Gozouta Kit
Assembly Instructions

Circuit Abbey

Gozouta Kit
Hardware
T600056

Gozouta Kit
Control Board
Parts
T600055

Gozouta Kit
ICs &
Sockets
T600052
Gozouta Kit Description

The Gozouta is a utility mixer kit. It has 4 inputs with slide pot faders, line or modular output level, and clip indication. This 4HP module has a maximum 40mA current draw. Module depth is 26mm.

Main Board Assembly

Main Parts List:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>T100424</td>
<td>Cap,22uF,25V,Elect PTH</td>
</tr>
<tr>
<td>3</td>
<td>T100426</td>
<td>Diode,BAT85,Schottky</td>
</tr>
<tr>
<td>4</td>
<td>T100248</td>
<td>Cap,100n,Cer,50V,Y5V,2.5mm PTH</td>
</tr>
<tr>
<td>3</td>
<td>T100151-10K0</td>
<td>Res,1/4W,1%,MF.PTH</td>
</tr>
<tr>
<td>1</td>
<td>T100480</td>
<td>Cap,100p,cer PTH</td>
</tr>
<tr>
<td>2</td>
<td>T100481</td>
<td>Res,array,100k</td>
</tr>
<tr>
<td>3</td>
<td>T100151-1K00</td>
<td>Res,1/4W,1%,MF.PTH</td>
</tr>
<tr>
<td>2</td>
<td>T100257</td>
<td>Res,1R0,1/4W,5%</td>
</tr>
<tr>
<td>1</td>
<td>T100151-680K</td>
<td>Res,1/4W,1%,MF.PTH</td>
</tr>
<tr>
<td>1</td>
<td>T100390</td>
<td>Header,2x5,shrouded</td>
</tr>
<tr>
<td>1</td>
<td>T100151-15K</td>
<td>Res,1/4W,1%,MF.PTH</td>
</tr>
</tbody>
</table>

A lead forming tool is handy and speeds assembly.
Here is a picture of the board for reference:

Start by inserting the resistors and the diodes. They are placed on the silk screen side of the board:

Flip the board over (carefully), solder, and trim the leads:
There are several techniques for holding parts in place while soldering. The first is bending the leads slightly. The second is to use tape like masking tape to hold the parts. The third is to tack solder the leads on the component side then flip the board and finish soldering.

Next solder the IC sockets. Be sure to properly align the pin 1 notches on the board and sockets. The socket can be found in the bag labeled “ICs and Sockets”.
Locate the capacitors and resistor arrays:
Install and solder the capacitors and resistor arrays:

Note the polarity. The resistor arrays have a dot near pin 1. The board has pin 1 marked.

The board is marked with a “+“ for the polarized capacitors. The electrolytic caps (black) is marked with a “-“, which goes to the opposite hole from the “+“ mark.

Locate the 2-pin shunt. Place it in J2 and solder in place.
Control Parts Assembly

Panel parts list:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Title</th>
<th>Reference(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>POT, 500K SLIDE</td>
<td>R1, R2, R3, R4</td>
</tr>
<tr>
<td>5</td>
<td>Jack, 3.5mm, Stereo, Vert</td>
<td>J1, J2, J3, J4, J7</td>
</tr>
<tr>
<td>1</td>
<td>Switch, toggle, sub, on-on</td>
<td>SW1</td>
</tr>
<tr>
<td>2</td>
<td>Header, 1x5, rt angle 0.1&quot;</td>
<td>J5, J8</td>
</tr>
</tbody>
</table>

Locate the bag labeled “Control Board Parts”

First place and solder the right angle headers. This bit is tricky, because the headers will be behind the pots and therefore inaccessible. So it is really important to get it right at this point.

Place the headers as shown:
Make sure the headers sit flush with the board. Tack one pin of each header with solder.

Check the headers for alignment.

This one is okay

This one is canted and needs to be fixed

Trim the header leads as close to the board as possible without causing damage.
If the connector leads are too long they will push the slide pots up. If this is happening then remove the slide pot and trim the connector leads closer to the board.

Solder in the slide pots but only tack solder 2 pins. Re-verify the pot is flush to the board. If it is not, carefully re-heat the tacked pins while pushing the pot against the board. Once the slide pot is flush, solder the rest of the pot pins. Be very careful soldering the pot pins. Some of the pads are very close together and bridging is likely to occur. Closely inspect your work and clear and solder bridges.

Now for the rest of the control board hardware.
We will attach the front panel as a soldering jig before soldering the jacks and the switch.

Attach the standoff to the control board PCB as shown:

Insert the 5 jacks into the control board PCB.
Locate the switch. Assemble one nut onto the switch. Remove all other hardware.

Insert the switch into the board as shown:
Install the front panel. Be careful, the components are not soldered in and may fall out of the board. Install the Allen screw on top and the hex nut for the switch:

Now install the jack nuts:
Flip the board over, double check the jacks and switch are fully seated, and solder:
Install the ICs into the sockets. Be sure to line up the notches on the ICs and the sockets. You may have to carefully bend the pins on the ICs to fit into the sockets:

Congratulations! Your Gozouta is complete.
Usage

There are many places where a utility mixer can be handy. You can mix the outputs of several VCOs for drone effects. You can mix the outputs of several filters when doing pinged filter percussion. Many effects modules will get even more interesting when fed a complex signal. Use the Gozouta in front of a wave folder for an interesting effect, for example.

This mixer can be DC coupled, so it can mix CVs as well as audio. Mix two or more LFOs for a complex modulator.

Theory of Operation

Mixers are pretty easy to understand. On the control board the 4 inputs jacks are fed directly into the slide pots. The wipers of the pots are then routed to the main board where they are buffered by U1. The 4 U1 outputs are summed through RN2 U2B. U2A provides gain for the modular level output. The toggle switch on the control board sets the gain of U2A by shorting out R12. C5 is a DC blocking cap for AC operation, and is shorted out by J2 for DC operation. D3, C7, R4 and U3 form a quick and dirty clip detect circuit. D3 rectifies the signal so it is positive only, which then charges C7. R4 discharges C7 to set a time constant for the clip detect. U3 is a comparator which compares the voltage on C7 against a reference set by R9 & R10. When the voltage rises about the reference U3 turns on the LEDs.
Control board schematic
Main board schematic