



Colecovision 5v Memory Mod Installation

The Colecovision suffers from common failure points: the power supply, power switch, and 4116 DRAM. The power supply suffers from poor soldering, the power switch gets dirty which makes the system fail to properly boot, and the DRAM chips run hot.

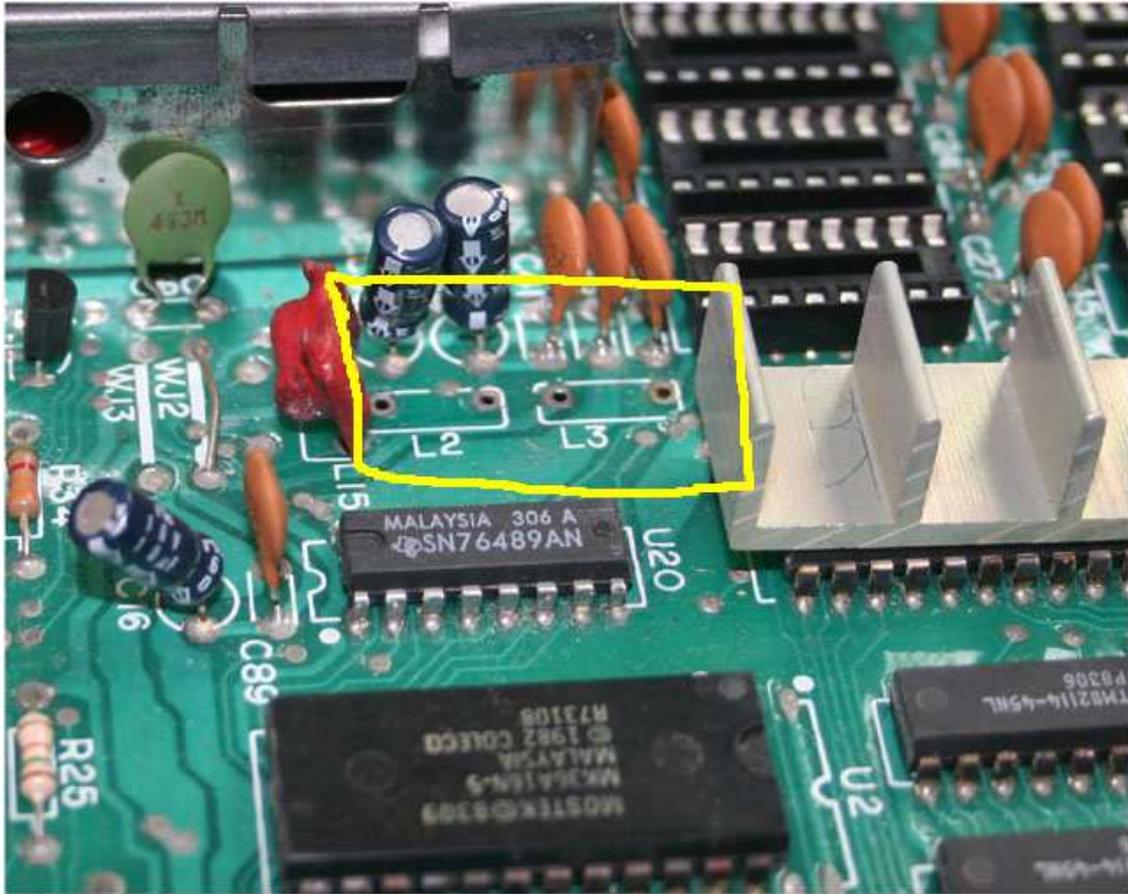
To make the system run cooler and more reliably take out the 4116 DRAM which requires +5v, -5v, and +12v to run and replace it with 5v only 4516 or 4164 DRAM ICs. This reduces the load on the power supply and takes the -5 and +12 voltages off the chips. This reduces the heat output of the system and takes away the problems of the power supply switch.

WARNING: Do this at your own risk. Only you are responsible for any damage to your system. If you cannot solder and desolder IC chips then please get help with the installation of this kit.

Disassemble the Colecovision

Take 8 screws from the bottom. Carefully peel the silver & black Colecovision sticker from the front panel to reveal 3 more screws. Remove those and the front panel will come off. The expansion module door will fall out as well. It's only held in by the front panel's pressure against the case.

Take the 3 screws out of the RF shield then use a hot soldering iron to melt the solder by the expansion bay connector holding the shield in place. Remove the shield and remove the last screw in the middle of the board holding it in place.



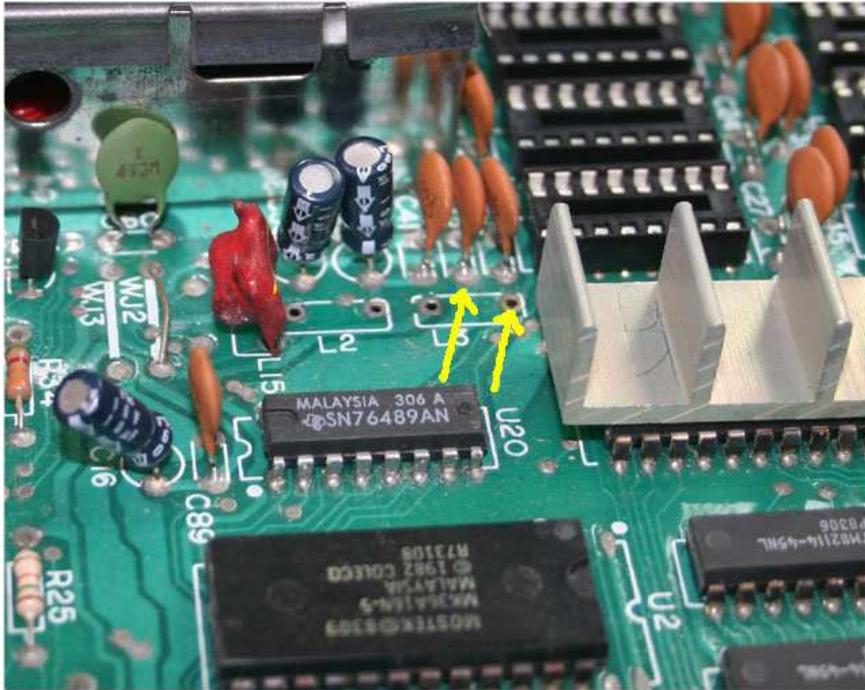
After the sockets are installed, remove L2 (-5v filter for DRAM) and L3 (+12v filter for DRAM.) This will remove the -5v and +12v voltage sources from the DRAM. The original 4116 DRAM needs this but the replacement 4516 and 4164 DRAM ICs do not.

On the 4516/4164 DRAMs, pin 1 is RFSH* while on the 4116 DRAMs, pin 1 is -5v. By taking the -5v off pin 1 and NOT connecting anything to that line it will float. Per Mostek's 4516/4164 datasheets this is OK to do if it is not being used.

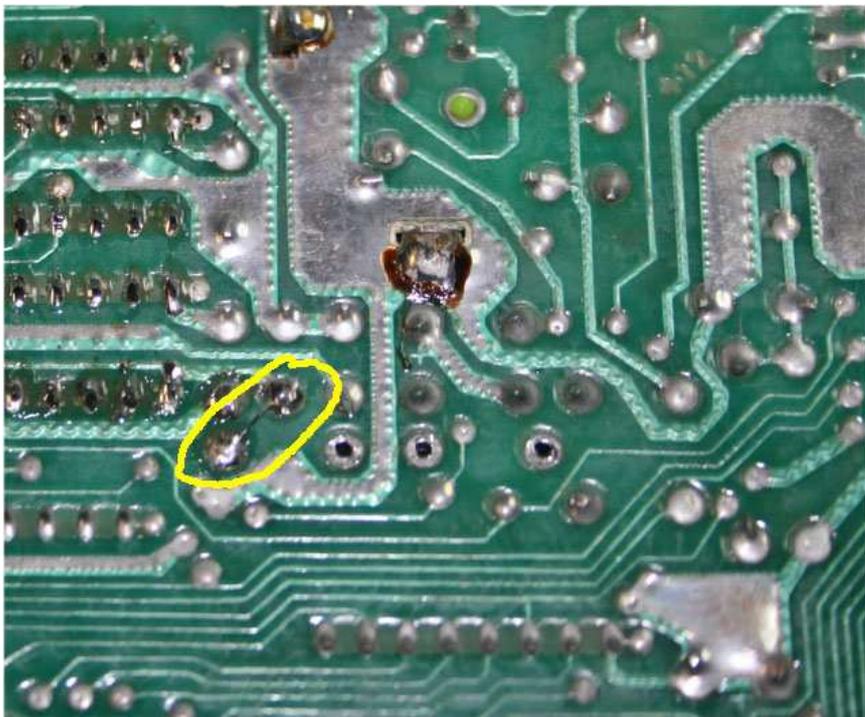
The 4116 DRAM has different pinouts than the 4516 and 4164 DRAM does.

Pin No.	4116	4516/4164
1	-5v	RFSH* (Not connected for this application)
8	+12v	+5v
9	+5v	NC (Not Connected)

A source of +5v needs to be connected to pin 8 of the replacement DRAM chips. It does not matter if +5v is on pin 9 as it is NC on the 4516 and 4164 DRAMs.

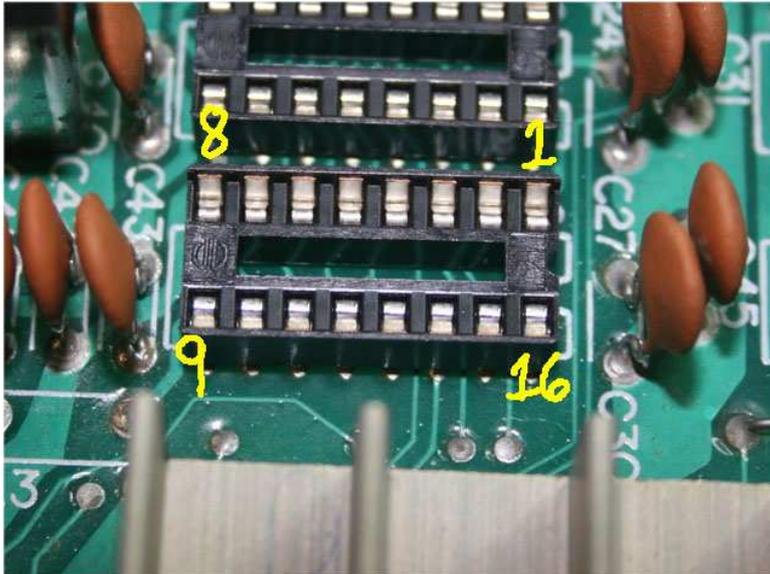


Look at the L3 location - there are 2 solder points. Above the right hand solder point is capacitor C42. The solder point CLOSEST to the L3 for C42 is a source for +5v. Solder a jumper wire from C42 to the RIGHT SIDE PAD (Left side when working on the bottom of the board) for L3; this will be the pad closest to the DRAM.



Be careful! If you connect it to the left side pad by mistake you will be bridging +12v and +5v lines which will not only damage the Colecovision power supply but will most likely damage your game board beyond repair. Double check your work!

Double check your connections. Do this with the power switch ON, but the power brick NOT PLUGGED IN. This way you can check at the 4 power wires for any shorts between them.



The DRAM chips should now be wired as:

Pin 1 = no connection to any power source.

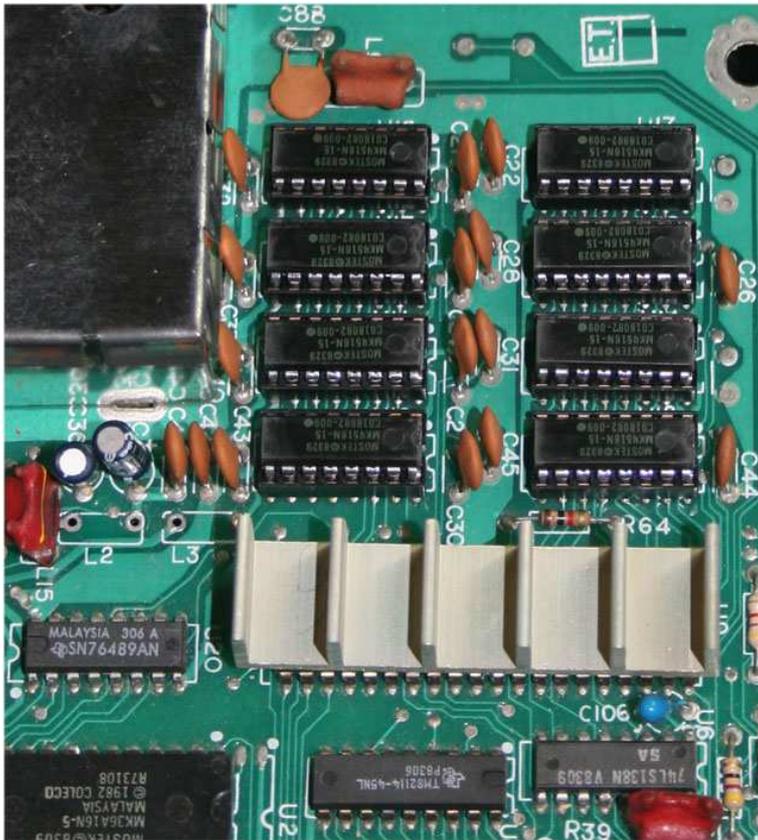
Pin 16 = ground – connects to the Black power wire

Pin 8 & 9 = +5v – connects to the White power wire

NO connections to either the Red or Blue power wires

NO shorts between pin 16 and either pin 8 or 9

Some resistance between 16 and either 8 or 9 is normal, but it shouldn't be abnormally low. 300 ohms is fine. Less than 20 is not.



If all looks well, solder in the sockets, plug in the DRAM, and give it a smoke test! If nothing smokes, then turn it off, and try a cartridge, you should have the Colecovision splash screen. Congrats!

Reassemble the system. Don't forget to put the solder blob back on the RF shield to keep your picture looking nice. If you forget it you may find strange interference on the TV screen.