

How to fix your V64Jr512 (by Socketz)

I have a V64Jr512, so I don't know if my solution will work with any other model.

I had a lot of trouble with my V64Jr512 and after considerable effort, found out why and was able to fix it.

I tried EVERYTHING! I disassembled it, changed the common components like the 74HC245s, solder plated the cartridge edge connector, solder plated the memory edge connector, (very carefully) soldered the memory to its socket, (again, very carefully) soldered the Altera chip to its socket, added thermal dissipation to the Altera chip, then changed the memory SIMM socket and the Altera PLCC socket, but NOTHING OF THIS WORKED!

I also tried changing the memory with some SIMMs, but discovered the V64Jr512 uses a custom made memory SIMM. No, it's not a standard DRAM SIMM, and it's not a standard EDO memory SIMM.

Then I noticed the following:

If I sent a game to the V64Jr and immediately verified it, it checked ok.

If, after sending a game to the V64Jr I left it on for some time (I tested mine for half an hour), then verified it, the memory was still ok.

Finally, if I sent a game to the V64Jr, then plugged it into the N64 and turned it on, after a short time (less than 5 minutes), the game crashed. After turning the N64 off and verifying the game, I found out the memory had failed.

WHY? What's the difference???

I used a tester to measure the voltage while battery powered and then while powered by the N64 and found a very slight difference... nah, can't be that stupid...

IT IS!!!!

***** The V64Jr512 uses 3.3 Volt memory *****

The designers at Bung just took the 5V coming out from the 7805 voltage regulator, put 2 diodes in series to drop the voltage to something less than 4V and fed the memory with this!

Why? Well, that's easy, it was cheaper than adding a 3.3V voltage regulator. How much? Oh, about \$1.50 cheaper! You can't believe it? Me either!

Let me tell you something: 3.3V memory requires 3.3 Volts, NOT 3.9V nor 3.2V.

IT REQUIRES THREE POINT THREE VOLTS!!!

This is a design flaw!

Well, let's fix it...

Note: if you have no idea about electronics, seek help. Don't try this yourself!

If you do this incorrectly, you WILL blow your V64JR AND your N64!

If you do this modification to your V64Jr512, its at YOUR OWN RISK, OK?

What you will need:

Equipment:

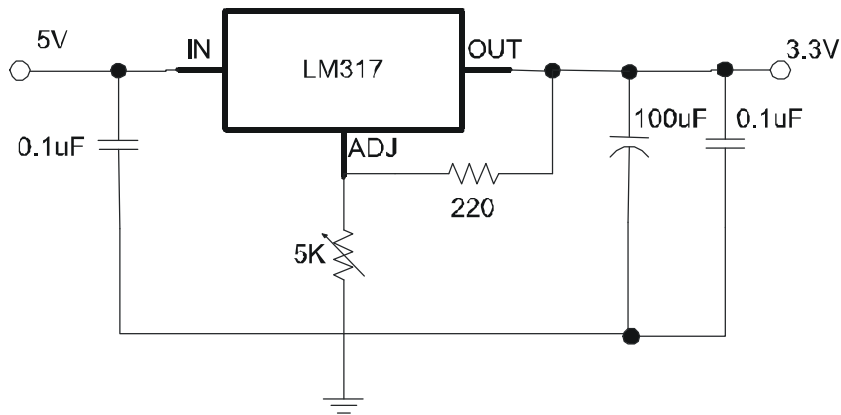
- * soldering iron
- * 1mm (or thinner) 60/40 electronics solder (with flux core)
- * desoldering tape (ChemWick or similar)
- * digital Tester
- * Phillips screwdriver (to open the V64Jr)
- * little standard screwdriver (to calibrate the preset)
- * a drop of nail enamel

Components:

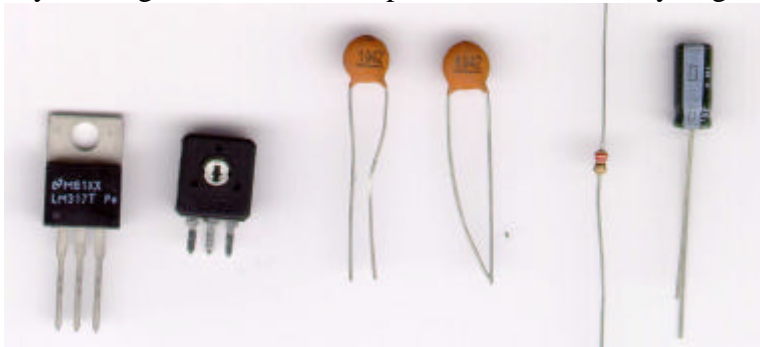
Qty Description

- 1 LM317 (1.5Amp) voltage regulator
- 1 5K preset
- 1 100 uF x 16 volt electrolytic capacitor
- 2 0.1 uF ceramic capacitors (one is optional)
- 1 220 Ohm resistor
- a piece of (not very thin) insulated cable (see orange cable in photo 2)

The Circuit:



If you bought the correct components, this is what you got:



1 2 3

PHOTO 1

Photo 1: From left to right: LM317, 5K preset, two 0.1uF (104) ceramic capacitors, 220 ohm resistor (red-red-brown), 100 uF electrolytic capacitor.

The LM317 pins are from left to right:

1 adjust

2 output

3 input

Be careful!

This is the finished modification:

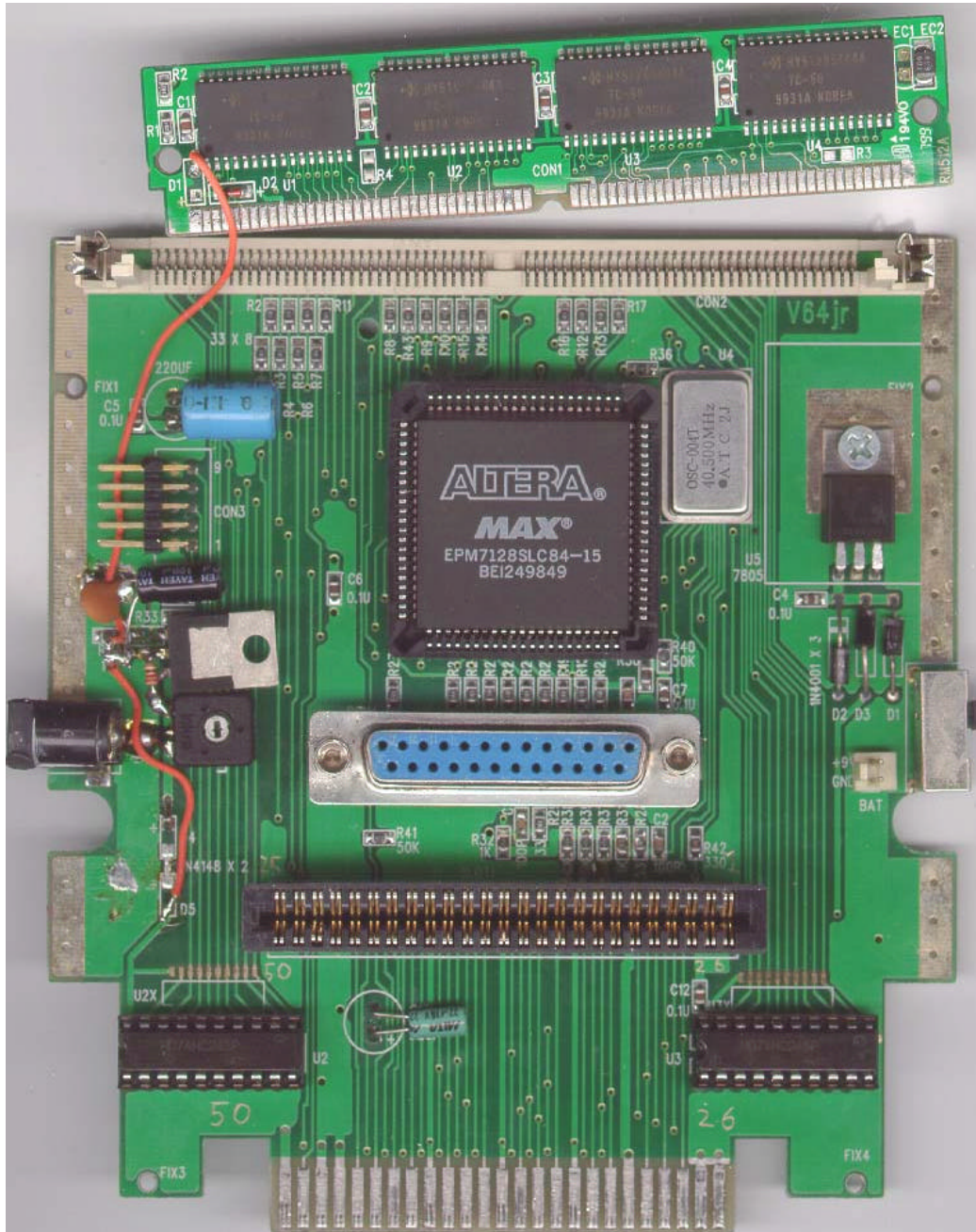


PHOTO 2

Steps:

- 1) Carefully remove the memory SIMM
- 2) With the desoldering tape and the soldering iron, remove diode D1 from the memory SIMM (See PHOTO 4). You can remove diode D2 if you want (I left it there but it's no longer in use)
- 3) With the desoldering tape and the soldering iron, remove diodes D4 and D5 from the board.

You can see D4 and D5 in this photo (1N4148) near the place where the power plug should be. (This photo with the components removed was taken when I completely disassembled the V64Jr trying to fix it)

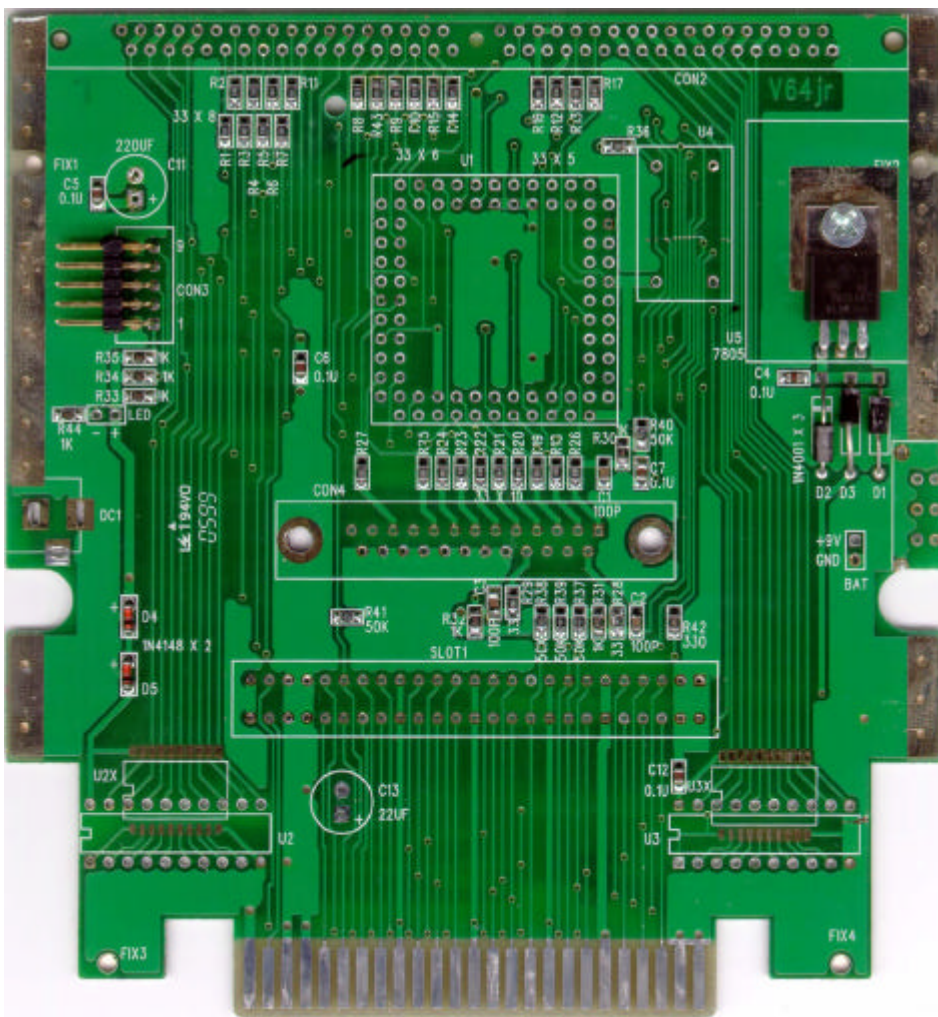


PHOTO 3

- 4) Solder pin 3 (the input) of the LM317 to 5V. I chose to place the 317 with it's front towards the PCB and soldered pin 3 (cut it to fit) to the LED + (you can see the hole from the removed led in photo 3. Don't remove the led)
- 5) solder pin 1 (adjust) of the 317 to the left pin of the preset

- 6) remove some of the paint from the ground on the PCB where it says 'DC1' (see photo 3) and solder the middle and right pins of the preset (together) to there.
- 7) the middle pin of the 317 remains in the air and DOESN'T touch the PCB anywhere, it's the 3.3V output. Solder one end of the 220 Ohm resistor to this point (middle pin of the 317)
- 8) solder the other end of the resistor to where pin 1 of the 317 is connected to the left pin of the preset (see step 5)
- 9) remove some more paint from the PCB ground near CON3 and solder the ground (marked with a white stripe of zeroes) from the electrolytic capacitor there
- 10) solder the other end of the electrolytic capacitor to the middle pin of the 317. Be very careful not to short any other pins
- 11) solder a 0.1uF ceramic capacitor in parallel to the electrolytic capacitor (one end to ground, one end to middle pin of the 317)
- 12) optionally solder the remaining ceramic capacitor between pin 3 (input) of the 317 and ground. I didn't do this step, it works ok without it. The 7805 in the V64Jr already filters the input voltage to 5V (regulated).
- 13) Solder 2 pieces of (insulated) wire to the middle pin (output) of the 317
- 14) **THIS STEP IS EXTREMELY IMPORTANT:** using the digital Tester to measure the output of the middle pin of the 317, rotate the preset (yep, with the small screwdriver) and calibrate the output to EXACTLY 3.30V (or slightly less, like 3.29V)
- 15) fix the preset (right, with the drop of nail enamel you borrowed from your wife, girlfriend or mother)
- 16) OK!, we now have the correct voltage to feed the memory and glue logic (74HC245).

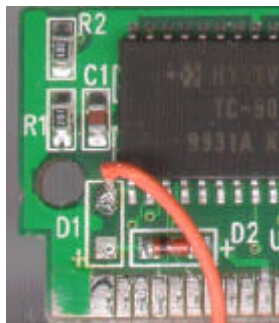


PHOTO 4

- 17) Solder the end of one of the 2 pieces of wire we put in step 13 to the memory board, where D1 was (see PHOTO 4). Put the memory back in it's slot.
- 18) Solder the end of the remaining wire to the PCB, where D5 was (see PHOTO 2)
- 19) If you put the components where I told you to, you should be able to put the cover back on. Do so now.

We're DONE! If you did it correctly, your V64Jr512 should work OK now (I hope it does!). If it doesn't, the bad voltage it was using might have blown the memory for good.

Contact me at socketz@usa.net with your feedback (did it work?) or WISE questions. I won't answer dumb questions. And PLEASE no junk mail!

Greetings from Argentina to the N64 community!

Socketz