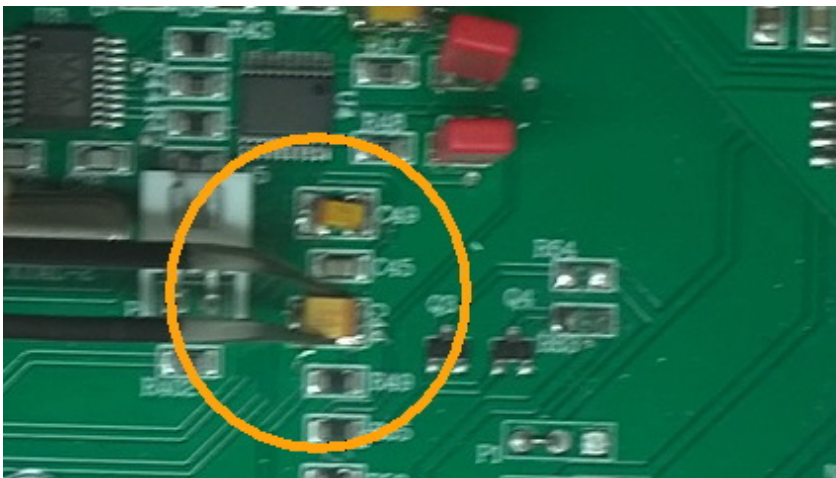


## THE CAIMAN MKII GATORIZED FIRMWARE UPGRADE - CMII GFU

The following modifications should only be attempted if you are reasonably skilled in soldering and have access to the correct equipment and parts.

For details on how to desolder and remove a surface mount component (SMD), have a look at:  
<https://www.youtube.com/watch?v=8JM4oCpWnjU>



It is recommended that you also get hold of a pair of tweezers so that you can hold the SMD component steady whilst trying to solder it in.

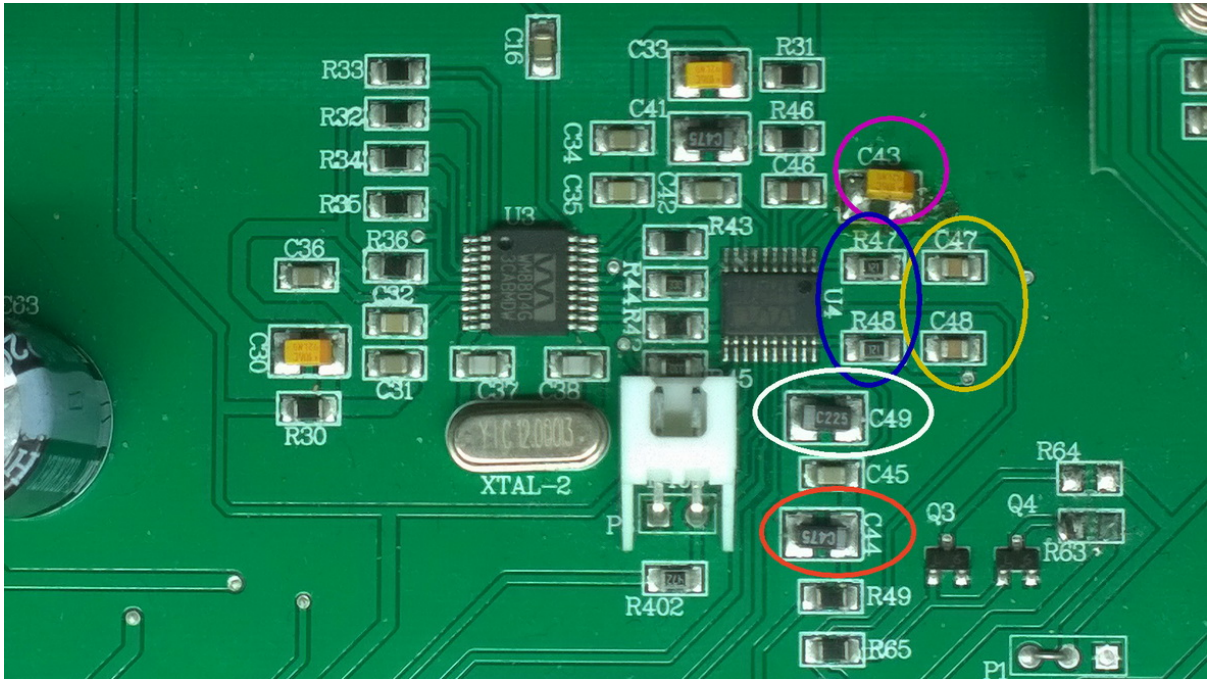
### About the upgrades

The various modifications have been broken down in various sections and in the order of importance versus complexity. The hardware modifications can also be carried out for the SFW3 firmware upgrade. They are not exclusive to the GFU upgrade.

### How to open the DAC

1. Undo the four screws at the side of the case. There are two each side.
2. Remove the top cover of the DAC.

## Identifying the SMD components that are relevant to the modification steps



We shall first begin with the description of the components that can be desoldered and replaced without having to remove the PCB from the case. In other words, only the top cover needs to be removed in order to carry out these modification.

C43: purple circle

This capacitor is part of the internal circuit within the DAC chip that generates a negative voltage for the analogue output stage.

Replacement: the chip manufacturer recommends a 10uF tantalum capacitor.

For this mod, change that to a 100uF Tantalum SMD. Case size is B. Minimum voltage rating is 4V. But as long as the case size is B, and the voltage rating is more than 3.3V, the voltage rating of the capacitor is not critical.

C49 - white circle

This capacitor is part of the voltage rail of the analogue supply for the DAC chip. The datasheet recommends 10uF. If you do not intend to remove the PCB in order to carry out the C73 and C83 mods, then try a 100uF/4V or 6.3V size B tantalum SMD in this location.

C44 - orange circle

This capacitor sets the middle point voltage level of the analogue output signal. The datasheet recommended value is 2.2uF. You could instead replace it with the 10uF capacitor that you removed from C43.

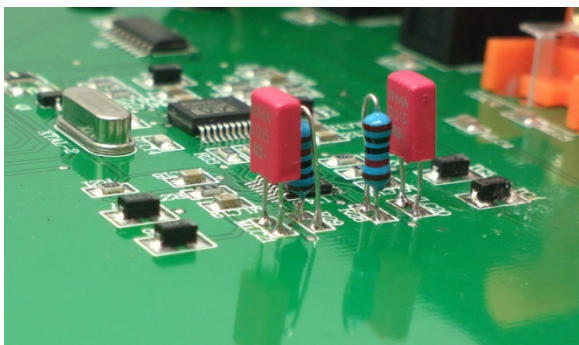
C47/C48 - yellow circle

These are 10 to 15nF SMD caps. They can be replaced with a 10 to 15nF WIMA 2.5mm capacitor.

R47/R48 - blue circle

These should be changed to 120 Ohms 1/4W or 1/8W metal film resistors.

The legs of the WIMA and the resistors should be soldered directly onto the PCB. See picture below.



NOTE: picture used is from a similar mod in a different DAC in our range

The 10nF WIMA with 2.5mm leg spacing can be found in the 50V, 63V, or 100V rating. Any of them will do.

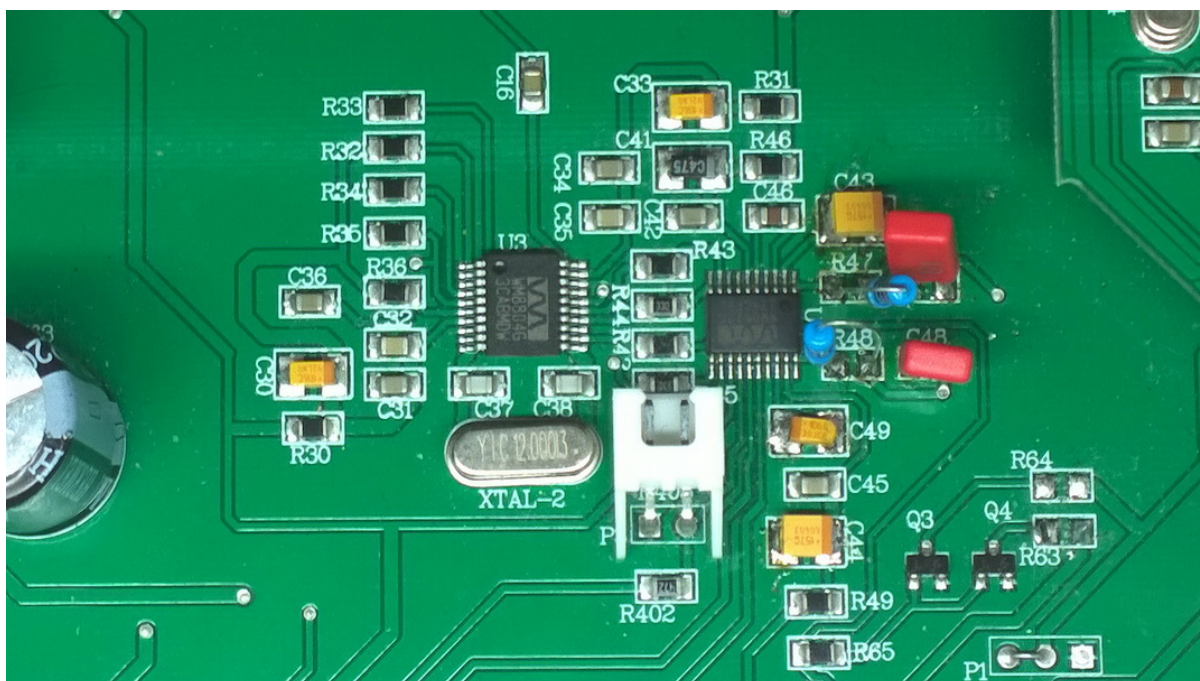
The capacitors themselves come in various types, and various prices accordingly. They could differ in sound quality, but no further information exists on that at this stage.

The part number of the 10nF type that is suitable and known is:

MKS0C021000B00KSSD Film Capacitor, MKS0 Series, 0.01  $\mu$ F,  $\pm$  10%, PET (Polyester), 63 V

For the 15nF, the part number is:

WIMA MKS0C021500B00KSSD Film Capacitor, MKS0 Series, 0.015  $\mu$ F,  $\pm$  10%, PET (Polyester), 63 V

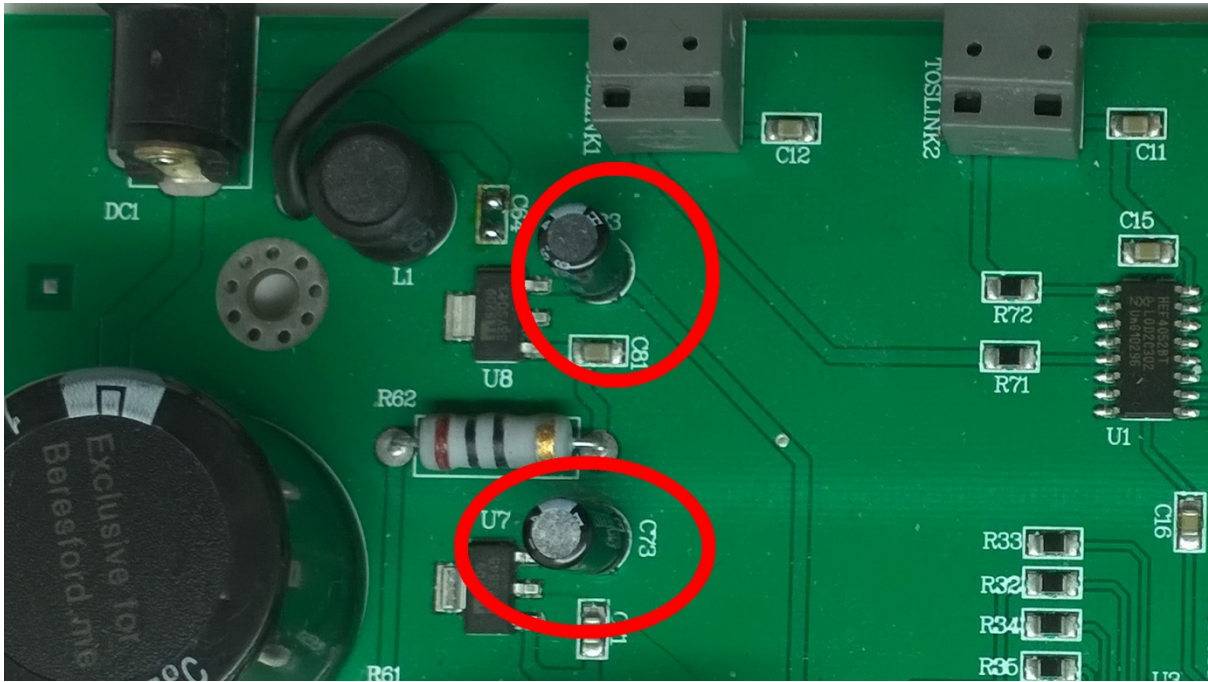


If you carry out all the mods, the PCB will look something like the above

For those more adventurous and skilled, the PCB would need to be removed in order to desolder the original components and replace them with a suggested alternative.

C73/C83 - red circles

These are for the 3.3V and 5V supply.



They can be replaced with a higher value capacitor. The one used in this modification are the Tokin 47000uF/5.5V Super Capacitors. Part number = FM0H473ZTP18-D 473

