

TWCIVC-ZF The Well Coupled I/V converter

Zero Feedback



TWCIVC-ZF DAC current to voltage converter without global feedback and inductive power supply.

Features:

Inputs: current output DAC (up to ± 3.5 mA)

Input impedance: less than 3 ohm

Architecture: Class A push-pull folded cascode without global feedback

Suitable DACs: TDA1541A, AD1862, AD1865, PCM63, PCM1704, PCM1794 and similar current output DAC

Output options: DC coupled (optional AC coupled)

Board mode: mono

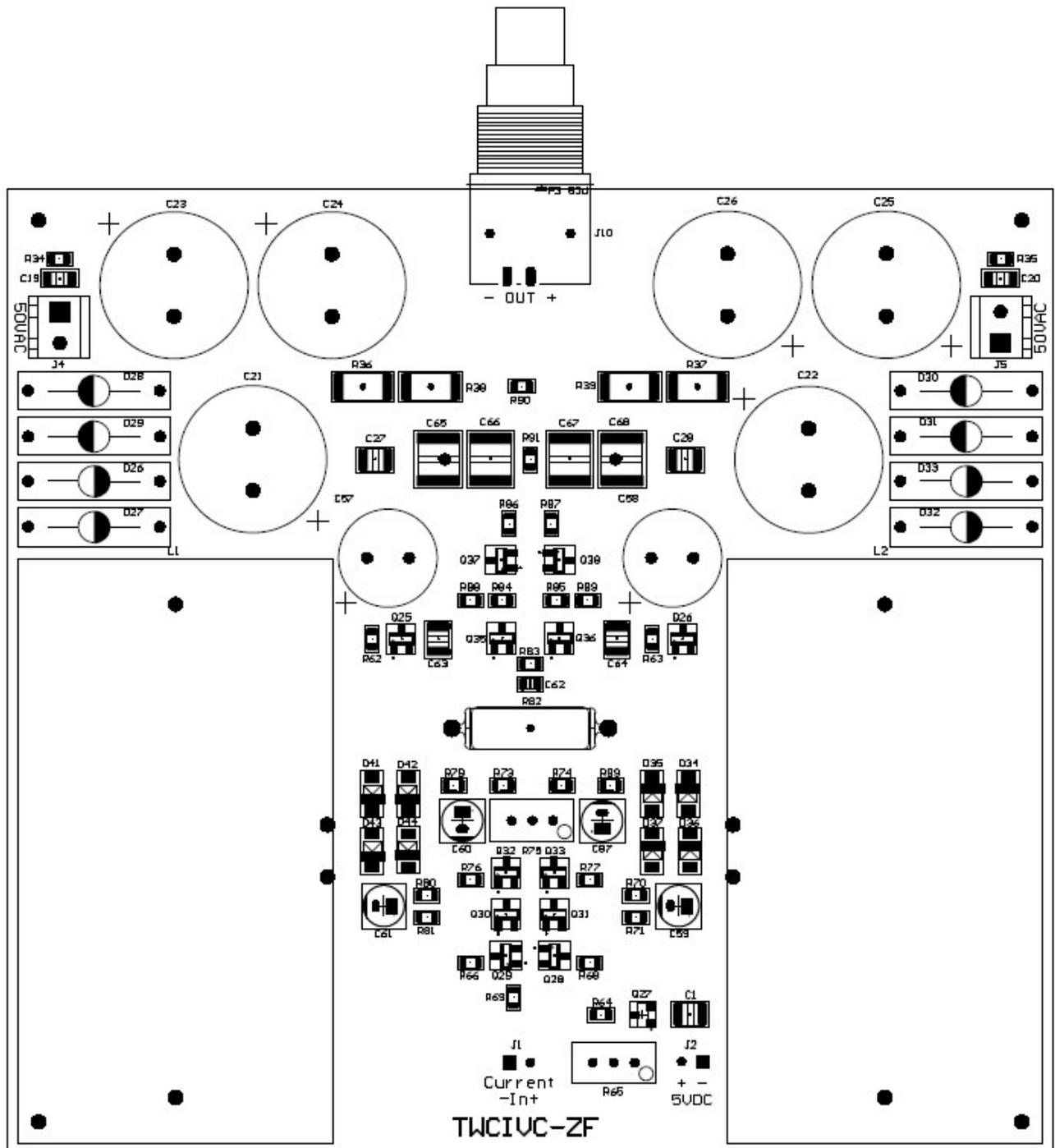
Output: up to 2V rms

Power supply: 50VAC/200mA x 2

Board size: 127 x 118 mm (excluding RCA connector)

Note: finished board without chokes and I/V conversion resistor (mono)

PCB layout



Connectors

J1: DAC current input (up to ± 3.5 mA)

J2: +5 VDC/20 mA (TDA1541A offset nulling)

J4-J5: 50VAC/200mA

J10: Analog output

There is 1 available option for this board:

- finished mono board without chokes and I/V conversion resistor

Installing the missing components

The I/V conversion resistor R82 is not installed because its value depends on the output current of the DAC. Furthermore, everyone has their own preferences on the type of resistance to use.

Below is the value of the necessary resistance as a function of the output current of the DAC:

DAC current output	Suitable DAC	R82
+0/-4mA	TDA1541A	1K5
Up to +/- 1mA	AD1862, AD1865	2K7
From +/-1mA to +/- 1.5mA	PCM1704, PCM1702	2K4
From +/-1.5mA to +/- 2.5mA	PCM63	1K5
From +/-2.5mA to +/- 3.5mA	PCM1792, PCM1794	1K

Suitable chokes to be used for L1-L2 are the Triad Magnetics C-3X (Mouser part 553-C-3X).

If the DAC is the TDA1541A is recommended to null its offset. In this case you need to install the following components:

- R64, 100R 0805 (Mouser part RG2012P-101-B-T5)
- Q27, MMBFJ113 (Mouser part 512-MMBFJ113)
- R65 1K trimmer (Mouser part 652-3296W-1-102LF)

Then provide regulated 5VDC/20 mA to J2 connector.

Two output options are available:

1. DC coupled. As supplied.
2. AC coupled. Remove R91, install C65-C66-C67-C68 (suitable part is the Rubycon 16MU226MD35750 Mouser part 232-16MU226MD35750, or the cheaper CDE 107BPA016M Mouser part 598-107BPA016M)

Settings

If you have installed the TDA1541A offset nulling components, turn R65 to get 0V at DAC output.

Adjust the output offset: turn R75 to get 0V at the output.

Caution

The board has a little DC offset drift. If your preamp/amp is DC coupled, AC coupled option is strongly recommended.