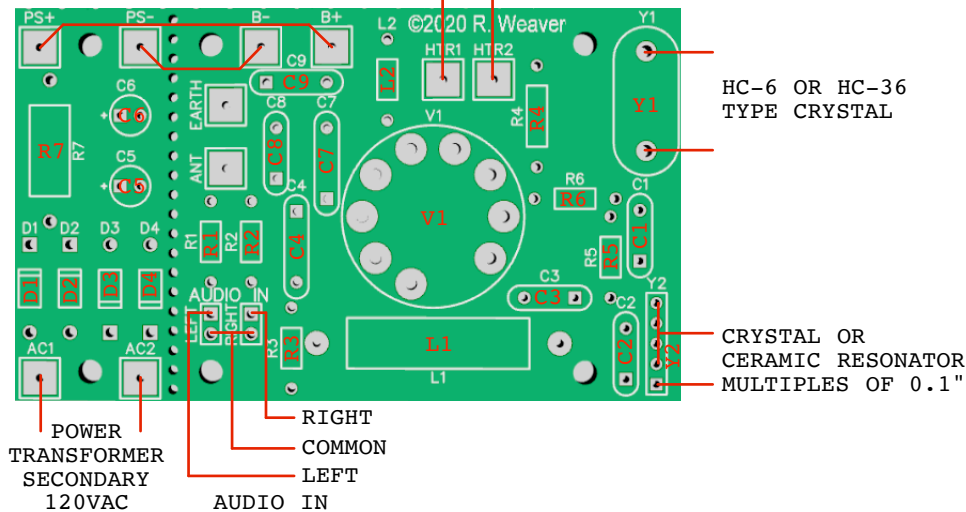
## Special Layout Considerations

Due to a layout oversight, the pad spacing for electrolytic capacitors C5 and C6 is closer than intended, requiring the leads to be bent closer together than normal. Take care to ensure they are mounted with correct polarity. The + terminals are closest to R7

Power resistor R7 should be mounted with a gap between it and the board, to provide air circulation around it.

One mounting hole is very close to a solder pad for L1. Take care to ensure that L1 is insulated from the mounting hardware.

6.3VAC  
HEATER  
CONNECTION



HC-6 OR HC-36  
TYPE CRYSTAL

CRYSTAL OR  
CERAMIC RESONATOR  
MULTIPLES OF 0.1"

## PARTS LIST

- C1... FOR CERAMIC RESONATOR: 150 pF  
FOR CRYSTAL: 22 pF  
C2,C3 100 pF  
C4... 0.1  $\mu$ F FILM (DO NOT USE CERAMIC)  
C5... 10  $\mu$ F 250V ELECTROLYTIC  
C6... 22  $\mu$ F 250V ELECTROLYTIC  
C7,C9 0.01  $\mu$ F  
C8... 10-50 pF TRIMMER (IF REQUIRED)
- D1-D4 1N4007
- L1... 2.5 mH CHOKE  
L2... CHOOSE TO SUIT ANTENNA LENGTH  
AND OPERATING FREQUENCY
- R1,R2 1 K  
R3... 1 MEG  
R4... 820 K  
R5... 100 K  
R6... 22 OHM  
R7... 1.5 K 5 WATT
- V1... 6U8, GGH8A, 6CQ8 OR ECF82
- Y1,Y2 CRYSTAL OR CERAMIC RESONATOR

RESISTORS ARE 1/4 WATT MINIMUM  
EXCEPT AS NOTED OTHERWISE.

CAPACITOR VOLTAGE IS MINIMUM 150V  
EXCEPT AS NOTED OTHERWISE.