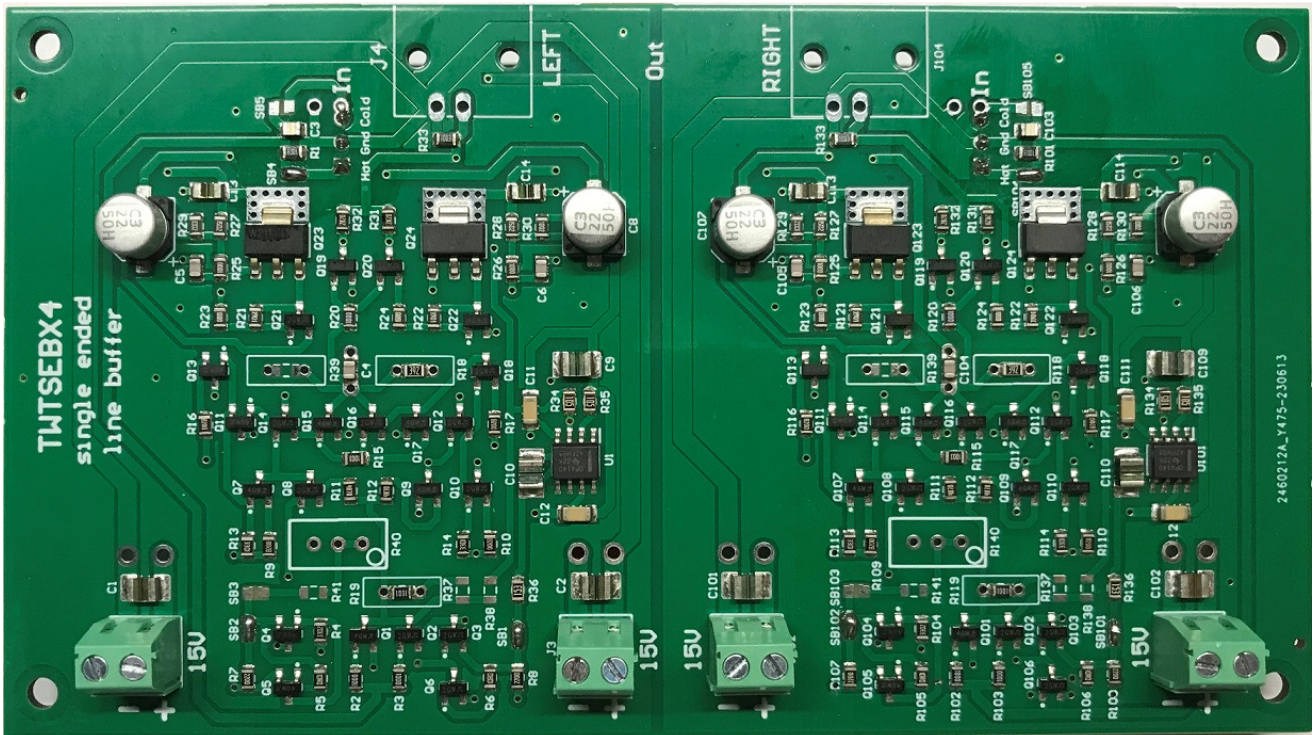


TWTSEBX4 Single ended line buffer



Solid state single ended line buffer suitable to be used as impedance adapter and amplifier for voltage output DAC. Designed to be stacked directly onto the TWSDAC-DSD, TWSDAC-DSD-SE and TWSDAC-LT discrete DACs.

Features:

Buffer type: single ended diamond buffer with DC servo

Output: configurable gain, optional overall NFB

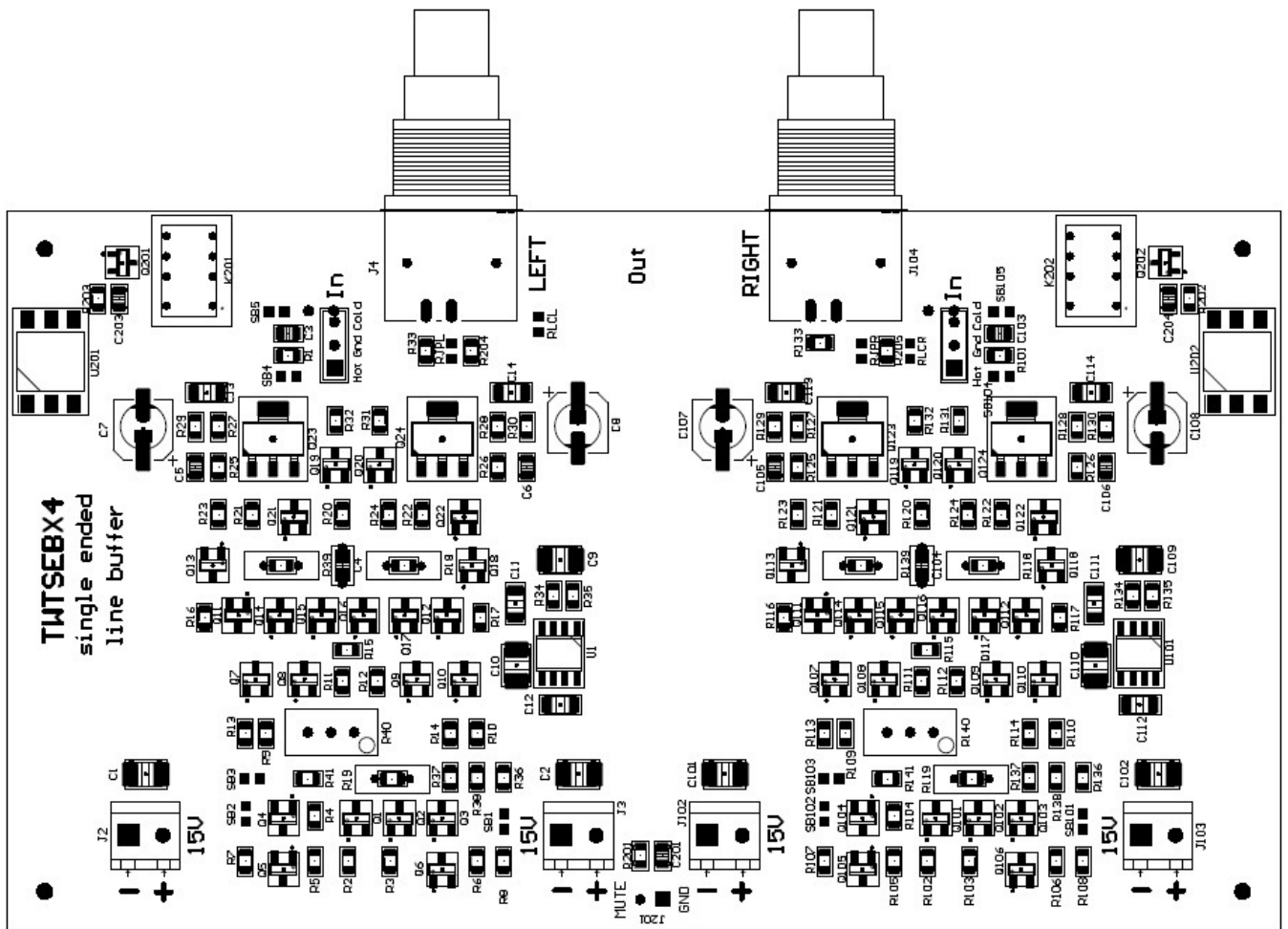
Optional: mute circuit

Board size: 140mm x 79mm (excluding RCA connectors)

Power supply: +/- 15VDC/100 mA

Board options: finished board only, with or without mute circuit

PCB layout



Connectors

J2, J3, J102, J103: 15 VDC/100 mA regulated power supply. Be careful with power supply polarities. Suitable power supply is TWRPS-DS.

J101: Input Right channel

J1: Input Left channel

J104: Output Right channel

J4: Output Left channel

J201: optional Mute 3V3 (Low=Muting, High=Active)

There is 2 available options for this board:

- finished boards without mute circuit (fully assembled without RCA connectors)
- finished boards with mute circuit (fully assembled without RCA connectors)

Suitable RCA connectors can be sourced from Hifi Collective, part number is LCHQRCA.

Input options:

1. Hot, J1 Hot and Gnd pins. As supplied. Suitable for TWSDAC-DSD and TWSDAC-DSD-SE.
2. Cold, J1 Cold and Gnd pins. Cut SB4 and SB104 solder bridges, solder SB5 and SB105 solder bridges. Suitable for TWSDAC-LT.

Output options:

1. DC servo enabled, manual offset setting disabled. As supplied.
2. DC servo disabled, manual offset setting enabled. Cut SB1, SB101, SB2 and SB102 solder bridges, solder SB3 and SB103 solder bridges, set the DC offset by R140-R141
3. DC servo enabled, manual offset setting enabled. Solder SB3 and SB103 solder bridges set the DC offset by R140-R141

Settings

Manual offset settings: turn R40 and R140 to get 0V at Left and Right outputs (connect a DMM to J4 and J104).

Gain:

1. 4X gain, as supplied. R18 and R118 resistors value is 3K9, R19 and R119 resistors value is 1K. Suitable for TWSDAC-DSD and TWSDAC-DSD-SE.
2. Unity gain. Replace R19 and R119 with 3K9 resistors (3K9 0805 resistor, Mouser part 754-RR1220P-392D). Suitable for TWSDAC-LT.

Overall Negative Feedback (not recommended in Unity gain mode):

1. Without overall negative feedback. As supplied.
2. With overall negative feedback. Replace R18 and R118 with 100K resistors (100K 0805, Mouser part 754-RR1220P-104D). Install R38 and R138, 3K3 resistors (3K3 0805, Mouser part 754-RR1220P-332D). Suitable for TWSDAC-DSD and TWSDAC-DSD-SE.

Caution

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

Optional Mute circuit

Using the Mute circuit of the TWSEBX4:

1. Remove RJPL and RJPR solder bridges

Input mute signal must be 0V to get the output of the buffer shorted to ground (Muting) or 3V3 to get the output of the buffer in normal operation (Active). TWSAFB-XMOS USB receiver provides the suitable mute signal.

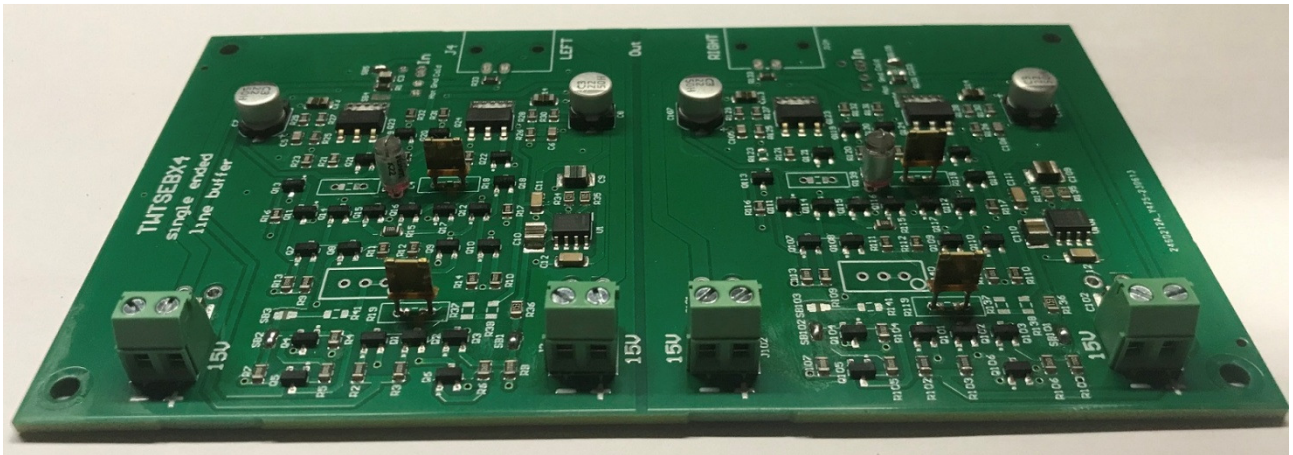
The mute circuit uses 100 ohm resistors to short the output to ground when muting is enabled. These resistors are in series with the analog outputs when the muting is disabled. If you want to bypass the series 100 ohm resistors when muting is disabled to get lower output impedance you have to short the RLCL and RLCR solder bridges.

If you are connecting the buffer to the Single Ended DSD DAC TWSDAC-DSD-SE driven by the TWSAFB-XMOS USB receiver, the mute circuit is mandatory to avoid click and pop during the sample rate switching. Moreover the DC servo has to be disconnected and the output DC offset has to be compensated by trimmers R41-R141 (please see output option 2 - DC servo disabled, manual offset setting enabled).

Optional audiophile tweaking

TWSEBX4 is supplied with standard components, but some of them can be replaced with better ones.

1. C4, C104 are 22pF 0805 NP0 capacitors, replace them with polystyrene capacitors of the same value (source them from HiFi-Collective or Parts Connexion)
2. R18, R118, R19, R119 are standard thin film 0805 resistors. Replace them with Z-Foil resistors, through hole footprints provided on the board, see the resistors value above (source them from HiFi-Collective or Parts Connexion)



TWTSEBX4 with polystyrene capacitors and Z-Foil resistors.