

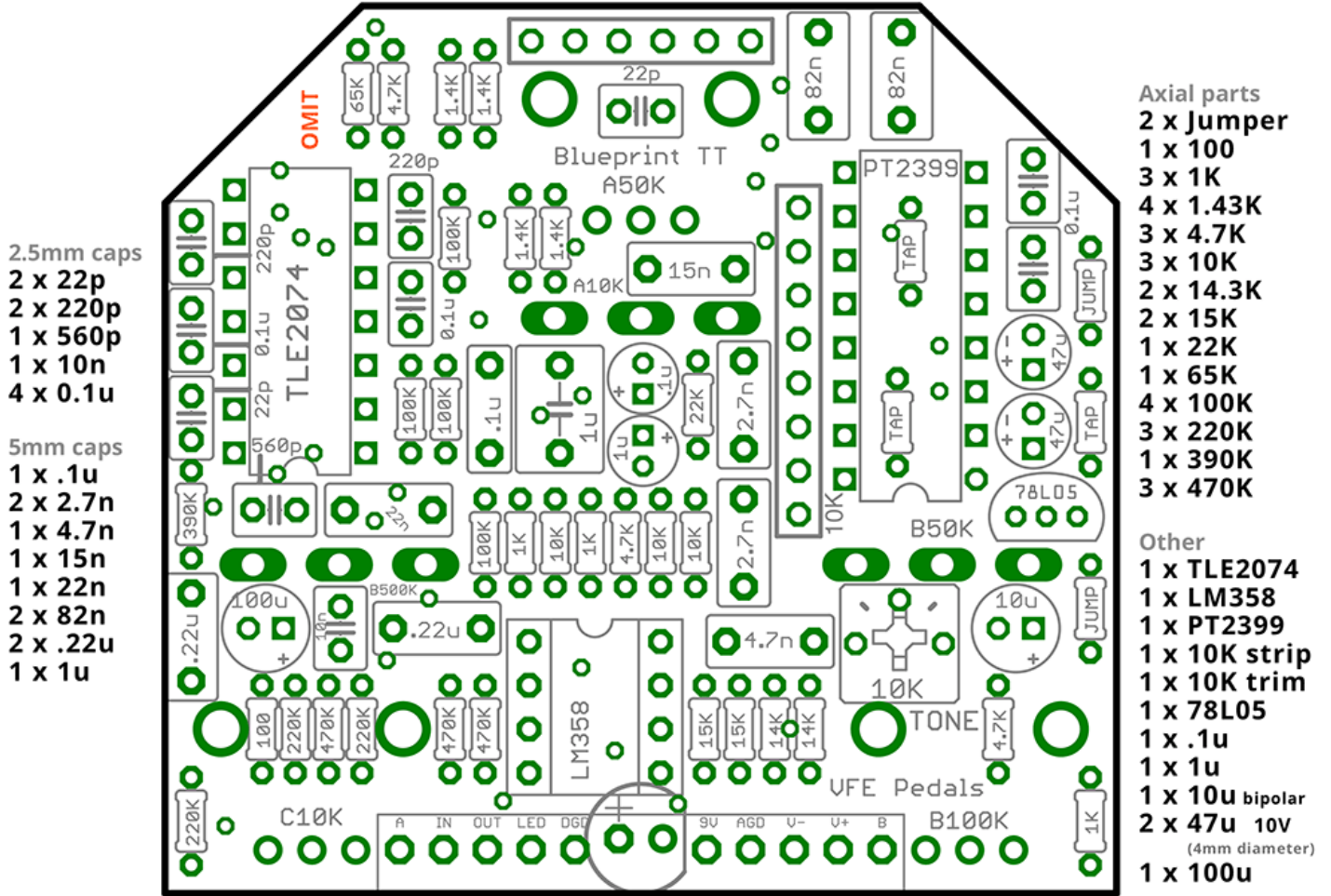
BLUEPRINT™

FX TYPE: Delay

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Project Doc © madbeanpedals

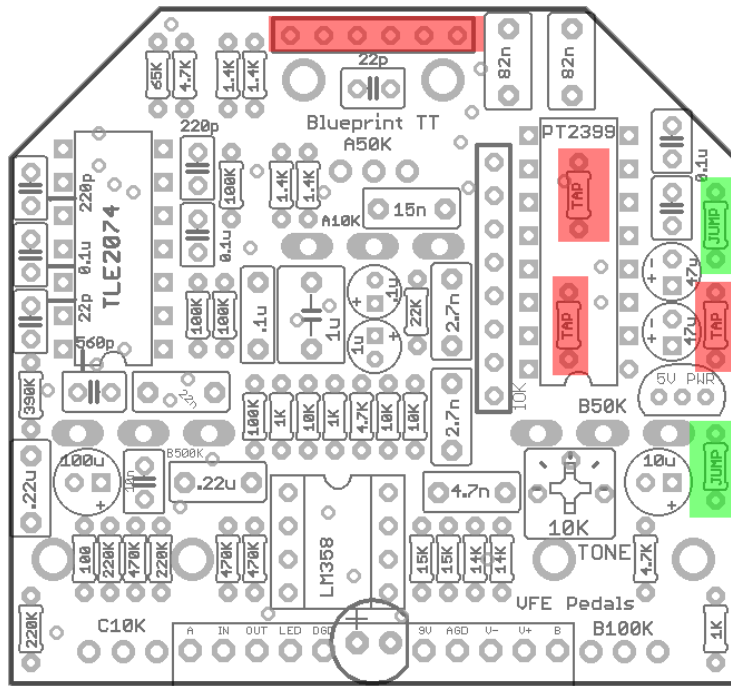
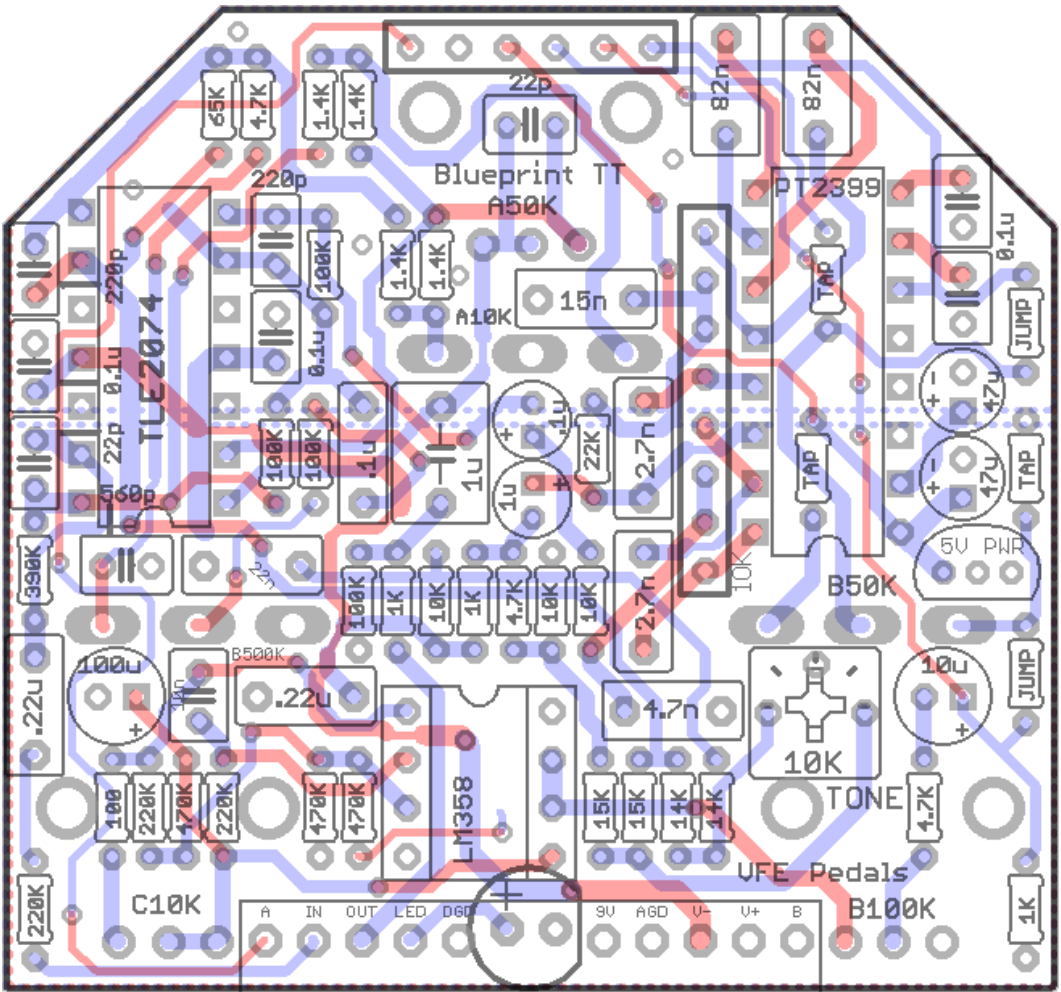
2.17" W x 2.025" H



Note: Use the values listed on the image above – not the values indicated on the silk-screen of the PCB. Some values changed over time in the VFE product cycles.

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Terms of Use: These projects are intended for DIY use only and may not be used in any commercial Endeavour including the sale of completed pedals or “kits”. The PCBs are the actual boards used to build the recently discontinued line of VFE pedals and have been generously provided to the DIY community by VFE for the purpose of DIY only.



■ leave empty
■ jumper

The areas in red appear to have been put in for a future tap tempo application (I don't think a TT version was ever made by VFE).

| Shopping List | | | | |
|---------------|-----------|-----------------------------------|---------|---------|
| QTY | Value | Type | Rating | Spacing |
| 1 | 100R | Metal / Carbon Film | 1/8W | |
| 3 | 1k | Metal / Carbon Film | 1/8W | |
| 4 | 1k43 | Metal / Carbon Film | 1/8W | |
| 3 | 4k7 | Metal / Carbon Film | 1/8W | |
| 3 | 10k | Metal / Carbon Film | 1/8W | |
| 2 | 14k3 | Metal / Carbon Film | 1/8W | |
| 2 | 15k | Metal / Carbon Film | 1/8W | |
| 1 | 22k | Metal / Carbon Film | 1/8W | |
| 1 | 65k | Metal / Carbon Film | 1/8W | |
| 4 | 100k | Metal / Carbon Film | 1/8W | |
| 3 | 220k | Metal / Carbon Film | 1/8W | |
| 1 | 390k | Metal / Carbon Film | 1/8W | |
| 3 | 470k | Metal / Carbon Film | 1/8W | |
| 1 | 10k strip | *see notes | | |
| 2 | 22pF | MLCC | 25v min | 2.5mm |
| 2 | 220pF | MLCC | 25v min | 2.5mm |
| 1 | 560pF | MLCC | 25v min | 2.5mm |
| 1 | 10n | MLCC | 25v min | 2.5mm |
| 4 | 100n | MLCC | 25v min | 2.5mm |
| 1 | 100n | Film | 25v min | 5mm |
| 2 | 2n7 | Film | 25v min | 5mm |
| 1 | 4n7 | Film | 25v min | 5mm |
| 1 | 15n | Film | 25v min | 5mm |
| 1 | 22n | Film | 25v min | 5mm |
| 2 | 82n | Film | 25v min | 5mm |
| 2 | 220n | Film | 25v min | 5mm |
| 1 | 1uF | Film | 25v min | 5mm |
| 1 | 0.1uF | Electrolytic *see notes | 25v min | |
| 1 | 1uF | Electrolytic | 25v min | |
| 1 | 10uF BP | Electrolytic | 25v min | |
| 2 | 47uF | Electrolytic | 25v min | |
| 1 | 100uF | Electrolytic | 16v min | |
| 1 | LM78L05 | | | |
| 1 | TLE2074 | | | |
| 1 | LM358 | | | |
| 1 | PT2399 | | | |
| 1 | 10k | Bourns 3362p | | |
| 1 | 50kA | PC Mount Plastic Shaft *see notes | 9mm | |
| 1 | 10kC | PC Mount Plastic Shaft | 9mm | |
| 1 | 100kB | PC Mount Plastic Shaft | 9mm | |
| 1 | 10kA | PC Mount Right Angle | 16mm | |
| 1 | 50kB | PC Mount Right Angle | 16mm | |
| 1 | 500kB | PC Mount Right Angle | 16mm | |

This list is for the audio board only. See the [Switching Board](#) doc for the parts needed for the switching system. This effect does use a split-rail power supply.

BOM Notes

- You can sub either 14k or 15k for the 14k3 resistors.
- You can also sub 1k5 for 1k43 (1.43k).
- The 0.1uF Electrolytic seems to be a space saving measure. You can try a film cap there but it might be hard to fit it in. Link below for an electrolytic cap.
- The 10uF does not have to be Bi-Polar. A regular polarized cap works fine.
- The 47uF caps do not have to be 10v. I used regular 25v caps.
- The 100uF cap must be a small diameter. Link below.
- The Blueprint uses a resistor network for space saving. Link below.
- Smallbear does not carry the 10kC 9mm pot (link below for Tayda). You can use a 10kB instead. A linear pot for the Rate control will bunch up more at the end of the turn.

22pF (MLCC):

<http://www.mouser.com/Search/ProductDetail.aspx?R=C315C220J5G5TAVirtualkey64600000virtualkey80-C315C220J5G>

220pF (MLCC):

<http://www.mouser.com/ProductDetail/KEMET/C320C221J2G5TA?qs=sGAEpiMZZMt3KoXD5rJ2N%252bwgBI1a522xefKI%252bxFregI%3d>

560pF (MLCC):

<https://www.mouser.com/ProductDetail/KEMET/C315C561J1G5TA?qs=sGAEpiMZZMt3KoXD5rJ2N%2fRod39htE4gZHA%2f7q8oYA%3d>

10n (MLCC):

<http://www.mouser.com/ProductDetail/TDK/FG18C0G1H103JNT06/?qs=sGAEpiMZZMt3KoXD5rJ2N5U4Cys%2fUpTlgSWmruA3wbyX7d2yhizmuA%3d%3d>

100n (MLCC): <http://www.mouser.com/Search/ProductDetail.aspx?R=C320C104K5R5TAVirtualkey64600000virtualkey80-C320C104K5R>

0.1uF Electrolytic:

<https://www.mouser.com/ProductDetail/Nichicon/USP1H0R1MDD?qs=sGAEpiMZZMtZ1n0r9vR22bflmQ%2f0BjFkDyyjdyklBfs%3d>

10uF BP:

<http://www.mouser.com/Search/ProductDetail.aspx?R=ECE-A1EN100Uvirtualkey66720000virtualkey667-ECE-A1EN100U>

100uF (small diameter):

<https://www.mouser.com/ProductDetail/Nichicon/UVR1A101MDD6?qs=UBiR96lgLrSPbXe39cac9Q%3d%3d>

9mm Plastic Shaft, PC Mount (50kA, 100kB):

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/>

9mm Plastic Shaft, PC Mount (10kC):

<https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/anti-log-reverse/10k-ohm-anti-log-taper-potentiometer-round-knurled-plastic-shaft-pcb-9mm.html>

16mm Right Angle, PC Mount (10A, 50kB, 500kB):

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/>

TLE2074:

<http://www.mouser.com/ProductDetail/Texas-Instruments/TLE2074CN/?qs=sGAEpiMZZMtCHixnSjNA6CumnoLUEIGjtkQTPuP%252bT7A%3d>

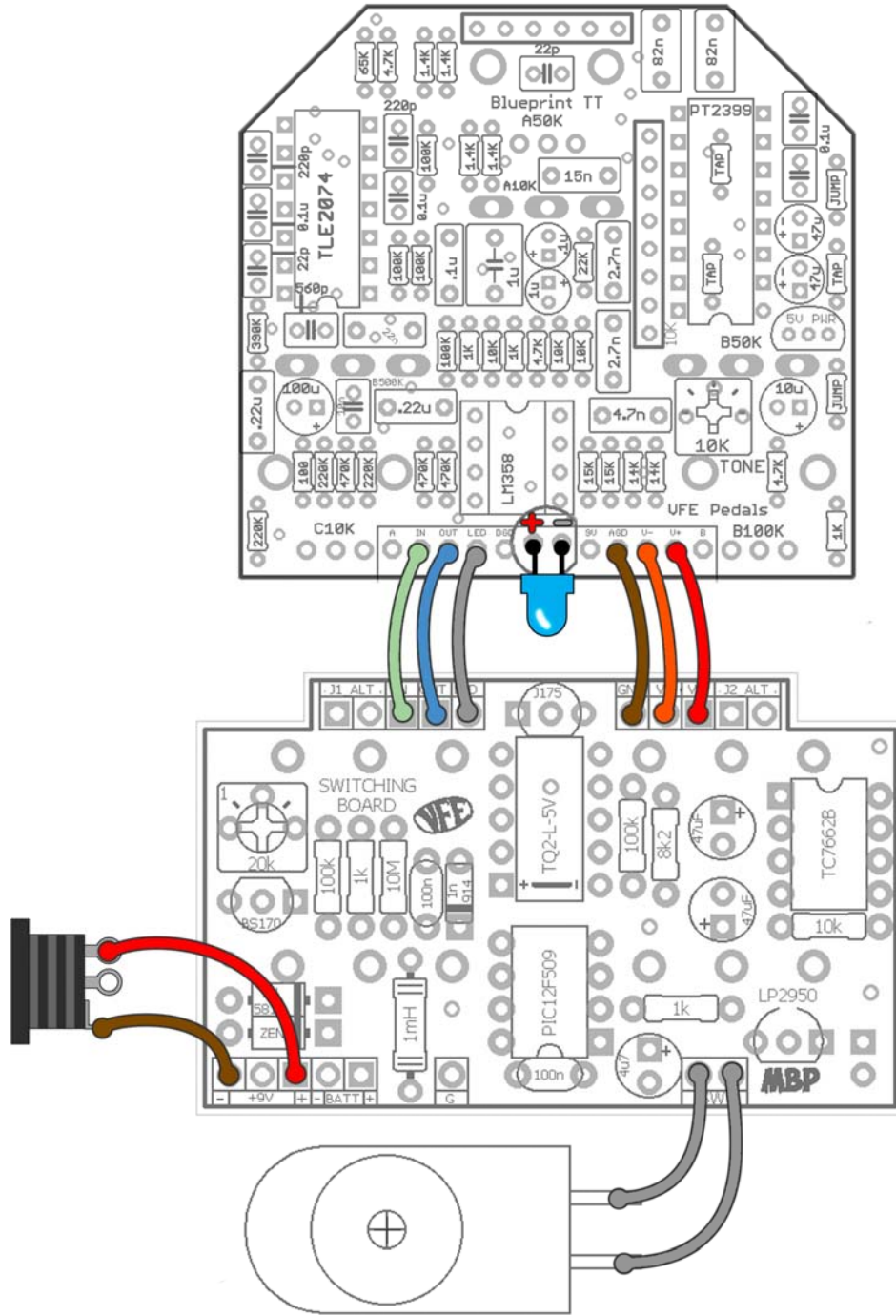
10k Resistor Network:

<http://www.mouser.com/ProductDetail/Bourns/4308R-102-103LF/?qs=sGAEpiMZZMvrmc6UYKmaNUjQ8u6jS5WRGwLbduv9WWM%3d>

10k Trimpot:

<https://www.mouser.com/ProductDetail/Bourns/3362P-1-103LF?qs=sGAEpiMZZMvygUB3GLcD7k%252bod3ZqvEIQboRRPdOKB6M%3>

Wiring



For more detailed wiring information and options, please refer to the “v2” Switching Board document

http://www.madbeanpedals.com/projects/VFE/VFE_SwitchingBoard_v2.pdf

Overview

From the VFE Website: The BLUEPRINT is an analog-voiced delay pedal, perfect for warm, ambient delays that don't muddy up your tone. The BLUEPRINT delay uses a unique EQ method that blends a dark and bright delay, yielding a warm tone without sacrificing clarity. An internal trimpot allows you to adjust the blend to brighten or darken the tone to your taste. Get up to 580ms of delay time, plus modulation for adding slight detuning, warbled chaos, or even pseudo-chorus sounds.

Controls

Descriptions from the VFE website: <http://vfepedals.com/blueprint.html>

TIME: Sets the delay time from ~ 40ms up to 580ms.

ECHO: Controls the amount of feedback in the delay circuit, and therefore the rate of decay of the repeats. It has a range from one repeat all the way to self-oscillation for those spaceship-style sounds.

MIX: Mixes between the unaffected dry signal & the wet delay signal. Fully counterclockwise = pure dry signal, fully clockwise = pure wet signal.

LEVEL: Sets the output volume of the Blueprint. Up to 20dB of clean boost on tap, making this a perfect boost/delay for your solos!

DEPTH: Sets the depth of the modulation. Turn 100% counterclockwise to turn the modulation off.

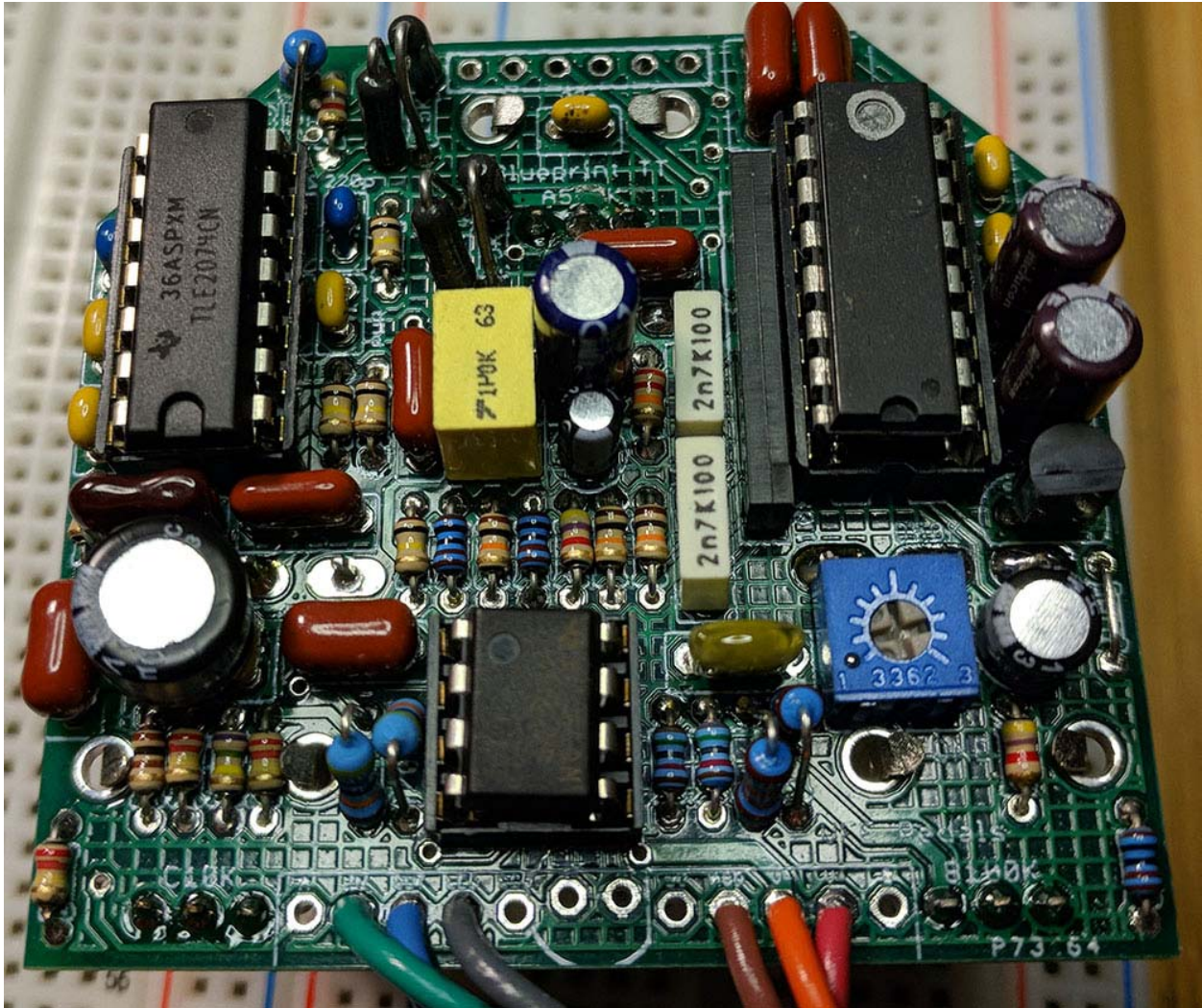
SPEED: Sets the speed of the modulation. Go from fast warble to a slow detuning effect.

TONE: The internal TONE trimpot blends the delay between two signals, one with a bright EQ and another with a dark EQ.

Notes

- This is a very compact layout and you should take your time populating!
- The LEVEL control allows for a lot of boost (if you wanted to use the Blueprint to boost a solo with delay, for example). However, if you don't want to use it that way try a 10kA pot instead. This allows you to more easily dial in unity with your bypass signal but still offers a little boost at the same time (I decided on 10kA for my build).
- The ECHO control will overload and distort the PT2399 as it goes into self-oscillation (around the last 20% of the control). That's just the nature of the design.
- The 10k resistor strip is composed of isolated resistors and does not have an orientation.

Build Pic



The 100uF cap is a very tight fit so I linked a 4mm diameter part on pg.4. If you use low profile caps like me then you can install it on top of the two adjacent caps. Pic below.

