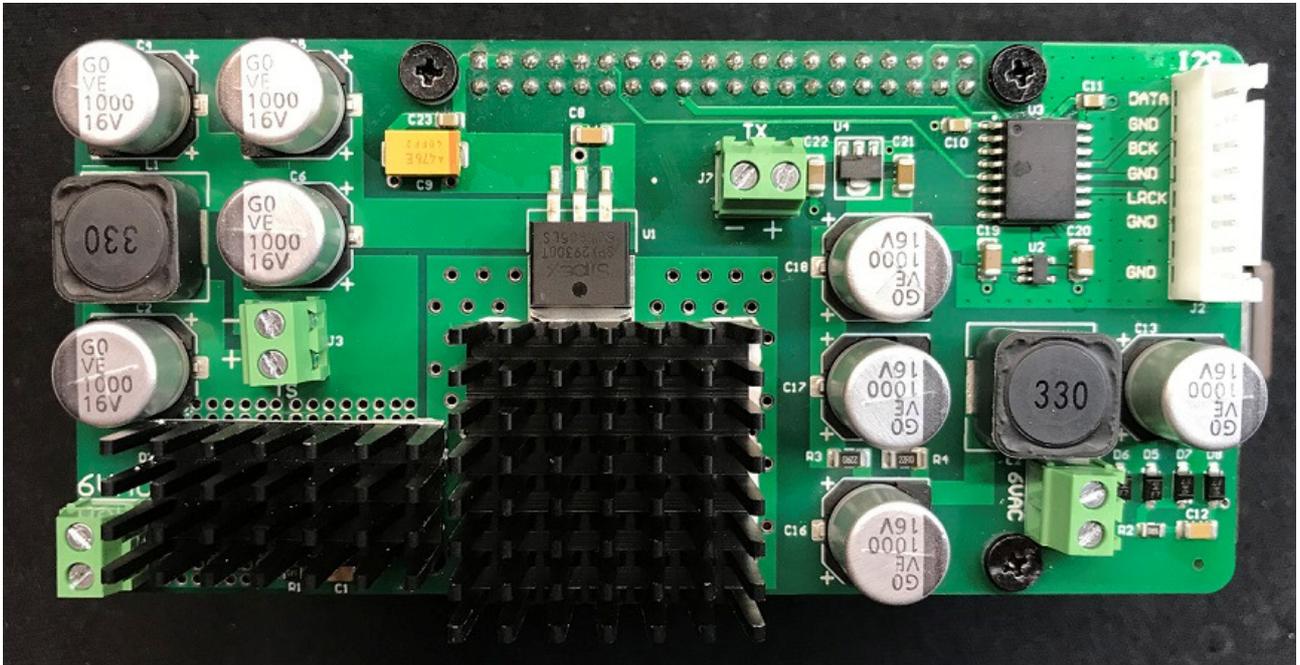# TWSAFB-RPI Raspberry power supply & isolated I2S

The board is designed to be stacked onto the Raspberry PI. It provides power supply to the RPI and to the official 7" touch screen. It provides galvanic isolated I2S output. The purpose of this board is to build a I2S source from the Raspberry.

Features:

5V Linear regulator to supply RPI and SSD hard disk

5V connector to supply the official 7" touch screen

5V independent linear regulator to supply I2S LVDS transmitter
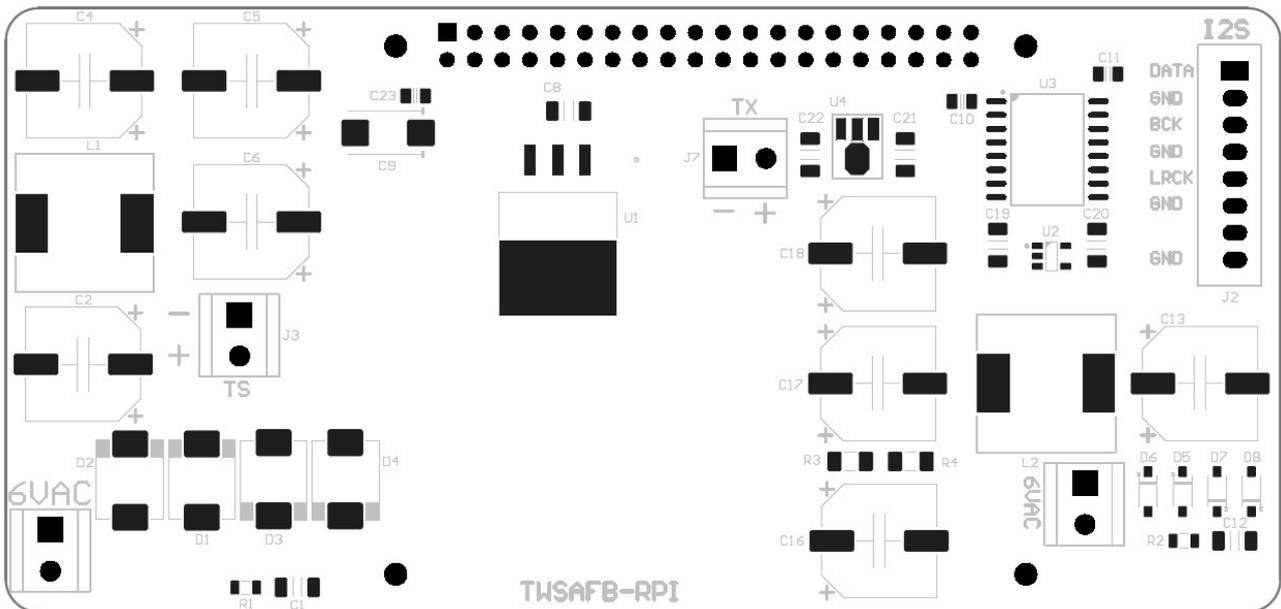
Galvanic isolated I2S output

Board size: 117mm x 56mm

Board options: finished and semi-finished

Note: supplied without raw materials to stack it onto the RPI

PCB layout

Connectors

J4, J6 (6VAC): 6V AC power supply. Use a transformer with two separate secondary at 6V. Suitable transformer is the Triad Magnetics VPT12-2080 Mouser part 553- VPT12-2080.

J3 (TS): 5V DC to power the Raspberry official 7" touch screen (the lower pin is +5V, the upper pin is ground)

J7 (TX): 5V DC linear regulator to supply I2S LVDS transmitter like the TWSAFB-TX (the right side pin is +5V, the left side pin is ground)

J2 (I2S): I2S isolated output to connect DAC, FIFO buffer or LVDS transmitter like the TWSAFB-TX. The pins from top to bottom (pin 1 to pin 8) are as follows: DATA, GND, BCK, GND, LRCK, GND, NC, GND. JST cable provided with finished board option.

J1 (40 pin header): this connector is used to stack the board on the Raspberry

A couple of heat sinks are supplied separately with the finished board option and are intended to dissipate the main regulator U1 and the rectifier diodes D1, D2, D3 and D4. They should be installed using adhesive thermal paste like the two parts Arctic AluminaThermal Adhesive.

There are 2 available options for this board:

- finished boards (fully assembled and tested)

- semi-finished boards (users have to solder a few TH parts)

The BOM for semi-finished board is available at post #125 on the diyaudio.com thread: The Well synchronized asynchronous FIFO buffer - Slaved I2S re-clocker.

Notes on semi-finished board

The semi-finished board option needs some parts to be soldered (through hole parts only).

There is one thing to pay the maximum attention:

- be careful installing the connectors with the right orientation, the component orientation is clearly visible on the PCB overlay