

Active Transformer Board

Assembly and User's Guide

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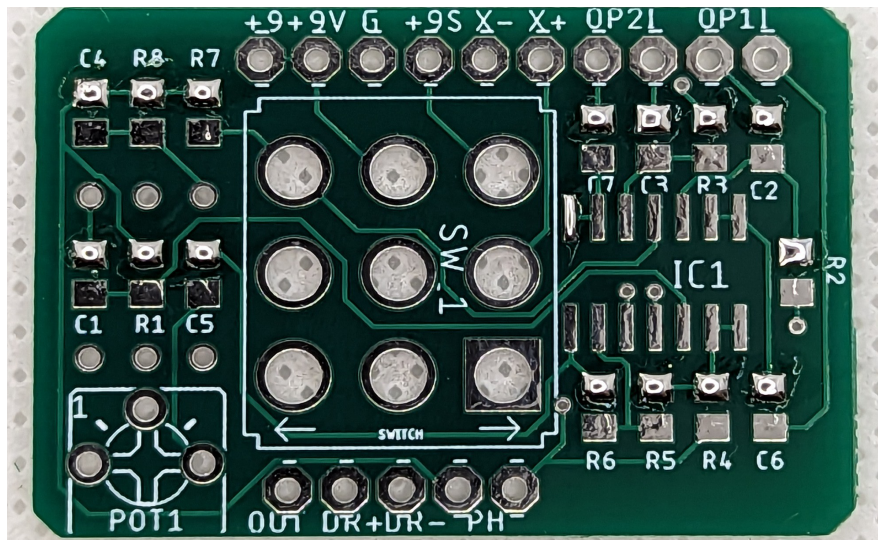
1 Introduction

A very common question when it comes to sustainers is whether the driver can be used with a neck pickup or as a neck pickup so that the user doesn't give up having a neck pickup to have a sustainer. One way to enable this is to actually use the driver as a neck pickup when not being used for sustaining. In order to turn the low-impedance, low-wind driver signal into something suitable for pickup purposes, a transformer is needed to step up the voltage.

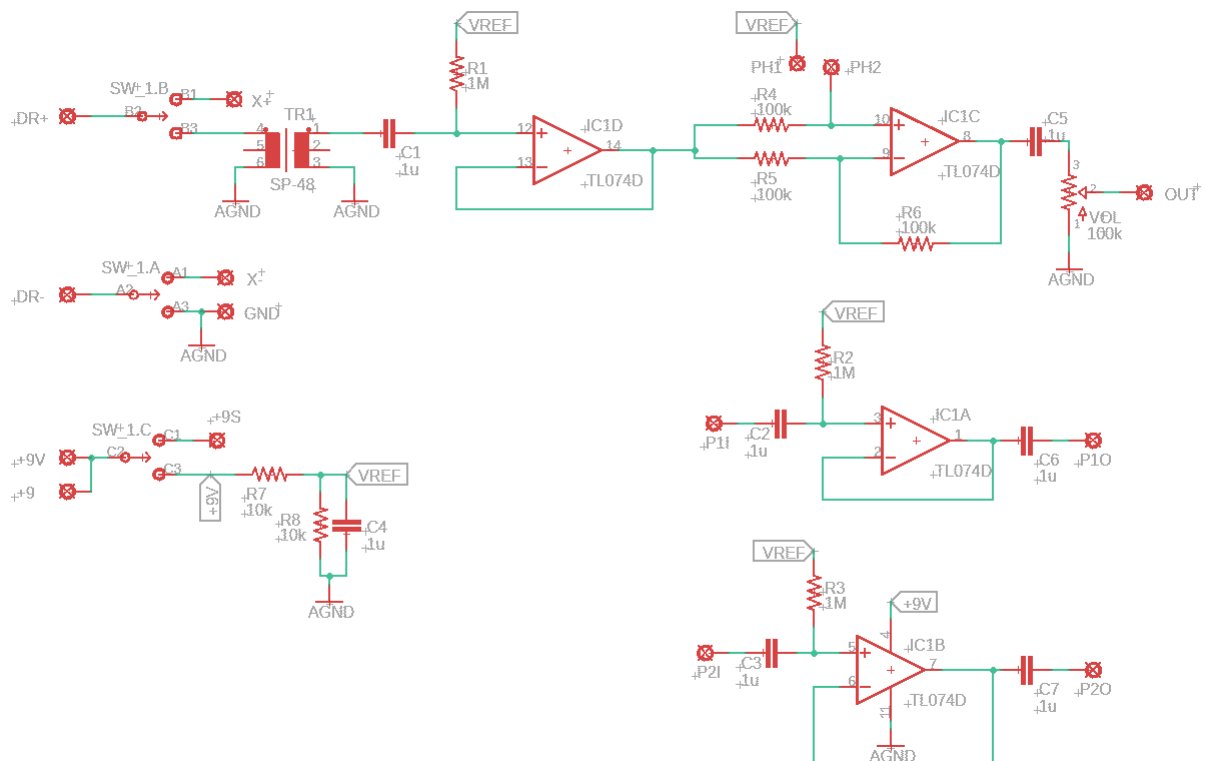
While the transformer works very well for stepping up the voltage as a pickup, it is not able to be combined with other pickups due to impedance mismatches. In order to remedy this situation, the stepped-up driver signal and the other pickup signals are all buffered to result in a common output impedance that can be combined with a standard pickup selector. The board shown here accomplishes this.

2 PCB Overview

The transformer board performs two separate functions. First, it switches the power between power between the sustainer circuit board and the onboard buffers. Second, it switches the driver coil leads between going to the sustainer circuit board or going into the transformer and then buffer. The unpopulated board along with the full circuit schematic is shown below.



Unpopulated Active Transformer Board



Active Transformer Board Full Schematic

3 Assembly

3-1 Board Connections

There are several connection points on the board. These are listed and explained below.

+9

This pad is connected internally to +9V and is connected to the +9 pad on the Stealth Mini board. This supplies power at all times to the Stealth power MOSFET's, just as would be done without the transformer board.

+9V

This pad is connected internally to +9 and is connected to the power source in the guitar (typically a 9V battery).

G

This is the ground pad. In order to ensure that the onboard battery doesn't get drained prematurely, it is recommended that this ground actually be tied to a switched stereo jack so that power is only used when the guitar is plugged in.

+9S

This pad is connected to the +9S pad of the Stealth Mini board. This supplies power to the majority of the sustainer circuit only when activated.

X-

This pad is connected to the X- pad on the Stealth Mini board. This is the driver negative connection.

X+

This pad is connected to the X+ pad on the Stealth Mini board. This is the driver positive connection.

OP2

This is the output of the second pickup buffer. It is identical to the first pickup buffer, so it does not matter which buffer a pickup is connected to.

P2I

This is the input of the second pickup buffer. It is identical to the first pickup buffer, so it does not matter which buffer a pickup is connected to.

OP1

This is the output of the first pickup buffer. It is identical to the second pickup buffer, so it does not matter which buffer a pickup is connected to.

PII

This is the input of the first pickup buffer. It is identical to the second pickup buffer, so it does not matter which buffer a pickup is connected to.

OUT

This the buffered neck output signal. There will only be signal on this pin when the switch is set to disable the sustainer.

DR+

This is the connection to the actual driver positive wire. This wire is switched between the transformer or sustainer circuit depending on the switch position.

DR-

This is the connection to the actual driver negative wire. This wire is switched between ground or the sustainer circuit depending on the switch position.

PH

These two pins are a phase inversion set of headers. If the driver-as-pickup combined with another pickup sounds very thin and weak, try changing these pins connection state and listen to the results. These pads could also be hooked up to a switch to allow for manual changing of driver-as-pickup phase in real time.

3-2 Output Level

The output level is set by way of the POT1 control. While this will help if the driver-as-pickup is too loud, it does not provide positive gain, which would have increase circuit complexity, component count, board size, and cost.