

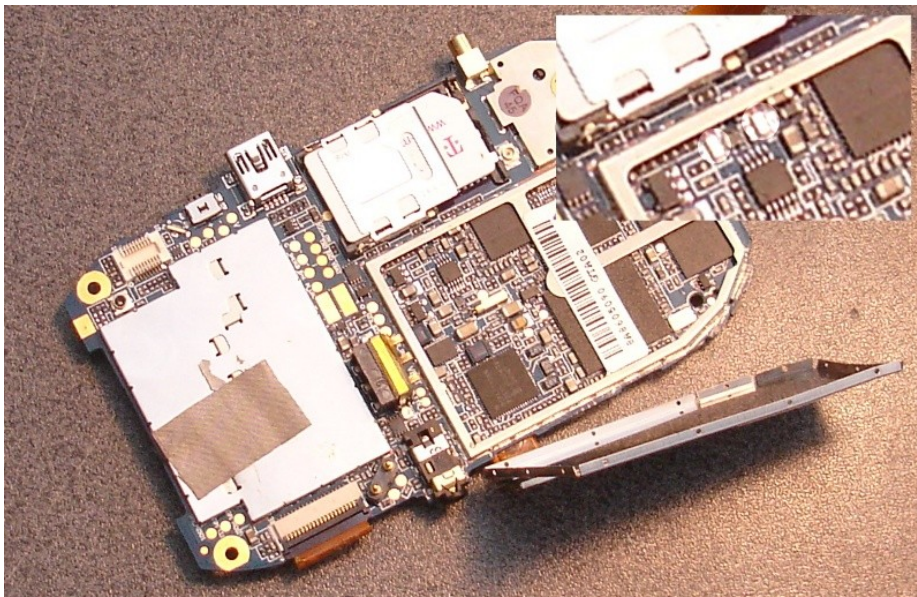
## Adding extra capacitors on GTA02 audio output

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The two capacitors shown highlit below have too small a value for best audio quality reproduction on GTA02 A5 – A7.

This document describes a way to increase the capacitance in a way that should increase the amplitude of lower frequencies.

This is nonofficial and not a recommended procedure. You shouldn't attempt this unless you are confident you can do the fine soldering required and willing risk taking sole responsibility for any damage to your GTA02. It's not recommended!



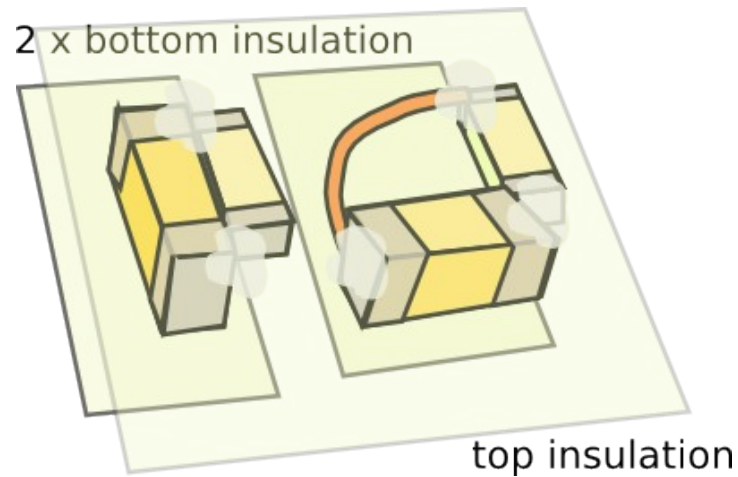
Before starting you would need a fine tip soldering iron and two new ceramic capacitors. The recommended capacitors from the amplifier application diagram in the datasheet is 100uF, but capacitors of this value that will fit under the can on top of existing components are hard or impossible to find. In this example, I used 22uF capacitors taken from another broken GTA02, it's possible 47uF like this

<http://uk.farnell.com/avx/12066d476mat2a/capacitor-47-uf-6-3v-1206-x5r/dp/1658886>

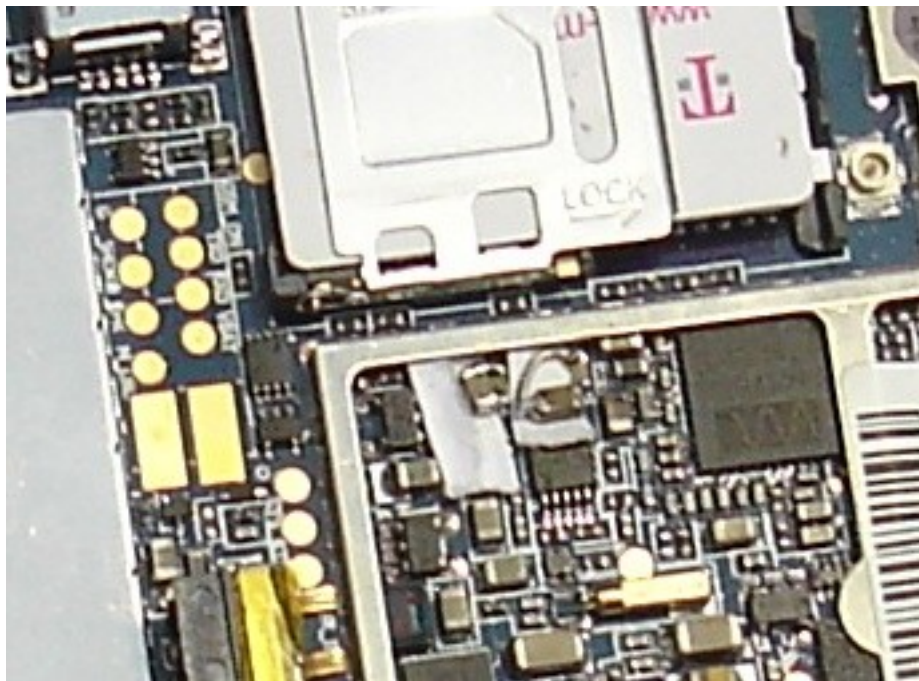
1206 1.78mm high may also fit. 6.3V rating should be OK. GTA02s have 1uF or 4.7uF capacitors fitted here at the moment, so even 22uF is a significant improvement.

1. Remove the GTA02 from its case, unscrewing the two Torx size 6 that hold the case together
2. With a fine blade, gently lift the RF can lid away from the can base until it clicks out all the way around. Do not apply too much pressure here or you will bend and damage the inner part of the can. Do not insert anything inside the can to lever it, you will damage components inside the can. If you're not confident about this get someone else with more experience to do it or give up now.
3. Identify the two capacitors shown above.

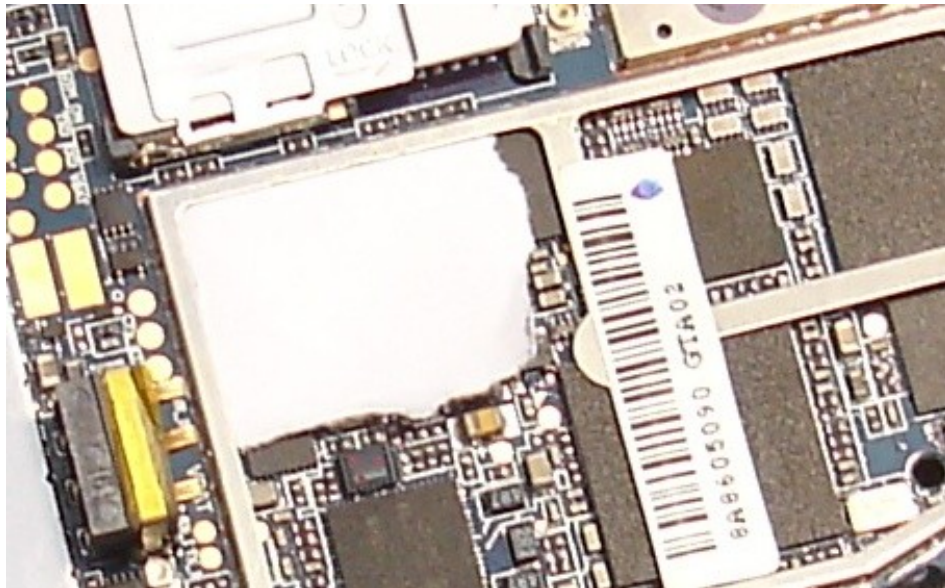
4. Prepare some insulation, I used thick paper but tough thin plastic would be better, to cover the components under where we will place the new capacitors. You will need a larger area of insulator as well to go on top of the modifications before the can goes back on.
5. We are going to add the new capacitors in parallel like this



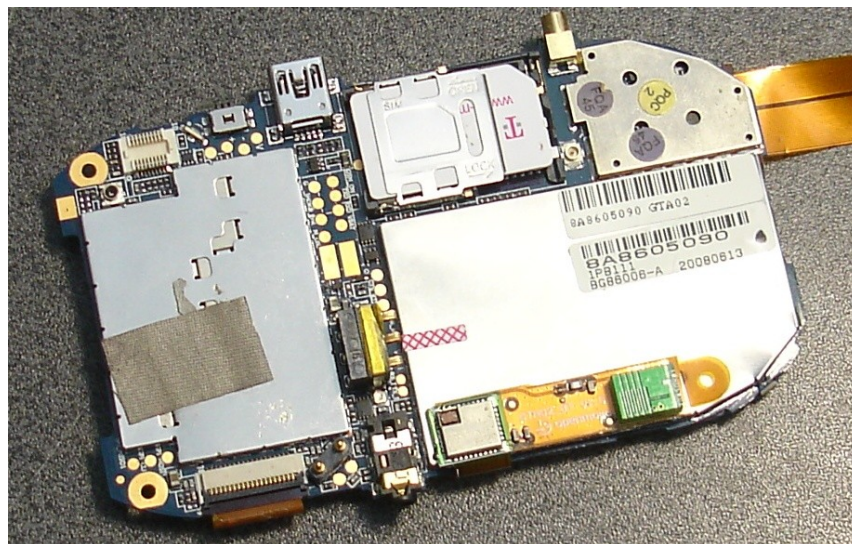
The capacitor on the left has enough clearance we can add the new capacitor directly against it. The capacitor on the right does not have clearance in the same position, so the new capacitor needs to go at a right-angle to it and a patch wire used to bring the other signal to the new capacitor.



6. Soldering in the following order worked for me: as shown above, a) while pressing gently down on the new capacitor, top left joint b) then bottom left; then c) on the other capacitor again while pressing gently down on it, the bottom right joint, then d) the patch wire at the top right and lastly e) the patch wire at the middle bottom.
7. Take care not to accidentally solder anything to the can frame, it's grounded
8. Take care when soldering that the solder is left smooth and rounded, without sharp spikes



9. Add the top insulation to cover the modifications, tucking it under the bottom part of the can metal if possible
10. Replace the can carefully making sure there was enough clearance from the additional capacitors that they do not press up against the can (the solder joints will fail if there is repeated flexing from battery removal then).



11. Reassemble the GTA02

Lower frequency reproduction should be somewhat improved.