TrueSoft

F X Type: **UTILITY**
Build Level: Beginner
Based On: VFE® SPS Switching System™

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Overview

The **TrueSoft 3.4** is the heart of all the VFE SPS projects. It handles the I/O and power for each circuit. It utilizes a relay-based, soft switching system for silent bypass operation. The TrueSoft PCB is connected to a separate audio PCB for each VFE SPS project via a soldered ribbon cable (included).

There are two varieties of the TrueSoft 3.4. The first version includes a voltage inverter for projects requiring split-rail DC operation. The second version does not include the inverter and is used with projects that require simple single rail 9v power. The correct version is provided with each VFE SPS project offered at madbeanpedals at no additional charge.

The TrueSoft PCB does require some through-hole component population. All the surface mount parts are pre-soldered to the bottom of the PCB.

NOTE: The VFE SPS effects are designed for the 1590BS enclosure. Since that enclosure type is not widely available, these projects are designated for 125B only. There are paper and Tayda drill templates available for the 125B in this document.

Controls

There is only one user control on the TrueSoft 3.4 PCB. It is a slide switch to select whether the effect is true bypass or buffered bypass. Enable buffer mode when required for your pedal chain. Usually one buffered pedal near the start and/or end of a pedal chain is enough to counteract any signal loss from using multiple pedals with patch cables inbetween.

ALL VFE projects have an alternate momentary bypass mode. When enabled, the effect is only active while the footswitch is pressed. To enable momentary mode:
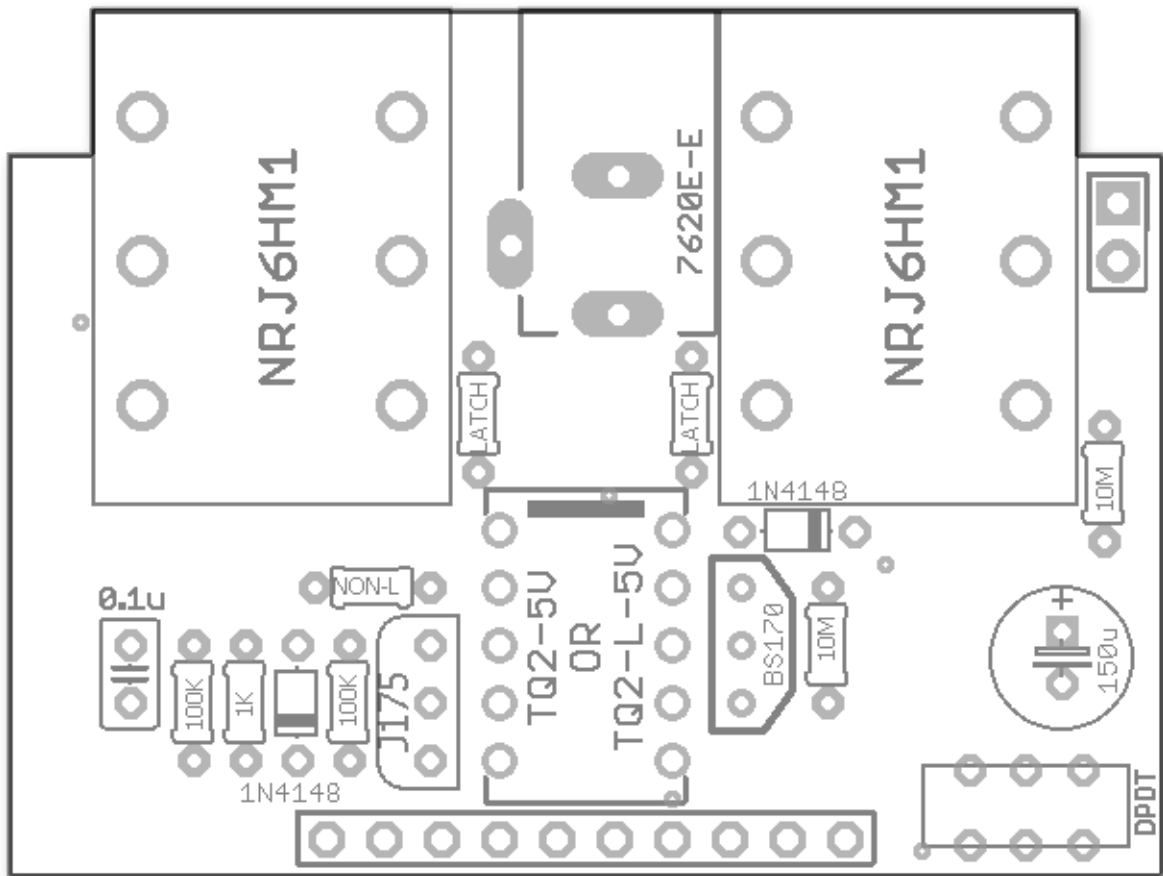
1. Wait 5 seconds after the last footswitch activation.
2. Tap the FS twice in quick succession then tap and hold. After a few seconds the bypass LED will blink rapidly to indicate momentary mode is enabled.
3. To go back to regular bypass mode, just repeat steps 1 and 2.
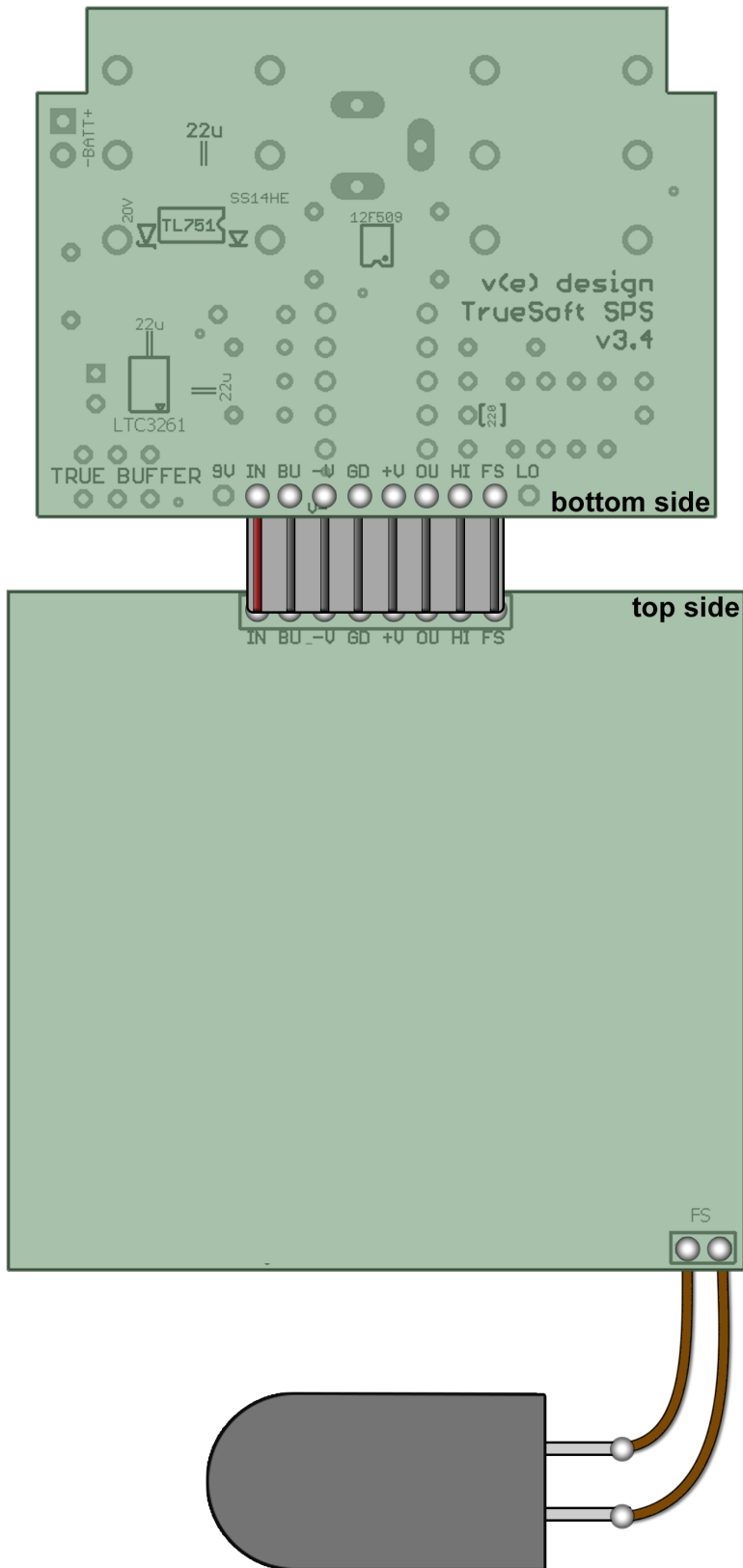
Wiring

Unless otherwise noted, all SPS projects are wired the same way, using the provided ribbon cable to connect the audio and I/O PCBs.

B.O.M.

Value	QTY	Type	Rating
100k	2	Metal Film	1/8W
10M	2	Carbon Film	1/8W
100n	1	MLCC	25v min.
150uF	1	Electrolytic	25v min.
1n914	2		
J175	1		
BS170	1		
Relay	1	TQ2-5v or TQ2-L-5V (see notes)	
DPDT	1	JS202011AQN	
1/4" Jacks	2	NJR6HM1	
DC Jack	1	7620E-E	
Ribbon Cable	1	included	

Shopping List

For your convenience, I have created a Mouser project that includes all the through-hole parts needed for the TrueSoft 3.4. It includes both relay types (latching and non-latching) so be sure to remove the relay you are not using. The Neutrik jacks do not come with nuts, so those are included in the Mouser project, as well. The approximate cost is $10 (ex. shipping)

https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=8d68234c06

| Sort	Product Detail			Description	Quantity	Availability	Unit Price (USD)	Ext. Price (USD)	🗑
1		Mouser #: Mfr. #: Mfr.: Customer #:	708-RNF18FTD100K RNF18FTD100K SEI Stackpole	Metal Film Resistors - Through Hole 100KOhms 1/8W 100 ppm 1% Std Metal Film RoHS Compliant QuickView ☑	2	2 Ships Now	$0.10	$0.20	🗑
2		Mouser #: Mfr. #: Mfr.: Customer #:	660-CF1/8CT52R106J CF1/8CT52R106J KOA Speer	Carbon Film Resistors - Through Hole 1/8W 10M 5% RoHS Compliant QuickView ☑	2	2 Ships Now	$0.11	$0.22	🗑
3		Mouser #: Mfr. #: Mfr.: Customer #:	594-K104K15X7RF53L2 K104K15X7RF53L2 Vishay	Multilayer Ceramic Capacitors MLCC - Leaded 0.1uF 50volts 10% X7R 2.5mm LS RoHS Compliant By Exemption QuickView ☑	1	1 Ships Now	$0.18	$0.18	🗑
4		Mouser #: Mfr. #: Mfr.: Customer #:	667-EEU-FR1E151 EEU-FR1E151 Panasonic	Aluminum Electrolytic Capacitors - Radial Leaded 25VDC 150uF 6.3x11.2mm LS2.5mm RoHS Compliant QuickView ☑	1	1 Ships Now	$0.39	$0.39	🗑
5		Mouser #: Mfr. #: Mfr.: Customer #:	512-1N914 1N914 onsemi	Diodes - General Purpose, Power, Switching 100V 4.0ns Diode Single Junction RoHS Compliant By Exemption QuickView ☑	2	2 Ships Now	$0.10	$0.20	🗑

Build Notes

There are two options for the relay: latching and non-latching. The latching relay will save the last bypass state even when powered off. The non-latching will always initialize in bypass mode when powered on. The latching relay is cheaper (for whatever reason) and might be beneficial if you run a lot of pedals through a looper and want your pedals in an always on state when powered up.

You will need to solder some jumpers depending on which relay you choose.
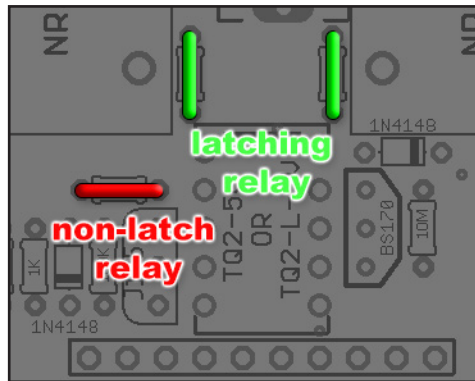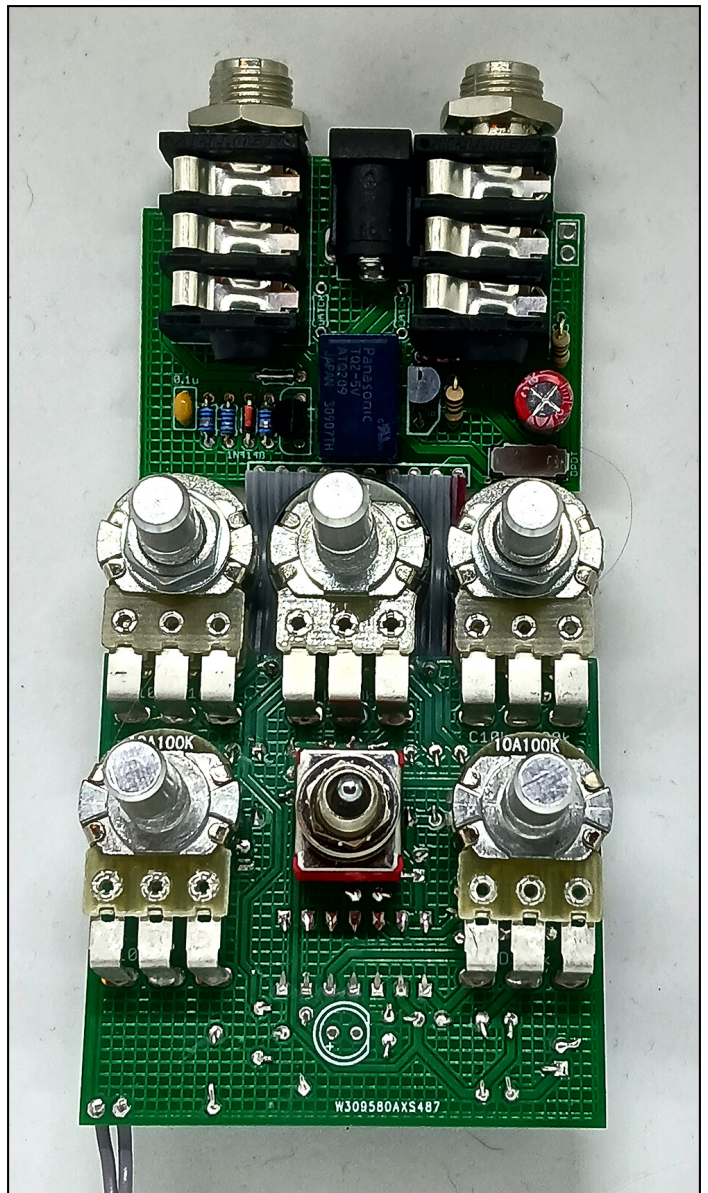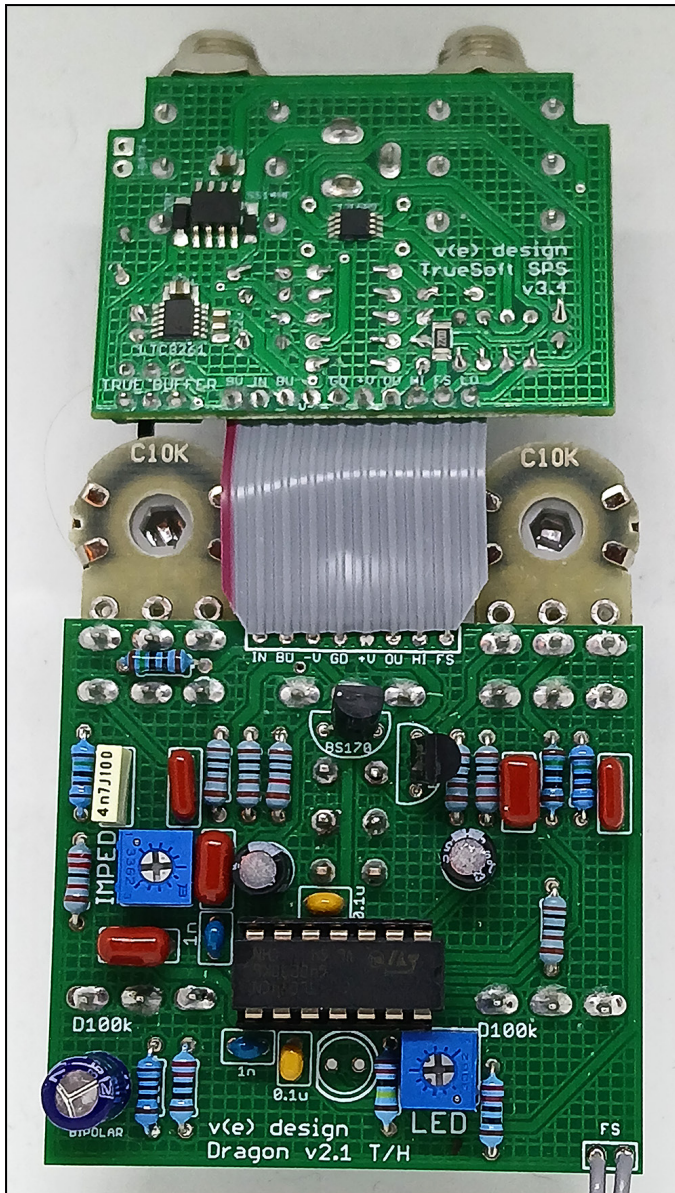
The ribbon cables that come with the TrueSoft PCB have 10 wire leads instead of the required 8. Trim the 2 outer wires back at an angle, as shown above. Or, use a utility knife and cut the last two rows on the cable to make a 8-pin.

125B Drill Template

3/8" 11/32" 3/8"
⊕   ⊕   ⊕

5/16"   5/16"   5/16"
⊕   ⊕   ⊕

5/16"   5/16"   5/16"
or   or   or
1/4"   1/4"   1/4"
⊕   ⊕   ⊕

⊕

5mm
⊕

1/2"
⊕

125-B
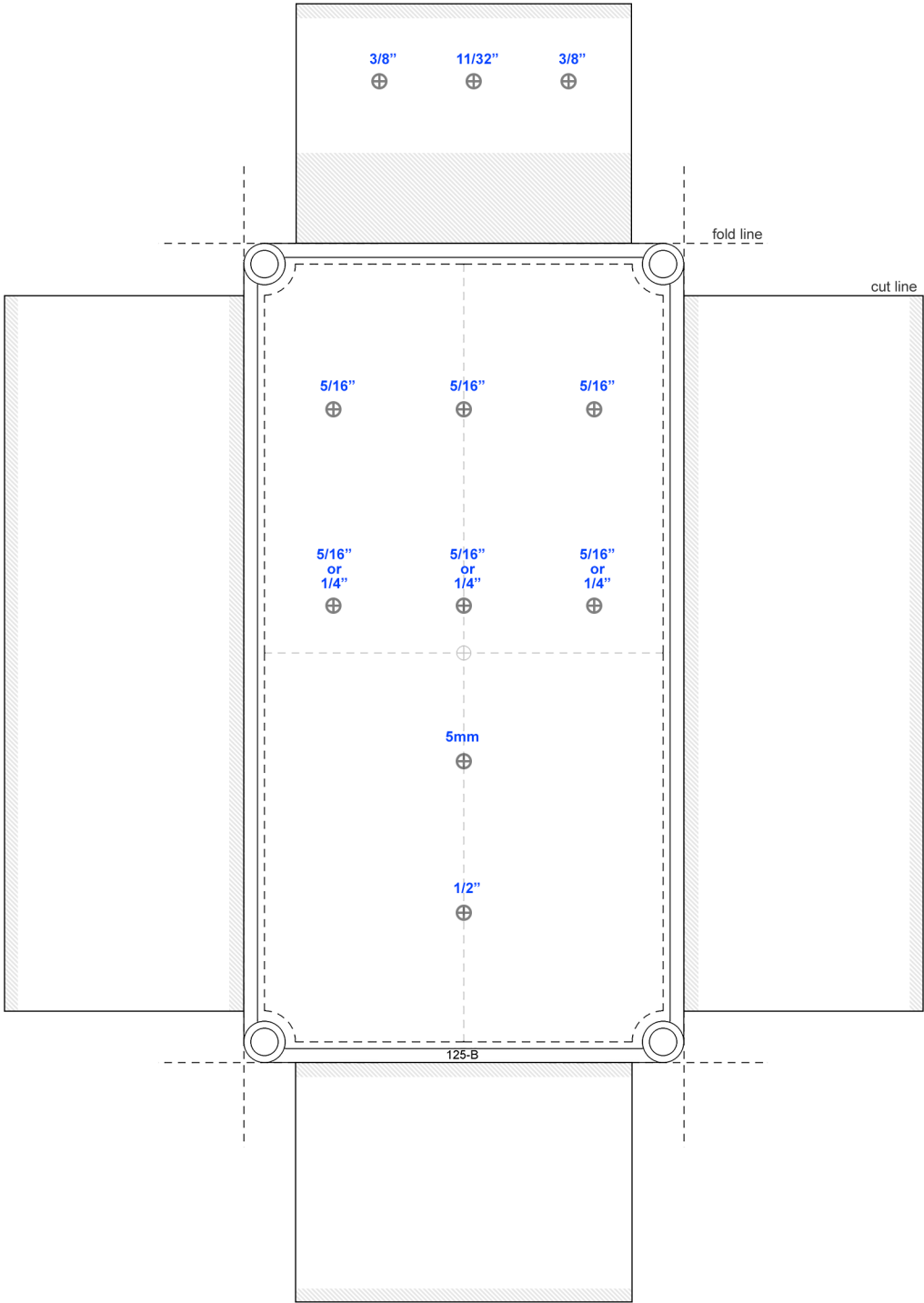
Use 5/16" for potentiometers and 1/4" for switches.

Tayda Drill Template

Edit Drill Design: 16079

Design Name

VFE_SPS_125B

Enclosure Type

125B

MAKE SURE TO TAKE COORDINATES FROM CENTER OF SIDES IN MILLIMETERS.
PLEASE ADD 0.2MM TO DIAMETER HOLES FOR POWDER COATING THICKNESS.
FOR EXAMPLE IF YOU NEED 8MM DIA HOLE, INPUT 8.20. PLEASE USE "." POINT FOR DECIMALS, PLEASE DON'T USE
COMMA "," , FOR EXAMPLE 5.36 , NOT 5,36

WITH 125B and 1590A and 1590B and 1590BB and 1590BB2 and 1590XX and 1590DD ENCLOSURES, YOU CAN CREATE
RECTANGLES, TRIANGLES OR EVEN STAR LIKE SHAPES. UNDER LINES TAB, CLICK '+ Add Line' BUTTON TO CREATE LINES
AND PUT THEM TOGETHER TO MAKE ANY SHAPE YOU WANT. TRY IT, WE HOPE YOU WILL LOVE IT!
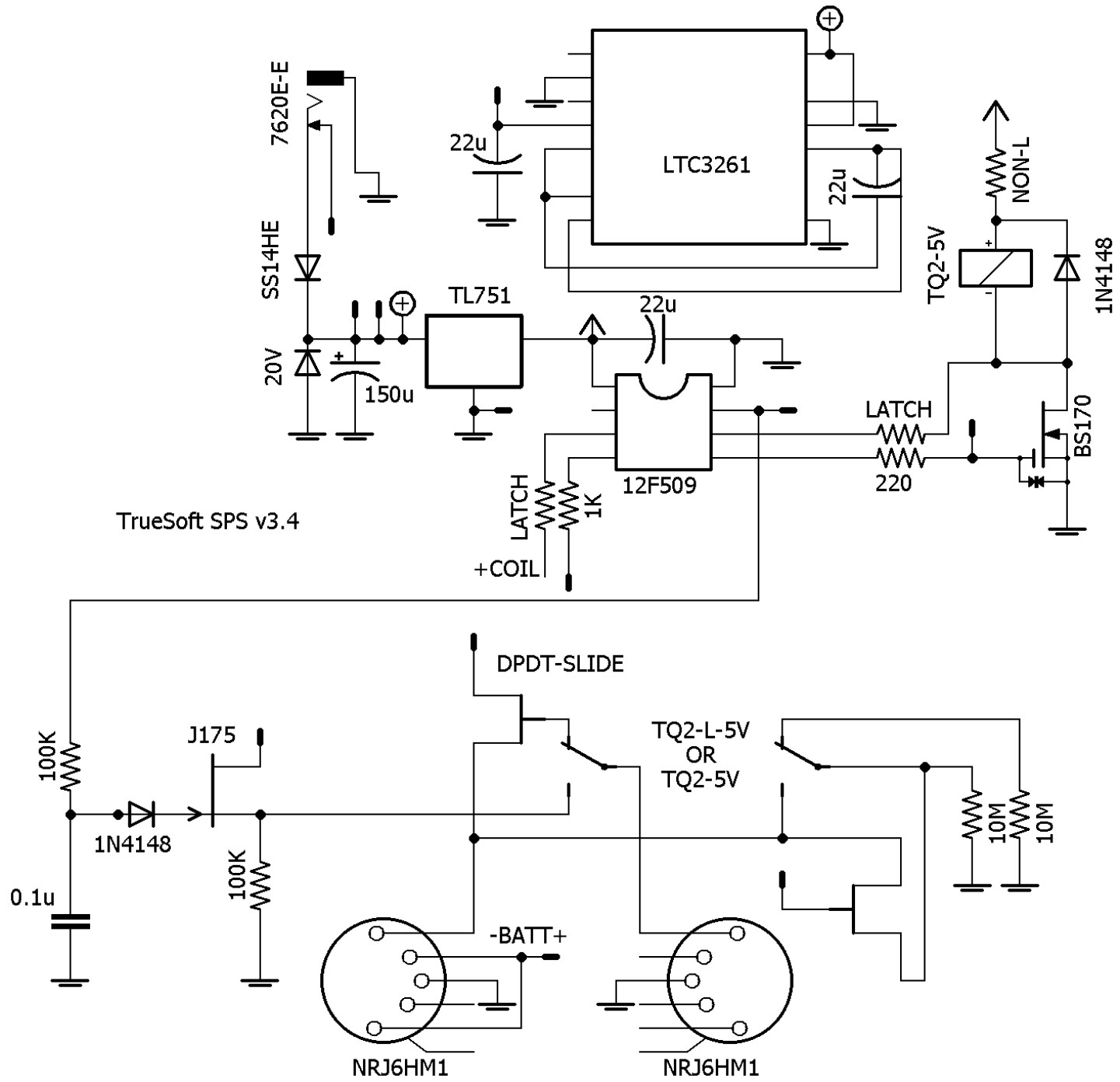
Holes | Lines | Shapes

Hole # - Side	Diameter(mm)	X Position (mm)	Y Position (mm)	
Hole #1 - Side A	7.5	-19.05	35.4	x
Hole #2 - Side A	7.5	0	35.4	x
Hole #3 - Side A	7.5	19.05	35.4	x
Hole #4 - Side A	7.5	-19.05	6.83	x
Hole #5 - Side A	7.5	0	6.83	x
Hole #6 - Side A	7.5	19.05	6.83	x
Hole #7 - Side A	5.2	0	-15.77	x
Hole #8 - Side A	12	0	-37.74	x
Hole #9 - Side B	9.5	-12.31	5.5	x
Hole #10 - Side B	9.5	15.24	5.5	x

Side B / Top

Side C / Left Side A / Face Side E / Right Enclosure Lid

Side D / Bottom

This form is only for illustration purposes and actual measurements for coordinates should be taken with
enclosure itself. The mounting holes for the bottom plate are usually in the bottom corners of side plates.

Tayda 125B drill template: https://drill.taydakits.com/box-designs/new?public_key=TllyajI4TFgwNDZGcG1XL1EyVjNDZz09Cg==

Note: I have not tested this Tayda drill template but should be accurate. You can use a round hole instead of square for the DC Jack, if you prefer. Use either 8 or 9mm for the size.

Schematic

TrueSoft SPS v3.4

7620E-E

SS14HE

20V

150u

TL751

22u

LTC3261

22u

22u

12F509

LATCH

+COIL

1K

LATCH

220

TQ2-5V

NON-L

1N4148

BS170

DPDT-SLIDE

TQ2-L-5V
OR
TQ2-5V

100K

J175

1N4148

100K

0.1u

-BATT+

10M

10M

NRJ6HM1

NRJ6HM1