

Heatsink Kit for Commodore 64 “Breadbin” Model

The 4 chips that run the hottest in the C64 are the SID (6581), PLA (901664-01, 93459PC or 82S100N), the CPU (6510) and VIC-II (6569) and because of this, they are the most common to fail. Usually, only the VIC-II chip has any original heatsinking (often using a copper spring tab connected to the metal shielding box). On later C64 models, there may be a thin stamped metal sheet with tabs touching the chips but this often loses its tension and the tabs may not even touch the chips!

Disassembling the C64:

When working on electronic devices, anti-static precautions should be taken. If possible a grounding wrist strap should be worn, but touching the metal case of a PC or other earthed device is better than nothing. (Fortunately, the C64 mainly uses older chip technology that is not as susceptible to static damage as modern components.)

Naturally, the C64 should be disconnected from its PSU and any other devices before proceeding. Disassembly is straightforward: On the underside there are 3 large Philips screws at the front - remove these and the top will come off. However, care should be taken as there are plastic clips along the back edge that will have become brittle with age. Try not to just open the case right up with the clips as a hinge, instead see if wiggling the top from side to side will help the clips come away without breaking.

Also, there are 2 cables attached to the top section of the case, one connecting the keyboard on the left and one for the power LED on the right. The connectors can be simply pulled away (but try not angle them as you go or the pins may get bent - it's not a big deal to straighten them again should that happen though).

Depending on the C64 revision, there may be a cardboard foil shield or the aforementioned thin metal stamped sheet covering the chips - this can be unclipped or taken off as required.

Cleaning:

You can - if you wish - remove the PCB from the bottom of the case, this may make it easier to clean and allow more pressure when pressing the heatsinks down (without flexing the PCB). There are usually 7 screws holding down the motherboard (there are also 2 screws holding the power / switch / joystick port plate onto the PCB - these 2 do not have to be removed).

If you do want to generally clean up the PCB, a small vacuum, or air puffer may help with the loose fluff. Isopropyl alcohol on cotton buds is recommended for dirt actually on the PCB itself. If the gold contacts of the edge connectors are really cruddy, the blue “pen” end of a pencil eraser can be used to lightly polish them (use the isopropyl to clean up afterwards).

Fitting the heatsinks:

Locate the SID (6581) PLA (906114-01 etc) and CPU (6510) chips (they'll be near the centre of the PCB). Their surfaces need to be cleaned of all dirt and dust to ensure the heatsink adhesive sticks well. Isopropyl alcohol on cotton buds is highly recommended, clean the top of each chip until fresh looking and no more dirt comes away.

The thermally conductive pads can now be applied to the bottom of heatsinks. Each pad is a form of double-sided tape, protected on both sides with a shiney backing. Peel away one of the protective layers and apply the pad to the heatsink, taking care so that no air bubbles are trapped (You can rub down the pad with the back of your thumbnail to make sure it has adhered evenly.)

The protection on the other side of the tape can then be removed and the heatsink pressed against the top of the chip. Hold down the the heatsink with some force for about 15 seconds to give it good adhesion.

Re-assembly:

Simply reverse the process to put the C64 back together. If you have the thin metal shield, the tabs for the SID, PLA and CPU can be bent upwards a little so they rest on the top of the heatsinks. The keyboard cable will only fit one way around as it has an alignment key, the power LED cable is fitted with black wire in the centre of the 3 pin group, red wire top or bottom (no damage will be done if incorrectly fitted).