



Overview

Back in 2005 I had the pleasure of owning both the Timmy™ and Tim™ pedals which I purchased directly from the designer, Paul Cochrane. In those days you had to call him to order his pedals. After mentioning that I was into DIY, Paul was kind enough to talk to me for almost an hour about pedal building. That Tim pedal ended up being my go-to when I was recording two records later on that summer. A few years later I had built my own versions of both pedals so I decided to sell the originals. I really do regret selling that Tim™.

Other than a handful of etched Timmy™ style boards I sold back in 2010 or so, I have not done any *official* mbp projects based on either design. With the original Tim™ being out of production for several years now I think that makes it fair game for DIY. Well, IMO at least!

The Shortbus is based on that ver.1 Tim™ that I owned. However, it is not a 1:1 clone and I'll explain the small differences in the Notes section. At its core, the Tim™ is a single overdrive circuit with passive bass and treble tone controls and a pretty unusual "boost" circuit. It's long been hailed as *the* transparent overdrive. Personally, I don't agree with that take because I don't think such a thing truly exists. But, that's not a dig on the design. It's a great OD and every DIY'er should build some variation of the Tim/Timmy.

Controls

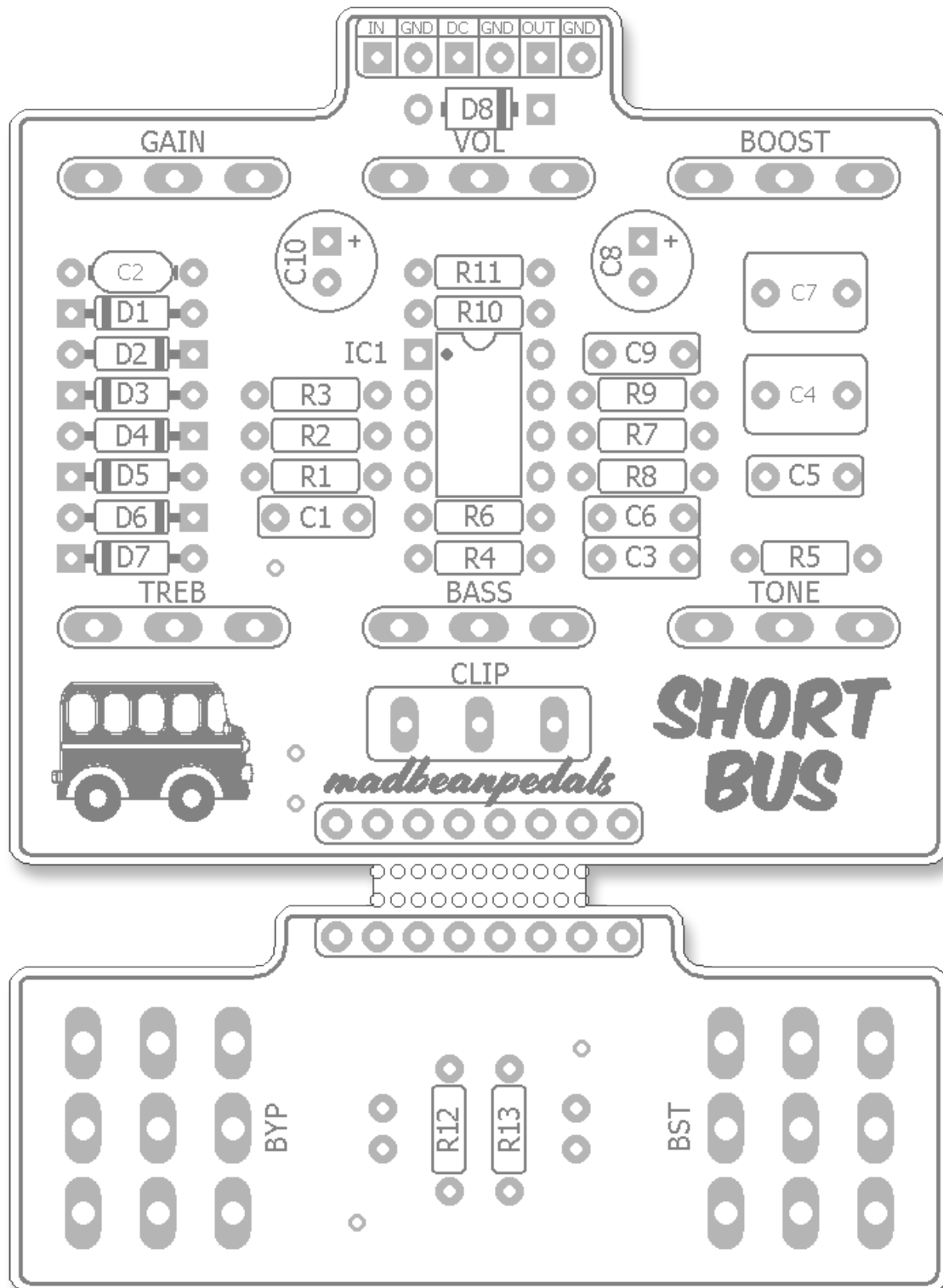
- **VOL, GAIN:** Self-explanatory.
- **BASS, TREBLE:** Both the tone controls operate as roll-offs, meaning their maximum values are at their respective CCW positions. Additionally, the BASS control sets the clipping frequency range of the IC1A gain stage. So, the more bass means more low frequencies are clipped. The TREBLE control is just a simple low pass filter after the gain stage and is followed by a small recovery stage.
- **TONE, BOOST:** The TONE and BOOST controls work in parallel with the BASS control. When the BOOST is activated the overall gain is increased. The TONE control works as an offset to the BASS control to extend the clipping frequency range. See the Notes section for more explanation.
- **CLIP:** This switch chooses between three different styles of clipping. The center position is the default which is symmetrical. The left position is asymmetrical and the right position is a more compressed type of symmetrical clipping. This implementation is slightly different than the original Tim™.

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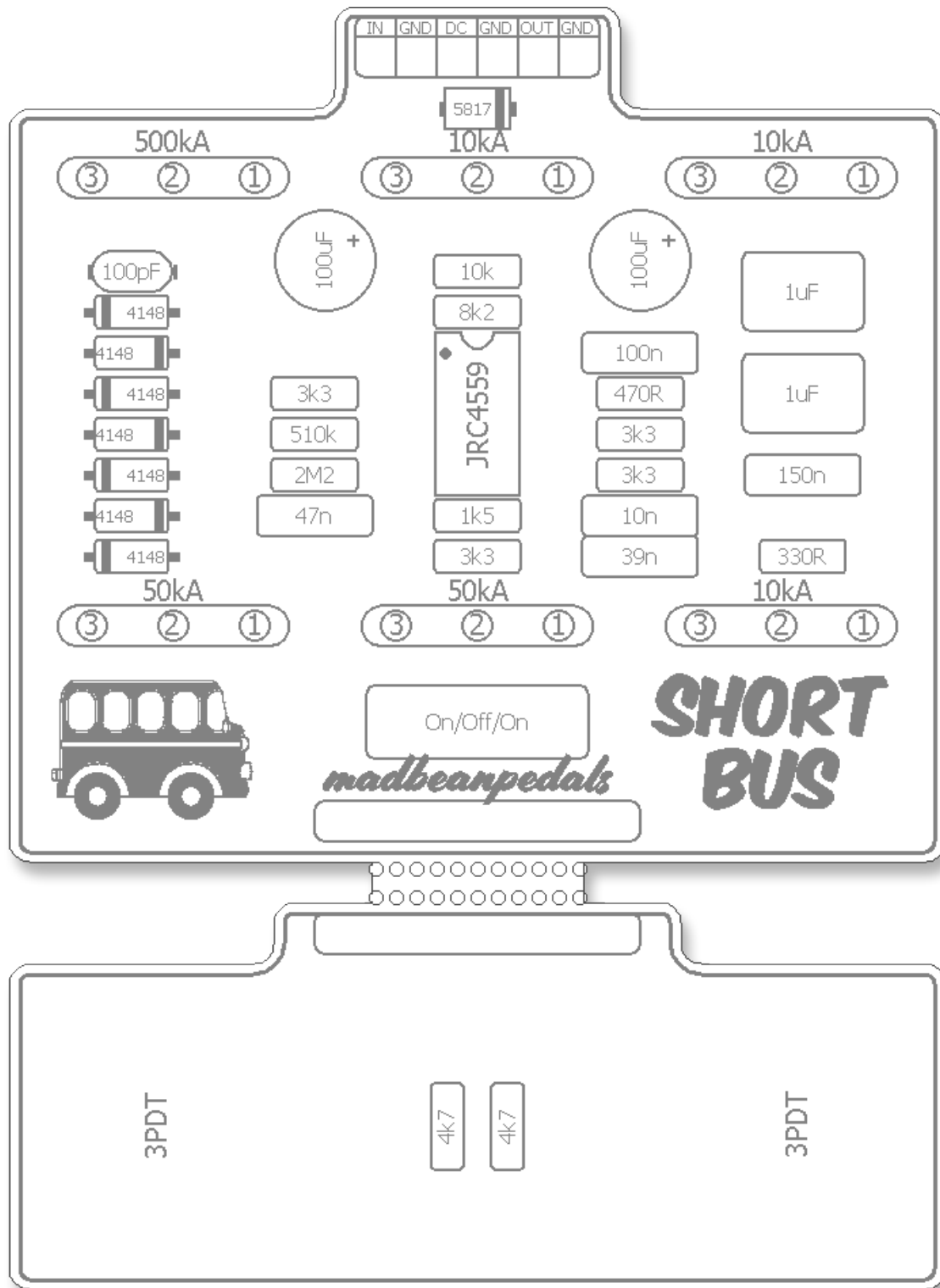
Technical assistance for is available via the [madbeanpedals forum](#). Please go there rather than emailing me for personal assistance. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.

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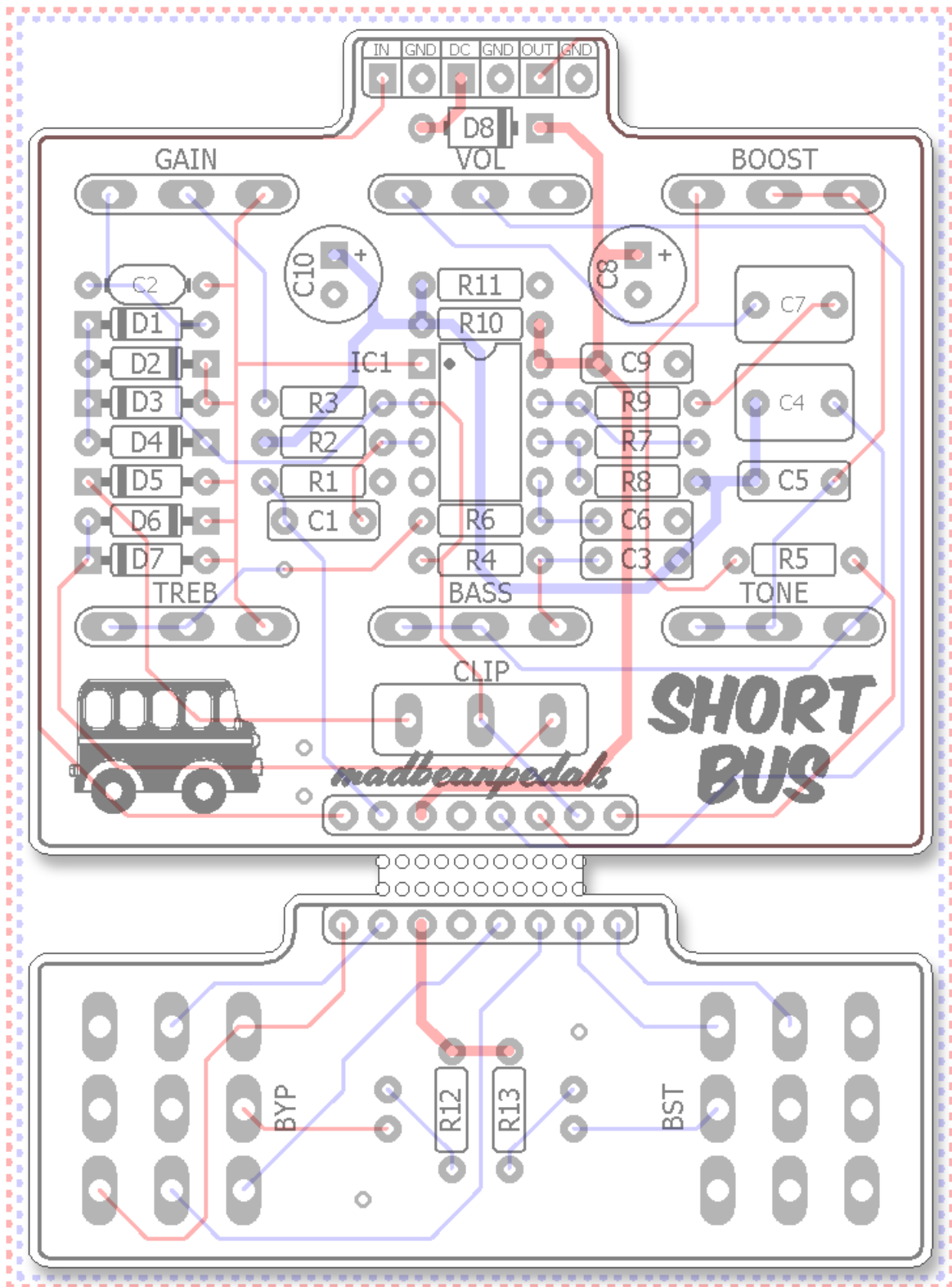
Parts Layout



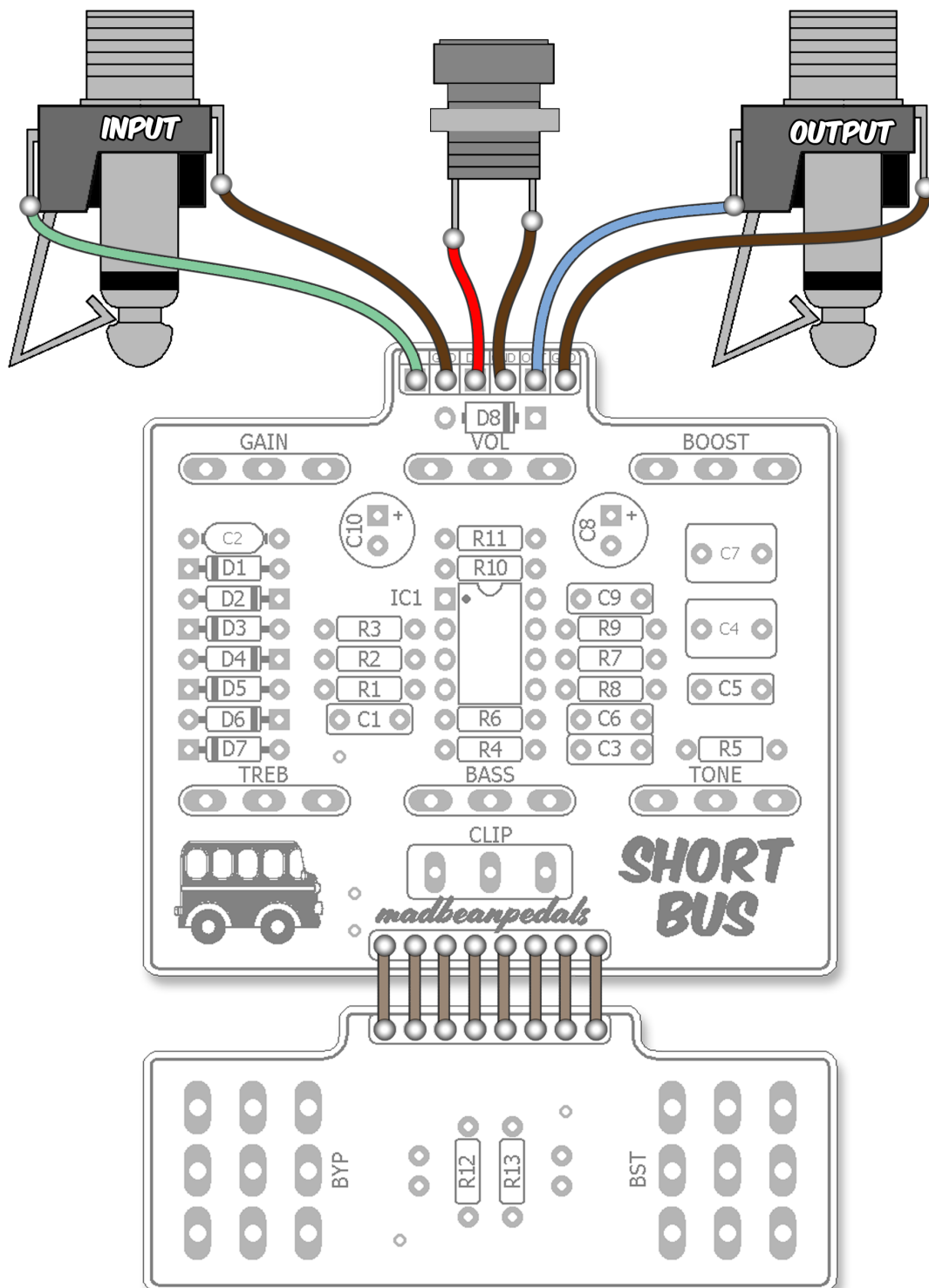
Component Values



Trace Layout



Wiring



The 3PDT and LEDs are soldered directly to the bottom of the daughter board.

B.O.M.

Resistors		Caps		Diodes	
R1	2M2	C1	47n	D1 - D7	4148
R2	510k	C2	100pF	D8	1n5817
R3	3k3	C3	39n	LED1, 2	any
R4	3k3	C4	1uF	IC	
R5	330R	C5	150n	IC1	JRC4559
R6	1k5	C6	10n	Switches	
R7	3k3	C7	1uF	CLIP	On/Off/On
R8	3k3	C8	100uF	BYP	3PDT
R9	470R	C9	100n	BST	3PDT
R10	8k2	C10	100uF	Pots	
R11	10k			BOOST	10kA
R12	4k7			TONE	10kA
R13	4k7			VOL	10kA
				BASS	50kA
				TREB	50kA
				GAIN	500kA

Shopping List

Values	QTY	Type	Rating
330R	1	Carbon / Metal Film	1/4W
470R	1	Carbon / Metal Film	1/4W
1k5	1	Carbon / Metal Film	1/4W
3k3	4	Carbon / Metal Film	1/4W
4k7	2	Carbon / Metal Film	1/4W
8k2	1	Carbon / Metal Film	1/4W
10k	1	Carbon / Metal Film	1/4W
510k	1	Carbon / Metal Film	1/4W
2M2	1	Carbon / Metal Film	1/4W
100pF	1	Ceramic, MLCC, Mica	25v min.
10n	1	Film	25v min.
39n	1	Film	25v min.
47n	1	Film	25v min.
100n	1	Film	25v min.
150n	1	Film	25v min.
1uF	2	Film	25v min.
100uF	2	Electrolytic	25v min.
4148	7	or, 1n914	
1n5817	1		
LED	2	any color	5mm
JRC4559	1		
SPDT	1	On/Off/On, Solder Lug	
3PDT	2	foot-switch	
10kA	3	PCB Right Anlge	16mm
50kA	2	PCB Right Anlge	16mm
500kA	1	PCB Right Anlge	16mm

Additional Hardware

- (1) 125B enclosure
- (2) 1/4" mono jacks
- (1) Slim 2.1mm DC jack

Build Notes

There are a few differences in the Shortbus from the original Tim™ design. Unfortunately, I long ago lost the gut pics of my unit so most of this based off memory. Despite the differences, the Shortbus is a good representation of the overall tone and vibe of the Tim™.

1. The Shortbus uses a Schottky diode for reverse-polarity protection. I believe the original unit used a 1n400x between power and ground.
2. The clipping circuit is different. The original unit had either an internal DIP switch or one of the pots had a pull switch (I don't remember which one I had) to select between different diode setups (of 6 diodes total). The difference in the Shortbus is that this has been made an external toggle switch and the D6/D7 diode setup was adopted from later versions of the Timmy™, which I find more useful.
3. The Tim™ had an effects loop so that you could plug in another pedal for tone shaping, like an EQ. This has been omitted in favor of making the Shortbus a dual-switch 125B project.
4. Later versions included a 4n7 cap in parallel with R7 (my schematic). This was left off the Shortbus.

IIRC, all the original versions of the Tim/Timmy used a JRC4559 op-amp. I know this was changed later on for the LM1458. I don't know if any other op-amps were used over the 20 year lifespan of these pedals. Personally, I really like the 4580DD in this circuit. Try it out.

As mentioned, the Boost and Tone controls are unusual. They are not independent circuits but rather switch in some controllable alternate values in the gain circuit. The two controls are most useful when the non-boost mode is set to more of a mild overdrive (LOW, at lower Gain and Bass settings). If you are running Gain and Bass at their max, you're not going to hear much difference with the boost enabled. But, if you are running Gain at lower settings and have some bass rolled off, when the boost is turned on you'll get a big kick in volume and overdrive.

Building the circuit is straight-forward. You'll need to gently break apart the main and daughter boards first. Use a wire cutter to trim up any leftover nibs. The two 3PDTs and LEDs are soldered directly to the bottom of the daughter board. Be sure to get that part right, otherwise the circuit won't work.

Circuit Voltages

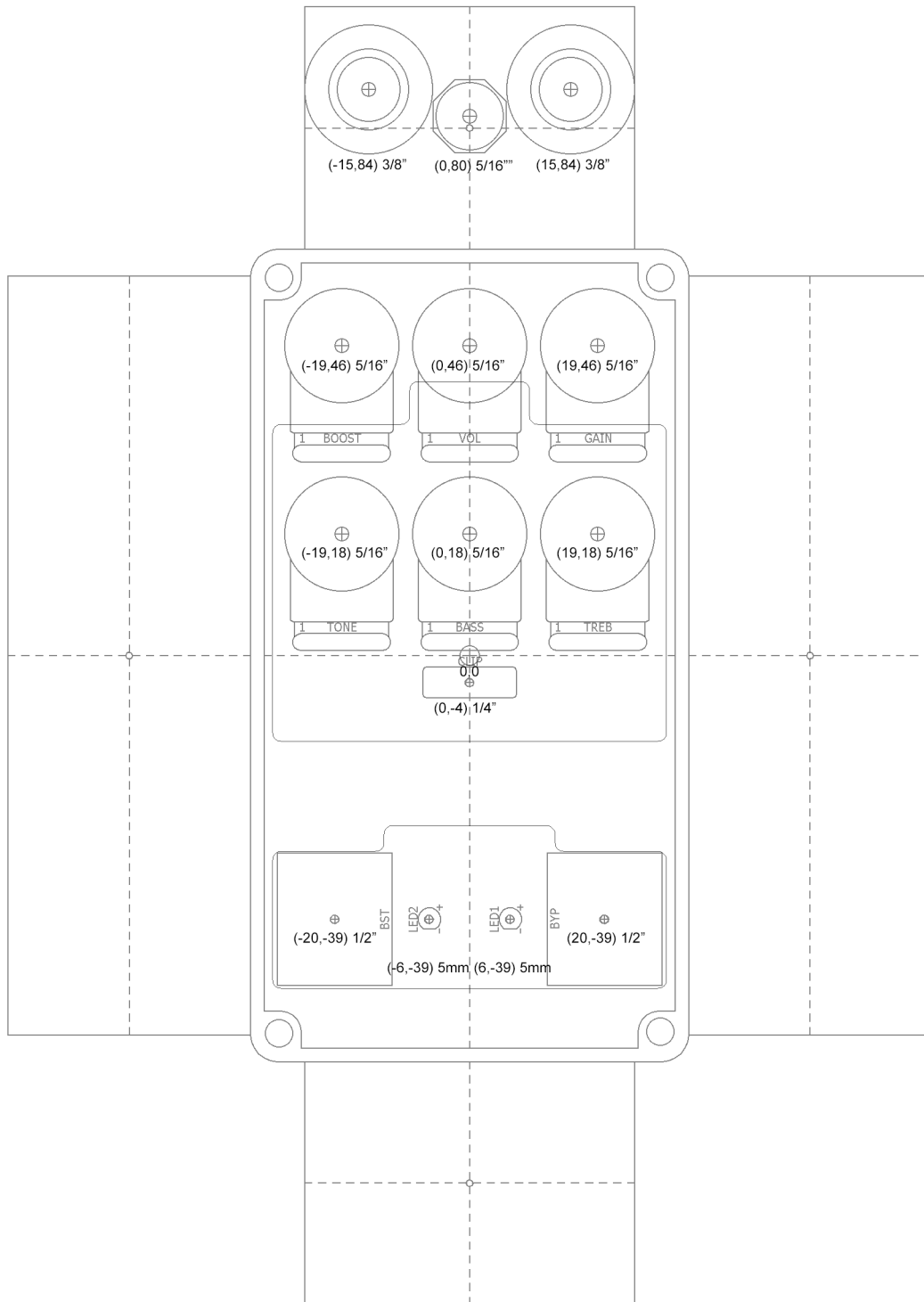
IC1 4580DD	
1	5.46
2	5.3
3	4.7
4	0
5	5.44
6	5.45
7	5.61
8	9.25

- 9.42vDC One Spot
- Current Draw: ~5mA
- Testing Conditions: Pots @ 50%, switch @ center position.
- Note: I did not have a 4559 on hand so I used a 4580DD instead.

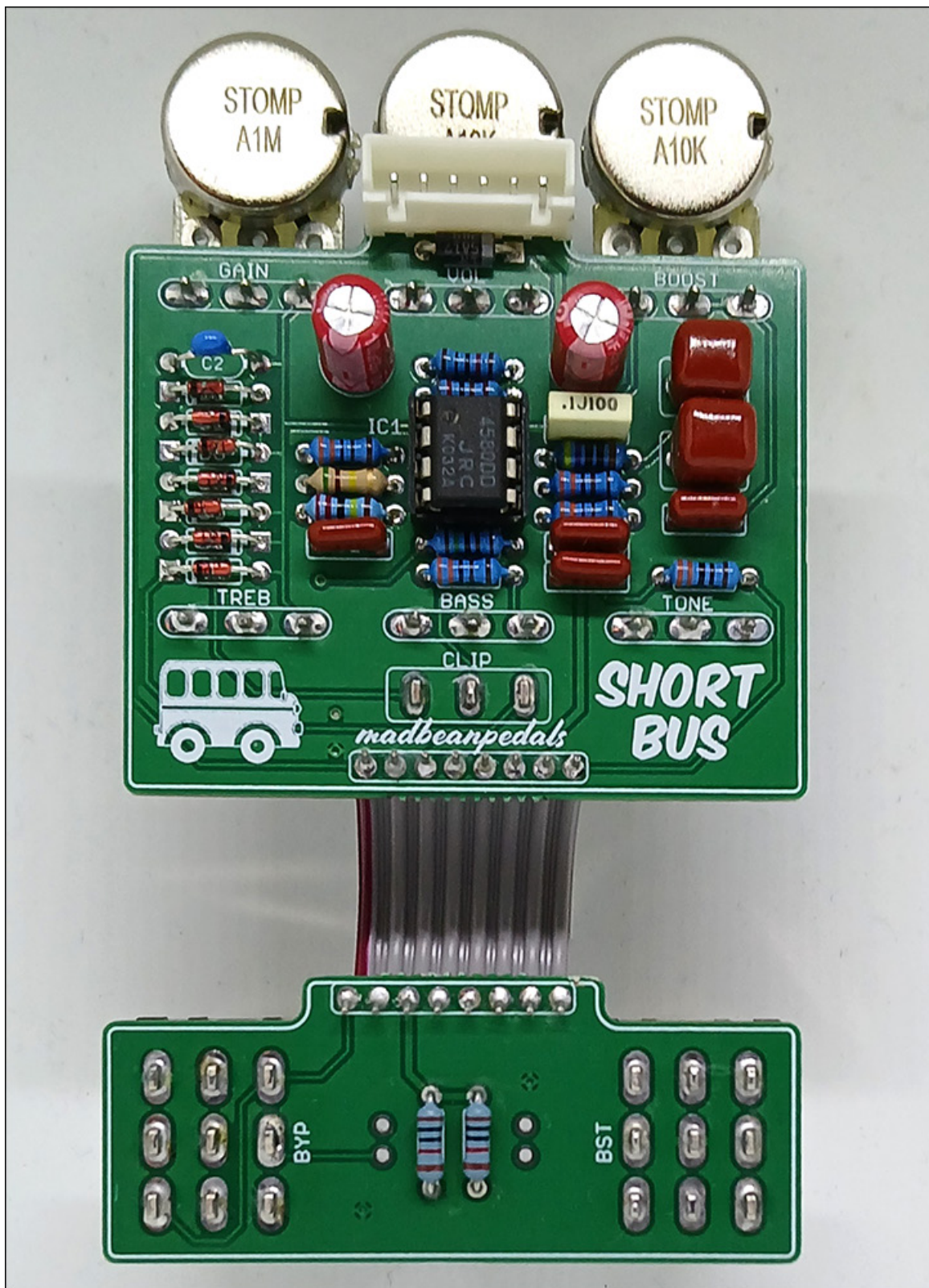
Drill Template

Coordinates are denoted in (X,Y), drill size format starting from the center (0,0) location of the enclosure.

Tayda drill link: https://drill.taydakits.com/box-designs/new?public_key=Y2JQ3dMdVZmZDdvdTE2WUxrM01ndz09Cg==



Build Pic



At the time of this build, I had no PCB mounted 500kA pots. So I used a 1MA pot and put a 1M resistor in parallel with it.

Schematic

