STEFFCORP

2600 VCO

Build Guide

Introduction

Build Instructions and BoM

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Here is a direct link to the much needed BoM (Bill of Materials): → BOM ←

Some prerequisits

This document consists of instructions assuming you have purchased a '2600 VCO Panel & PCB' bundle after August 2017. It is also assumed that you have some basic electronics skills and some experience from soldering both THT ('through-hole technology') and SMT ('surface-mount technology').

Equipment

Besides the obvious need for a good soldering station, you will probably need some tweezers, a small screwdriver and side-cutters. It is also advised to keep some de-soldering equipment ready, e.g. desoldering braid and solder flux.

2600 VCO Build Instructions

1 - Read this

We believe in every man's and woman's right to improvise and plan their work in the way they see fit. Thus, we do not provide you with a super-detailed step-by-step manual telling you exactly where to start and stop. Hey, we won't even tell you when to take a coffee break! However, we still want to make sure you don't make any expensive or time-consuming mistakes. Therefore, we recommend you read this document in its entirety and especially the following 8 tips before heating up your soldering iron.
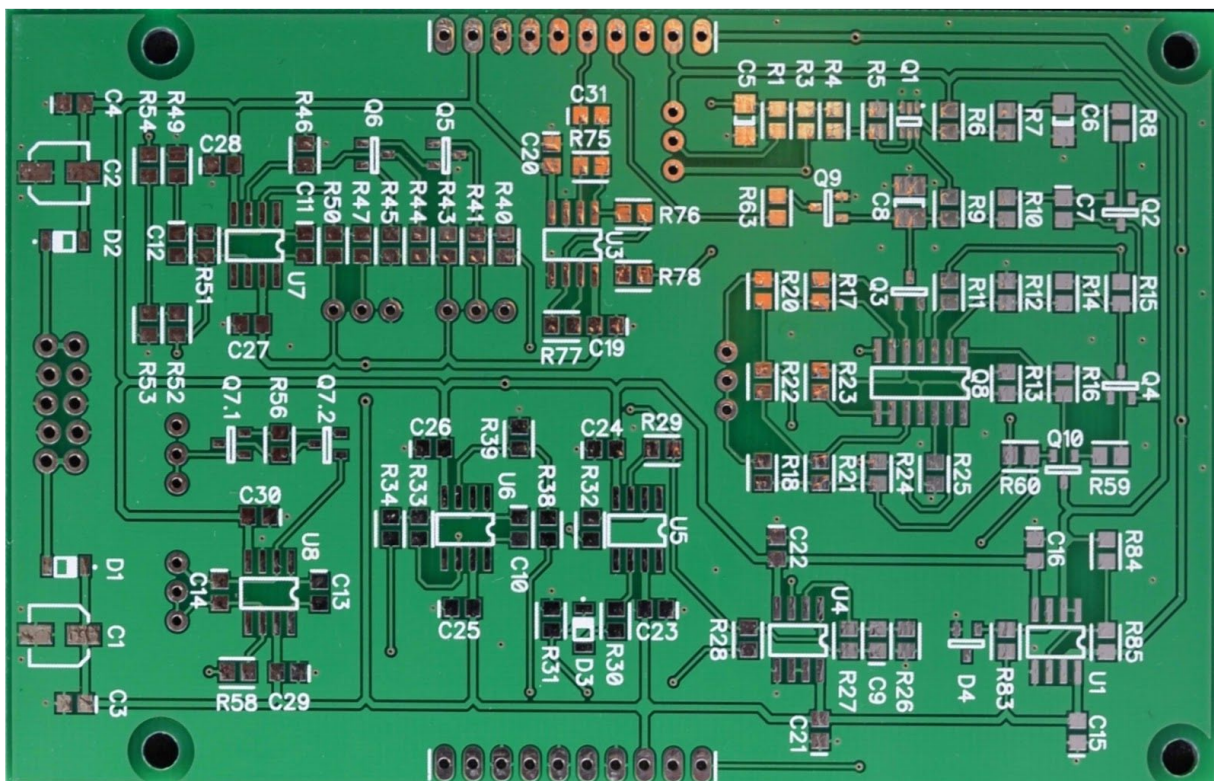
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2 - The PCBs

We will refer to the two PCBs as the 'Front PCB' (to which the panel will eventually be mounted and therefore will include the jacks, the pots and the switch) and the 'Back PCB' (which will be oriented towards the back of the module).

This is the 'Front PCB'...
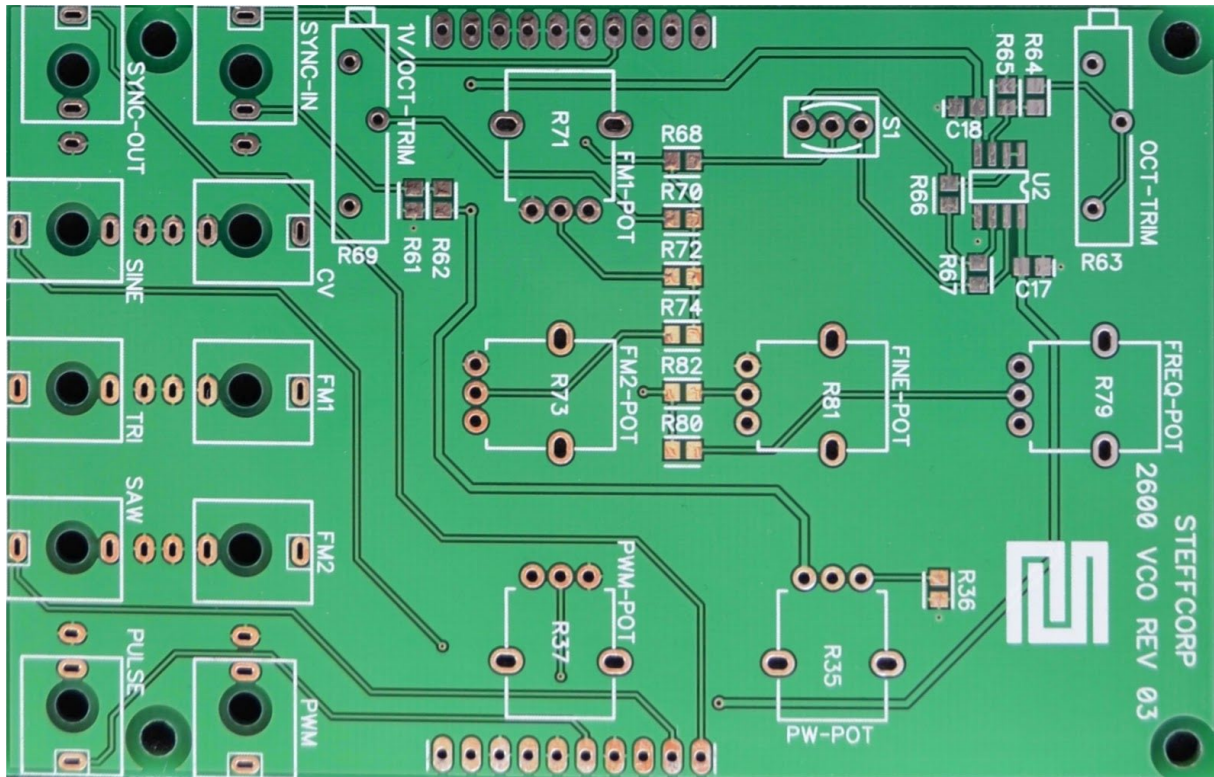
...and this is the 'Back PCB':

The PCBs are mounted on top of each other, back to back ('sandwich-style'). The 'Back PCB' contains the main circuit, while the 'Front PCB' house the controlling elements, buffers, and the sync-trigger circuit.

3 - Stay organized

We really don't advise you to assemble the two PCBs in any particular order. Instead, we just believe you should keep your working space tidy and organized. And by organized we also mean planning your work. And check your solder joints as you go.

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4 - Store galore

One way of keeping things organized is to bring out just a few components at a time to avoid mixing them up. Mind you, those SMT parts are tiny…! (We at Steffcorp just love those small container boxes easily found on 'aliexpress' and such places. They make it really easy to find the part needed in a second)

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5 - The right side

This might sound over-obvious, but do make sure you always apply parts to the side where the silkscreen is. (Silkscreen is referred to as the markings on the component side of a PCB to identify components, part numbers, logos etc.)

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6 - Consider this

OK, so we didn't want to provide you with any detailed advice on which order you should solder the components. But then again, we do not want to cause any frustration so please consider the following, broad guidelines:

Solder all SMT parts before soldering THT.
This is all about making sure you can reach the soldering pads, because on a 'busy' PCB, THT components sometimes tend to get in the way.

Then, solder the power headers and the trimmers. (on both PCBs)

Finally, attach the jacks, pots and the switch to the 'Front PCB' but do not solder at this stage. Instead, remove the nuts and mount the panel. Screw the nuts in place but don't overdo it just yet. Now carefully turn the PCB with the panel around and solder all the jacks, pots etc. making sure everything is perfectly aligned.

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7 - Spacers are the best

When you have assembled both of the PCBs and you feel it's time to put them together you should consider this great tip…

First, assemble the male and female headers. Then apply and fasten the four spacers on one of the PCBs. Now, fit the assembled headers in their respective holes on one of the PCBs and 'lock' them by mounting the other PCB on top of the spacers. This way, you can easily solder the headers flush to each PCB.

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8 - Final tip

Another thing to consider is to make sure the four spacers are screwed firmly into place on the 'Front PCB' and that you are able to unscrew the 'Back PCB' enabling you to separate the PCBs should you need to do so (for example when soldering the jacks and pots). And of course, be careful when separating the male and female headers.

Trimming

Frequency Calibration	1. Monitor the Saw output with an oscilloscope or a frequency counter. 2. Set all FM potentiometers to zero. 3. Make sure nothing is plugged into CV. 4. Put FREQ pot to max (fully CW). 5. Put FINE pot to a middle position. 6. Adjust CAL R2 for 10 KHz.
Saw Adjust	Adjust SAW-DC R19 for no or minimum DC offset.
Triangle Adjust	1. Adjust TRI-SYM R40 for best TRIANGLE waveform. 2. Adjust TRI-DC R48 for something close to +/- 5V.
Sine Adjust	1. Adjust SINE-PURITY R55 for SINE waveform. 2. Adjust SINE-GAIN R57 for +/- 5V.
1V/OCT	1. Connect keyboard to CV input and press low C (0V). 2. Put the switch in its middle position. 3. Adjust initial FREQ pot and FINE pot for 200 Hz. 4. Press C three octaves higher and adjust V/OCT R69 for 1600Hz. 5. Repeat steps 1-3 until low C remains at 200 Hz and C3 remains at 1600 Hz.
OCTAVE Switch	1. Connect keyboard to CV input and press low C (0V). 2. Put the switch in its middle position. 3. Adjust initial FREQ pot and FINE pot for 200 Hz. 3. Flip the switch up and adjust for 400 Hz. 4. Flip the switch down and adjust for 100 Hz.