



FOLDER by Korb-Modular

PCB Ver. : 1.0

Doc Ver. : 1.0

Date: 19.04.2017

#### Before you start:

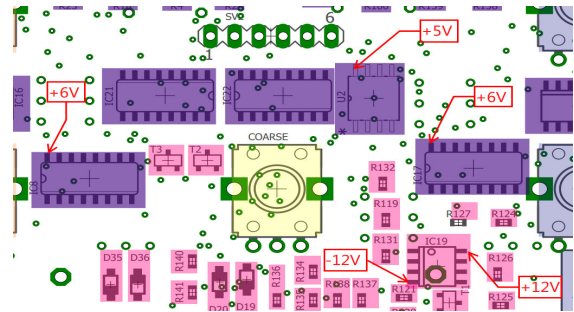
Folder is an advanced project and not recommend as the first SMT project. In addition to the usual electronic equipment a scope is needed. I recommend a hot air gun instead of an soldering iron for the SMT Parts. Please read the entire doc before starting the project.

#### 1. Step:

Start with assembling of the the Power Supply.

Don't forget R3,R33,R39,R96 (Bottom side)

Verify if the voltages are correct



#### 2. Step:

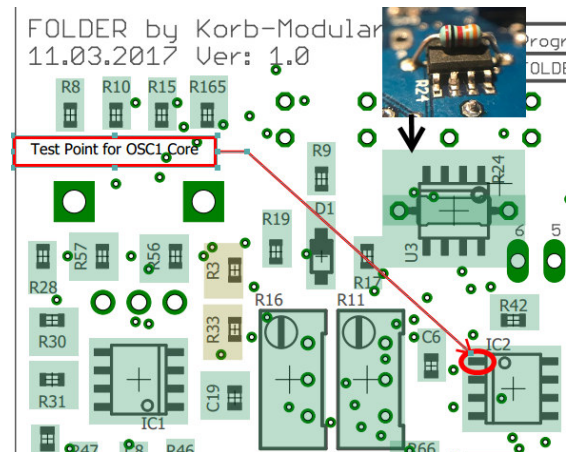
Assemble the Parts for OSC1 Core.

Mount R24 with a direct thermal contact to U3

Power up the module and check on the testpoints if the

ramp core is working

Tip: Do not assemble the Coarse\_OSC2 pot yet. For the functional tests it's not needed.



#### 3. Step:

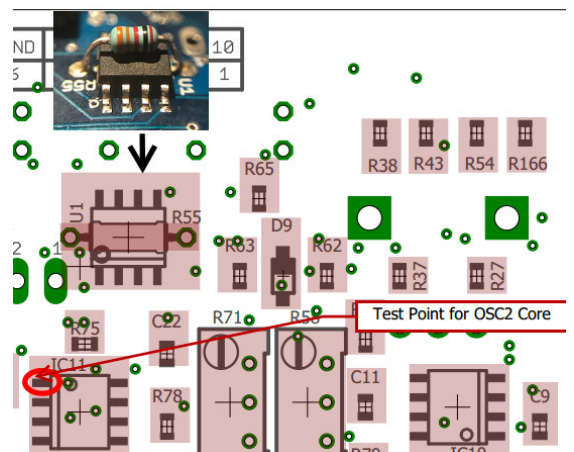
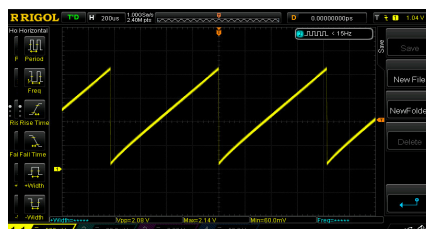
Assemble the Parts for OSC2 Core.

Mount R55 with a direct thermal contact to U1

Power up the module and check on the testpoint if the

ramp core is working

Tip: Do not assemble the Coarse\_OSC2 pot yet. For the functional tests it's not needed.



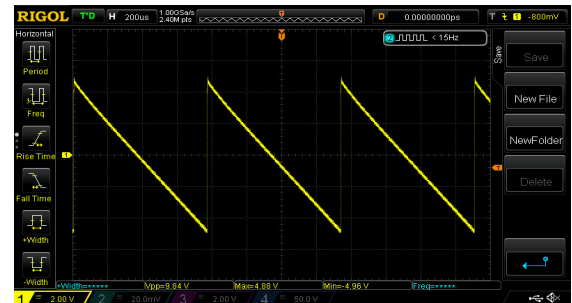
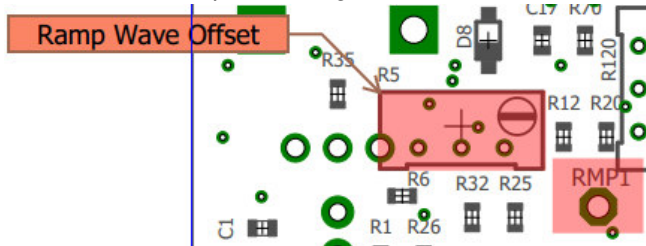
### 3. Step:

Assemble the parts of the Waveshaper section of OSC1.

Verify with a scope if the waveforms are available at the testpoints.

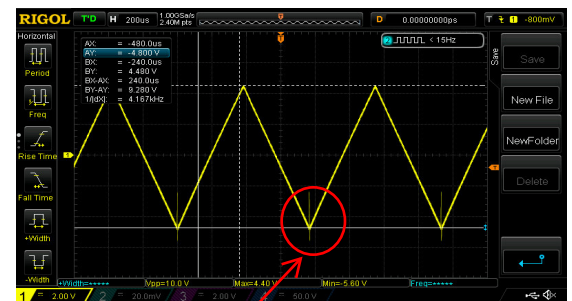
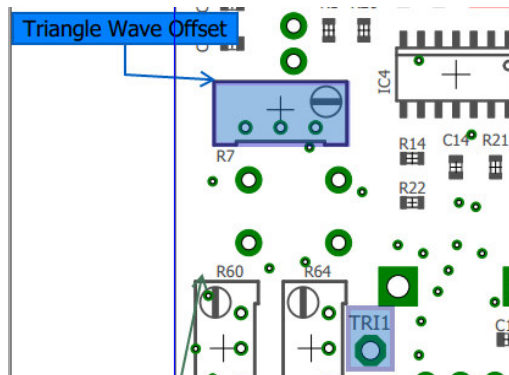
### Trimming of the Waveforms OSC1

Use R5 to center the Ramp wave to ground



Use R7 to center the triangle wave to ground

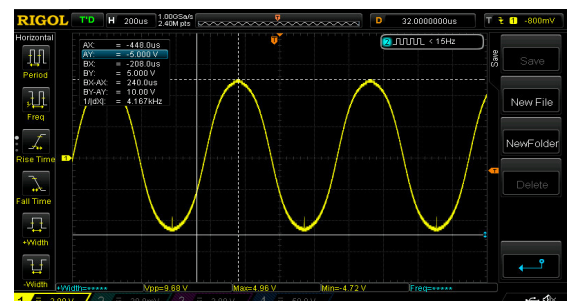
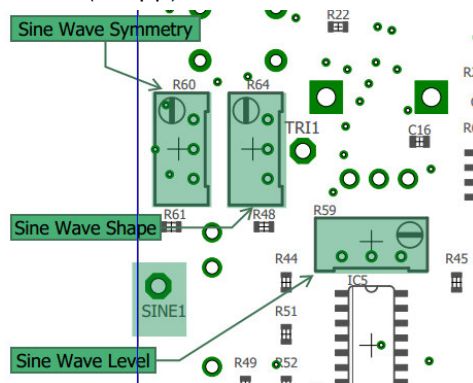
Re-Adjust R5 if the triangle wave looks not proper



Glitches are not audible

Use R60/R64 to trim the Sine wave to a nice shape

Use R59 to adjust the Level (10Vpp)



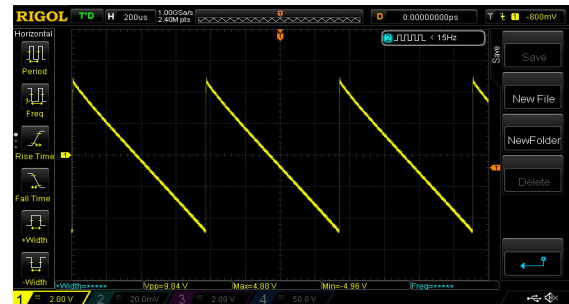
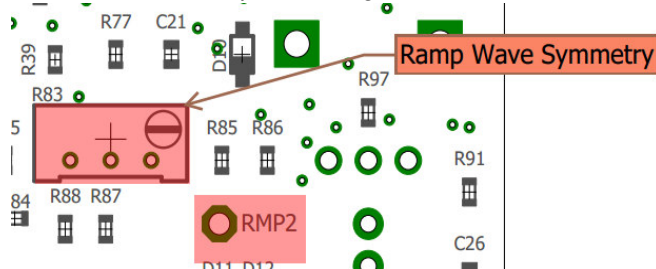
#### 4. Step:

Assemble the parts of the Waveshaper section of OSC2.

Verify with a scope if the waveforms are available at the testpoints.

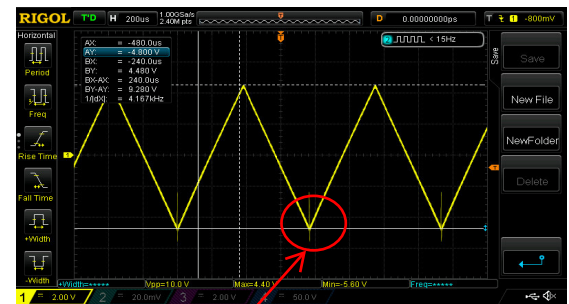
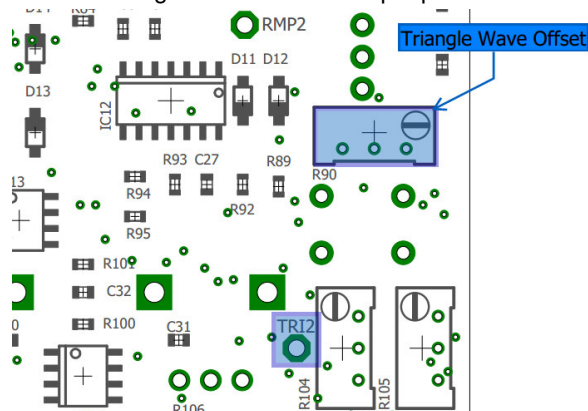
#### Trimming of the Waveforms OSC2

Use R83 to center the Ramp wave to ground



Use R90 to center the triangle wave to ground

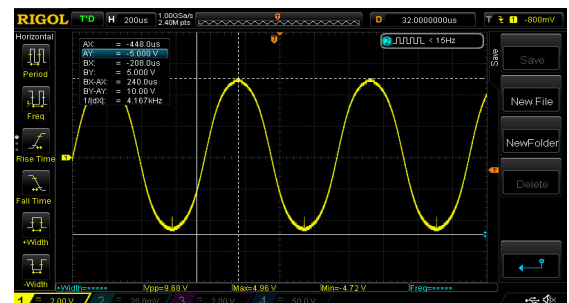
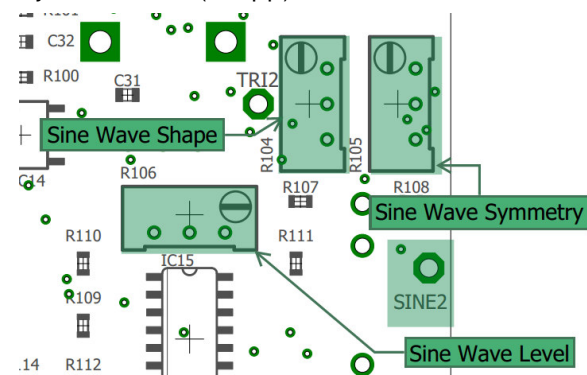
Re-Adjust R83 if the triangle wave looks not proper



Glitches are not audible

Use R104/R105 to trim the Sine wave to a nice shape

Use R106 to adjust the Level (10Vpp)





#### 5. Step:

Assemble all parts for the digital controlled wave switch.

If the  $\mu$ C is already flashed, you do not need the pin 1 x 6 row.

**Double check the orientation of the ICs.**

##### 1. Tip:

For a better alignment of the LEDs, solder the left- and rightmost Jacks on the PCB.

##### 2. Tip

Do not solder the tactile switches for the waveform switch.

For a short function test it's enough to snap them in.

Power up the module and check if the waveforms / LEDs cycling accordingly.



#### 6. Step:

Assemble all parts for the Oscillator mixer section.

Power up the module and set different waveforms for OSC1 / OSC2.

Check at the Mixer-Out if the output is changing according the movement of the OSC-Mix pot.

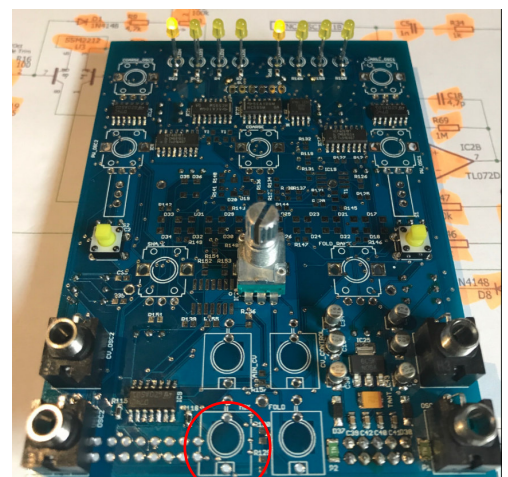
CCW => OSC1

CW => OSC2

##### Tip:

Do not solder the OSC-Mix pot, yet.

For a quick function test, it's enough to snap it in.



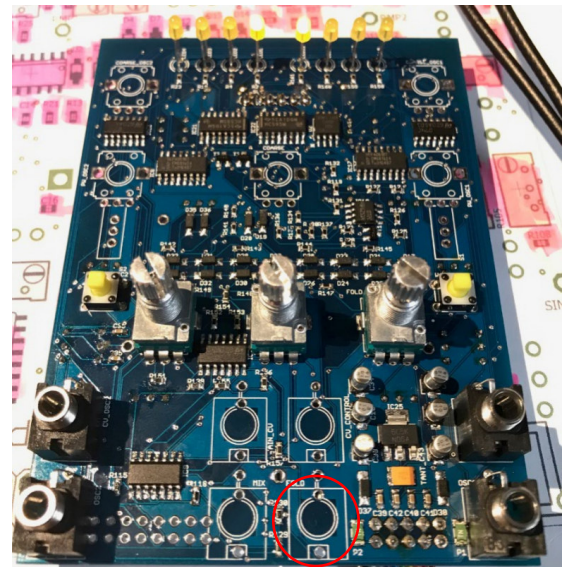
Mixer-Out

#### 7. Step:

Assemble all parts for the wavfolder section. For the function test the Mix-Pot and the wave switching buttons are also needed

#### Tip:

Do not solder the pots/buttons yet. For the function test its enough to just snap them in.



Fold-Out

Power up the module and set the waveform of OSC1 to Sine.

Turn the Mixer-Port fully CCW , the Range-Pot and Shape-Pot to 12 o'clock.

Check the waveform at the Fold-Out.

If everything is set up in the correct way you should see a folded wave.

Play with the Shape-Pot and the Waveform will be folded in a different way.

Repeat the test for OSC2. Therefore set the waveform to Triangle or Sine and turn the Mix-Pot fully CW

#### Tip:

The wavfolder works best with a Triangle or Sinewave.

If you mix OSC1/OSC2 use the Freq.Lock Switch for a better result.

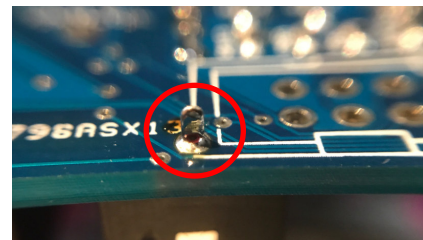
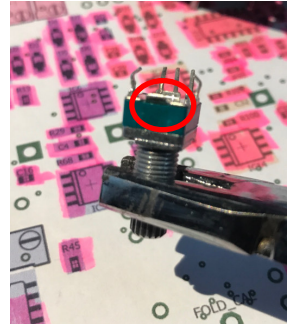


#### **8. Step:**

Assemble all pots, jacks, buttons and switches.

Some pots have a small metal thing on the bottom side, be careful with it. Make sure that there is no short circuit with the vias of the board when you solder the pots. To be on the safe side, cut it off.

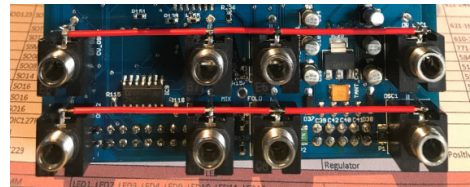
As last, solder the Expander Port. Therefore you must trim the pins of the OSC-Out and the Mix-Out jacks a little bit.



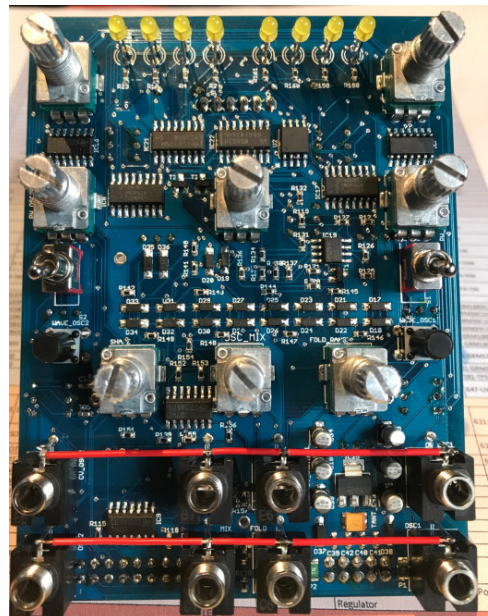
#### **KNOWN ISSUE:**

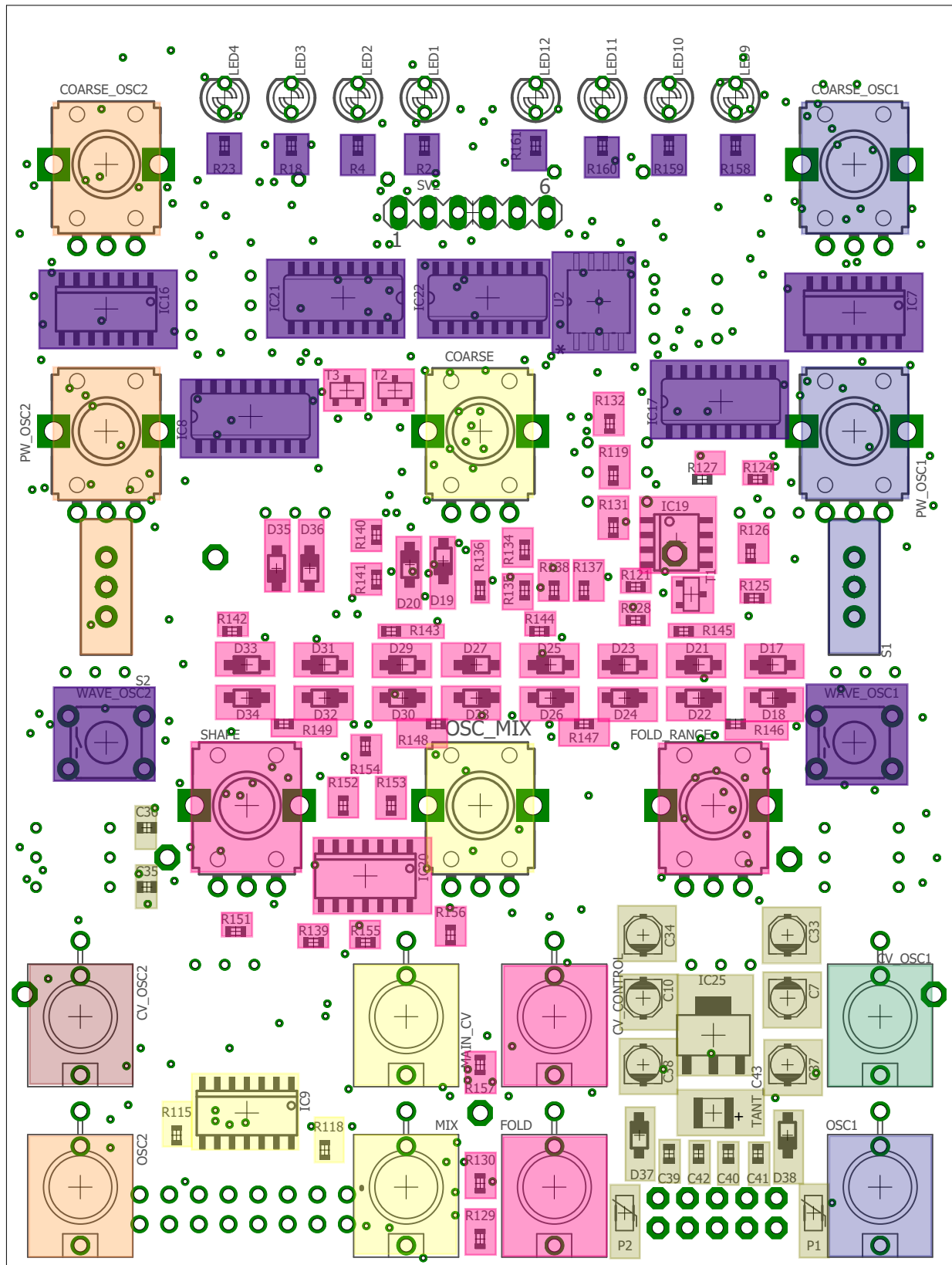
There is a known production issue with Ver. 1.0 of the PCBs. This leads to an unstable pitch of OSC1.

Luckily, the fix is very easy. Just connect all GND pins of the Jacks for the upper and lower row. There is no need to connect the rows to each other.



**Done.**



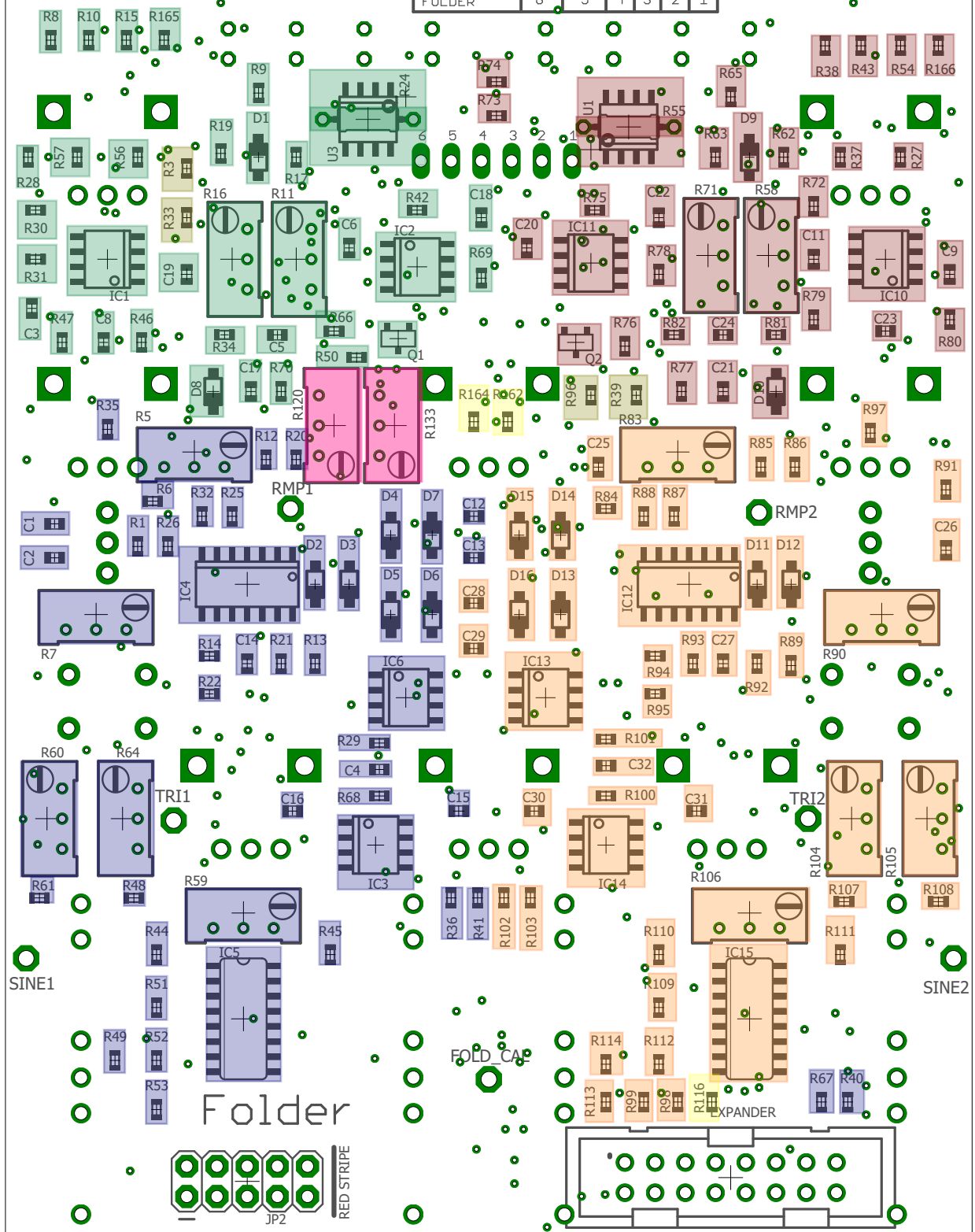


- |                 |                 |
|-----------------|-----------------|
| OSC1 Core       | Wavefolder      |
| OSC1 Waveshaper | Power Supply    |
| OSC2 Core       | Waveform Switch |
| OSC2 Waveshaper | Oscillator Mix  |



FOLDER by Korb-Modular  
11.03.2017 Ver: 1.0

Programmer	GND	VCC	13	12	11	10
FOLDER	6	5	4	3	2	1



- OSC1 Core
- OSC1 Waveshaper
- OSC2 Core
- OSC2 Waveshaper
- Wavefolder
- Power Supply
- Waveform Switch
- Oscillator Mix

FOLDER by Korb-Modular

14.02.2017 Ver: 1.0

Programmer	GND	UCC	13	12	11	10
FOLDER	6	5	4	3	2	1

High Freq. Trim

1V/Oct Calibration

High Freq. Trim

1V/Oct Calibration

Ramp Wave Offset

Ramp Wave Symmetry

Triangle Wave Offset

Triangle Wave Offset

Sine Wave Symmetry

Sine Wave Shape

Sine Wave Shape

Sine Wave Symmetry

Sine Wave Level

Sine Wave Level

Folder

