TETRIS DX
CUSTOM MOTHERBOARD

PLEASE READ THROUGH THESE INSTRUCTIONS ENTIRELY BEFORE ATTEMPTING TO INSTALL.

WARNING: IF YOU ARE NOT COMFORTABLE WITH SOLDERING, OR PERFORMING ANY STEP IN THIS GUIDE, _DO NOT PERFORM THE INSTALL YOURSELF._ _FIND SOMEONE WHO IS COMFORTABLE TO DO IT FOR YOU._

DESCRIPTION

This is a **full color printed custom motherboard** for the game **Tetris DX** for Game Boy. You can use it to customize your original Tetris DX, which may have lost its battery since it was released in 1998 and may have a damaged/rusted circuit.

Additionally, as you can see in the photos, this new circuit will give an incredible look to your Tetris DX. Remember to use a transparent Game Boy or Game Boy Color shell to display it in all its splendour.

FEATURES

- New full-color printed motherboard for Tetris DX!
- Replace the battery without the need for soldering once it runs out.

INCLUDED

- 1x Full color printed custom motherboard.
- 3x Resistors of 10K 0603 (you need 1).
- 5x Capacitors of 10nF 0603 (you need 3).
- 1x Battery holder.

RECOMMENDED / REQUIRED [NOT INCLUDED]

- Original Tetris DX game as donor game.
- Transparent game cartridge for Game Boy or Game Boy Color. [1]
- New CR2032 button battery.

- 3.8mm gamebit screwdriver.
- Sandpaper or metal files [2]
- Tweezers.
- Tin soldering iron.
- Tin.
- Flux.
- Isopropyl alcohol.

[1] Remember to purchase the shell for the circuit. It's up to your discretion whether to use the one for Game Boy or Game Boy Color; both are compatible.

[2] Could be optional. In case it's necessary, it serves to reduce the side tabs that the circuit has. This depends on how faithful the shell is to the original; the tabs prevent the circuit from wobbling or shifting from side to side. If the circuit doesn't fit into the shell, you'll need to file the tabs slightly.

BOARD DETAILS

The board doesn't have any connectors or pads where wires need to be soldered like my other kits. However, this board doesn't come assembled; you will be the one to assemble the components supplied with the kit, as well as the 4 chips that make up the game, which you'll need to extract from your donor game.
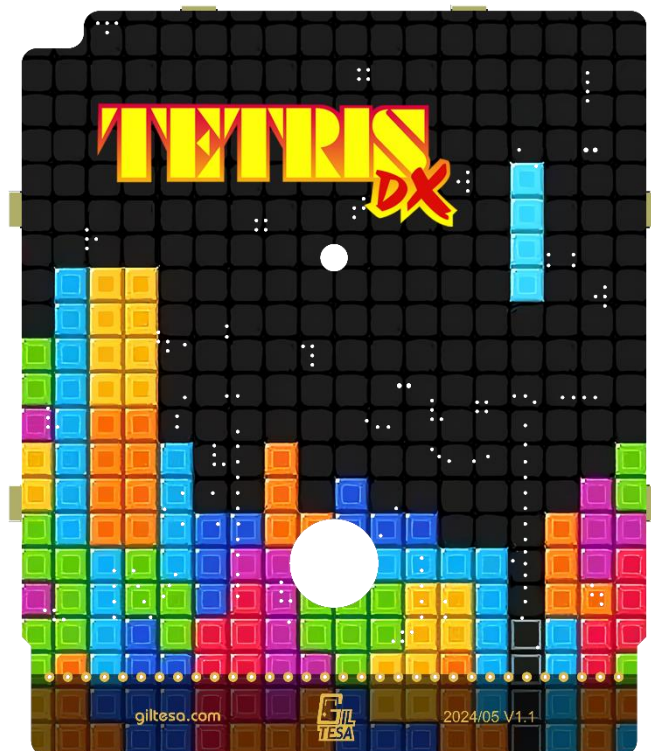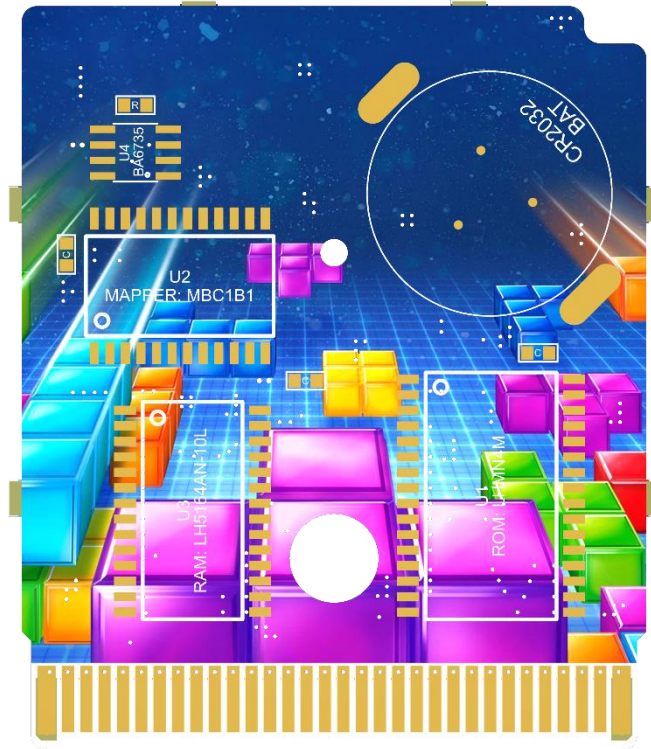
INSTALLATION STEPS

Please, carefully read the following steps for a successful installation.

PRE INSTALLATION STEPS

Before proceeding with the installation, **you need to retrieve the 4 chips that make up Tetris DX from your game circuit**. These chips must be transplanted to the new circuit.

This is where all the difficulty of the installation lies, as it is most convenient to use a hot air soldering station or a heating table to extract the chips. It is not recommended to use just a soldering iron, although perhaps in combination with a desoldering pump, it may be possible. It's up to you which tools to use.
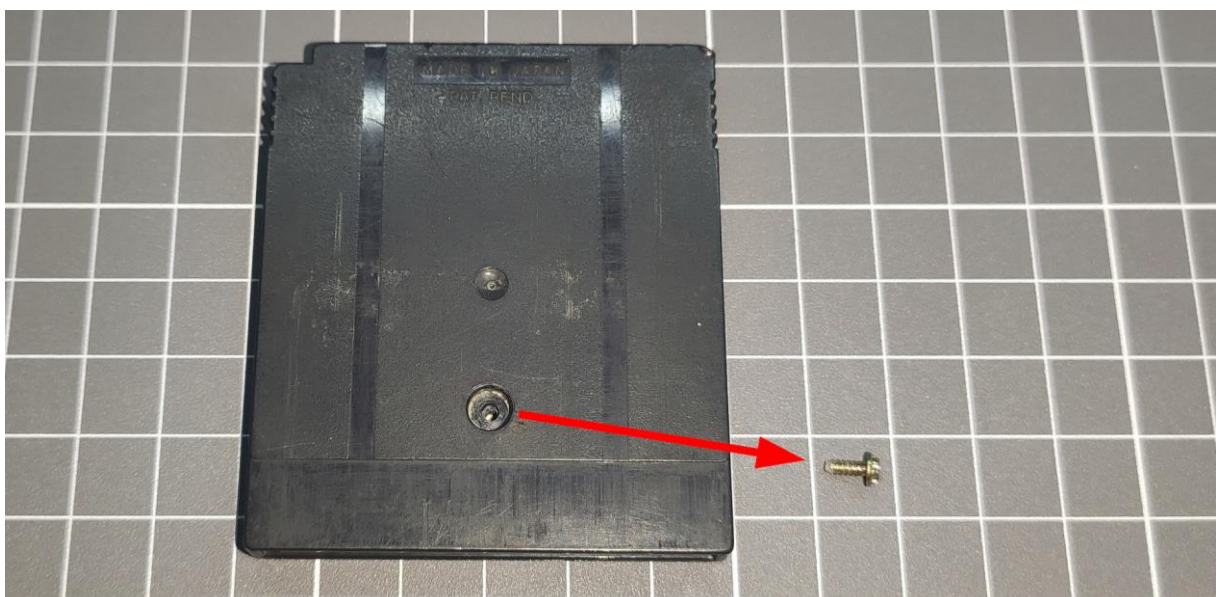
1. DISASSEMBLY THE CARD SHELL

First, you'll need to open the original game cartridge.
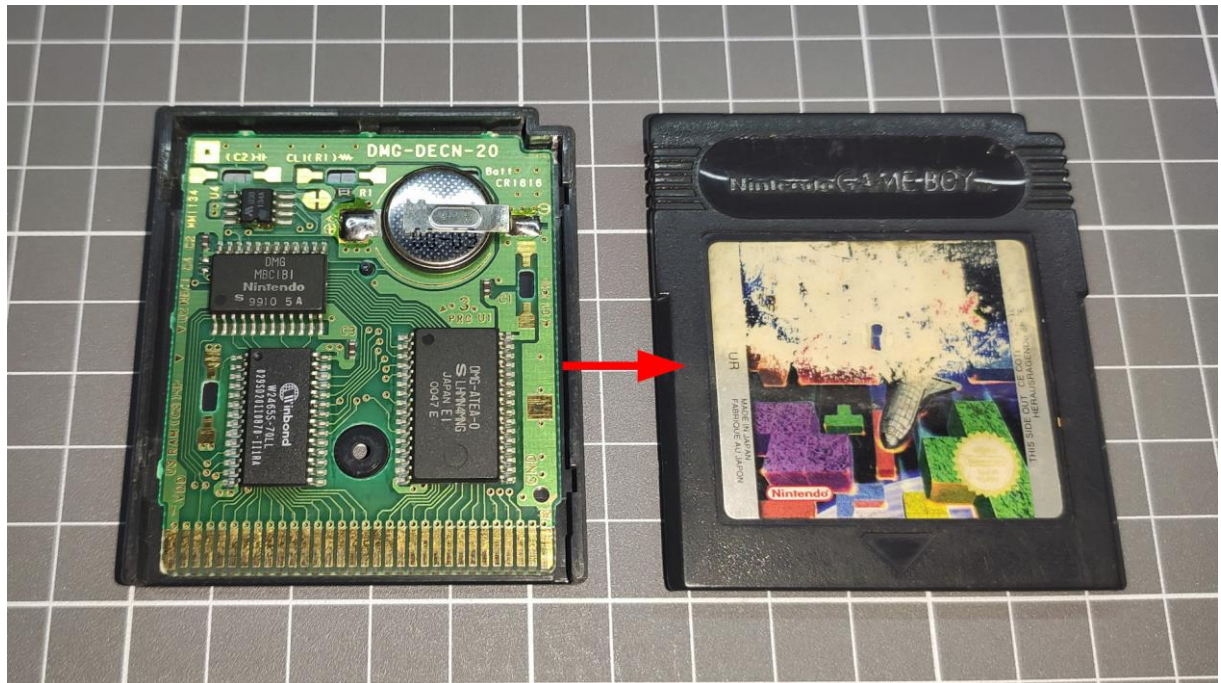

⊛ 3.8mm   ⊛ 4.5mm

Gamebit screwdriver

The cartridge uses a **3.8mm gamebit screw**, this is the screw:

Once opened, you'll see the interior, just an electrical circuit where all the components are soldered.

2. DISASSEMBLY THE CIRCUIT COMPONENTS

The first component to remove is the game's battery. No matter what type of tools you'll use to remove the rest of the components, this component must be removed manually with a soldering iron.

IMPORTANT NOTE: Removing the battery will erase any saved game data (if it hasn't already happened due to the battery running out). It is recommended to make a backup first if you don't want to lose your game progress.
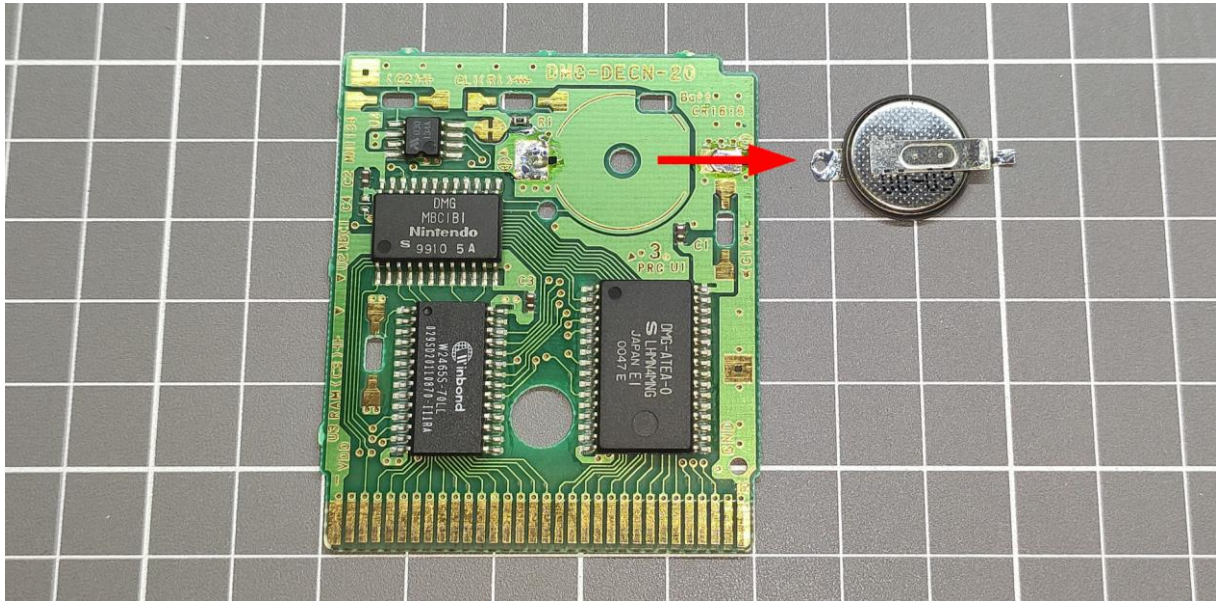
Then comes the tricky part. It is recommended to use a hot plate or a hot air soldering station, in both cases heating the circuit from the underside so that the chips do not receive excessive heat. You can add a bit of flux to help the solder melt more quickly and thus free the chip to be removed with tweezers.
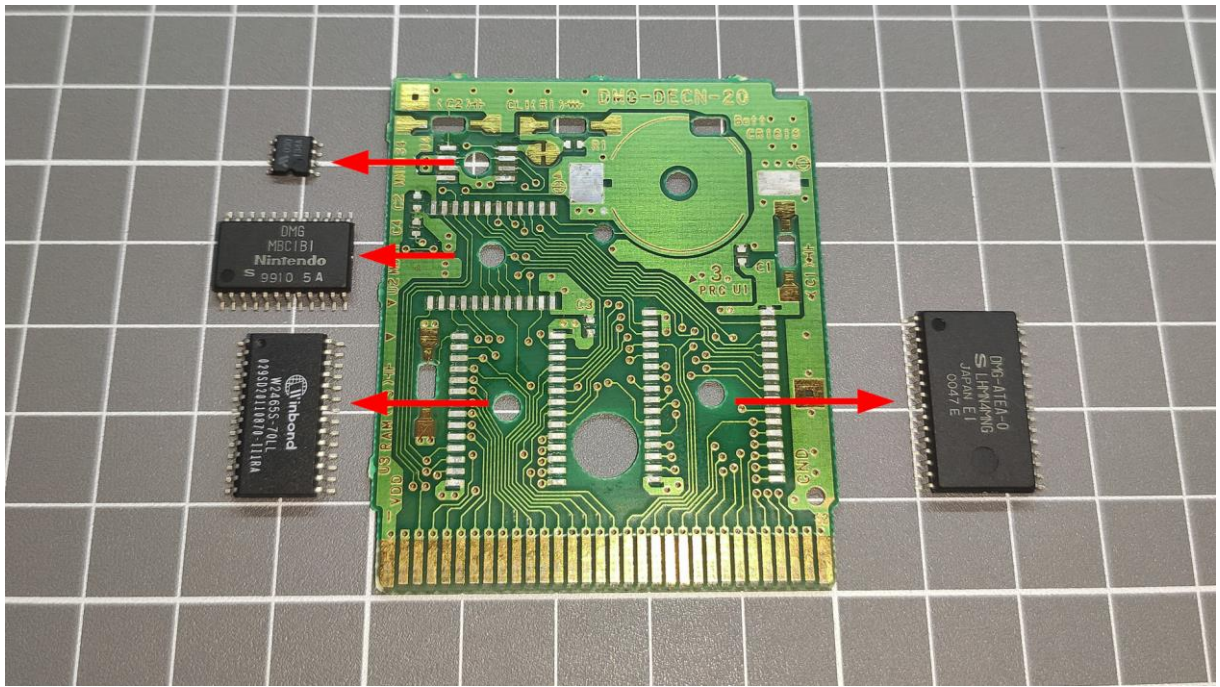
You don't need to remove the upper resistor or the three capacitors since new units are included in the kit.

INSTALLATION STEPS

1. ISOLATION OF THE CIRCUIT

As you can see when opening the kit bag, the circuit already includes a kapton tape that protects the bottom where the pads are located, which will make electrical connection with the Game Boy game connector.

It's crucial to keep this kapton tape in place until you finish the installation completely. This prevents accidental solder from falling onto these pads and ruining the PCB.

If you have removed the kapton tape, put it back in place 😊

PHOTO

2. SANDING THE CENTERING TABS [OPTIONAL]

Since there's a wide variety of manufacturers producing card shells for Game Boy, not all of them have the same dimensions as the original shells. That's why the included circuit has side and top tabs to try to centre the circuit as much as possible within the shell.
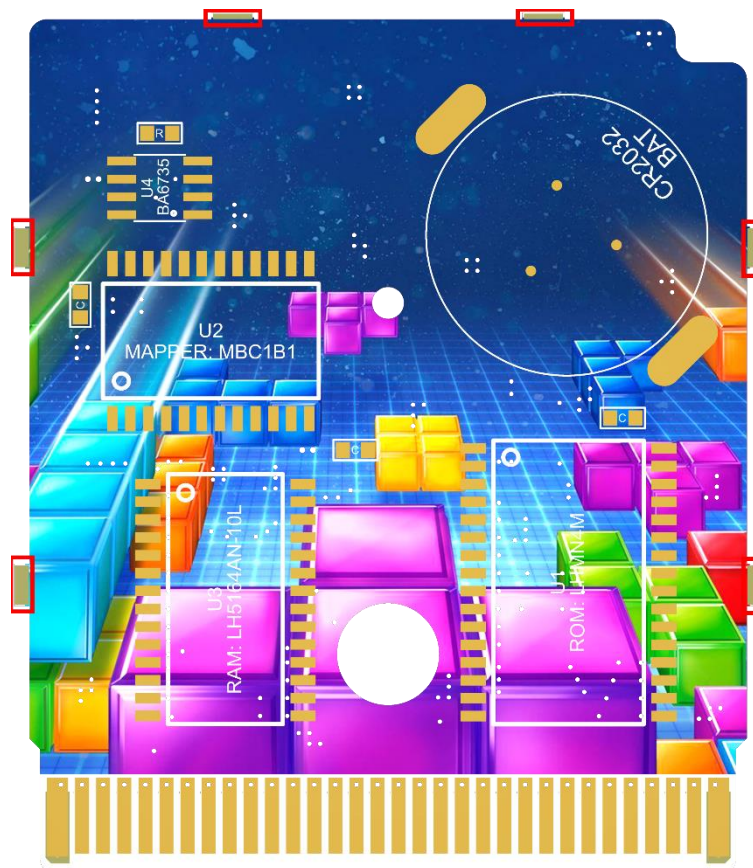
Insert the circuit into the shell you want to use and check if it fits correctly. If you have trouble inserting it, you'll need to sand the tabs very slightly, first on one side and then on the other. Sand gradually and check if the circuit fits into place or not.

<mark>PHOTO with the circuit in the shell</mark>

When you finish, clean the circuit with isopropyl alcohol.

## 3. *SOLDERING SMALL COMPONENTS*

It's time to proceed with the installation of everything. Start with the smallest components first, then the 4 chips in a specific order, and finally the battery holder.

The kit includes more resistors and capacitors than necessary because some might get lost during installation. Make sure to remove the components from the protective film one by one as needed and be careful not to lose them.

The **resistors are black** and have numbers written on them. The capacitors are brown.

<mark>PHOTO showing the resistors and capacitors.</mark>

The circuit requires 1 10K resistor sized 0603 and 3 10nF capacitors sized 0603. The circuit has an 'R' or 'C' marked in the centre of the component, but it might not be visible clearly, so in this photo, I've marked in red where you need to solder the resistor and in blue where you need to solder the capacitors.
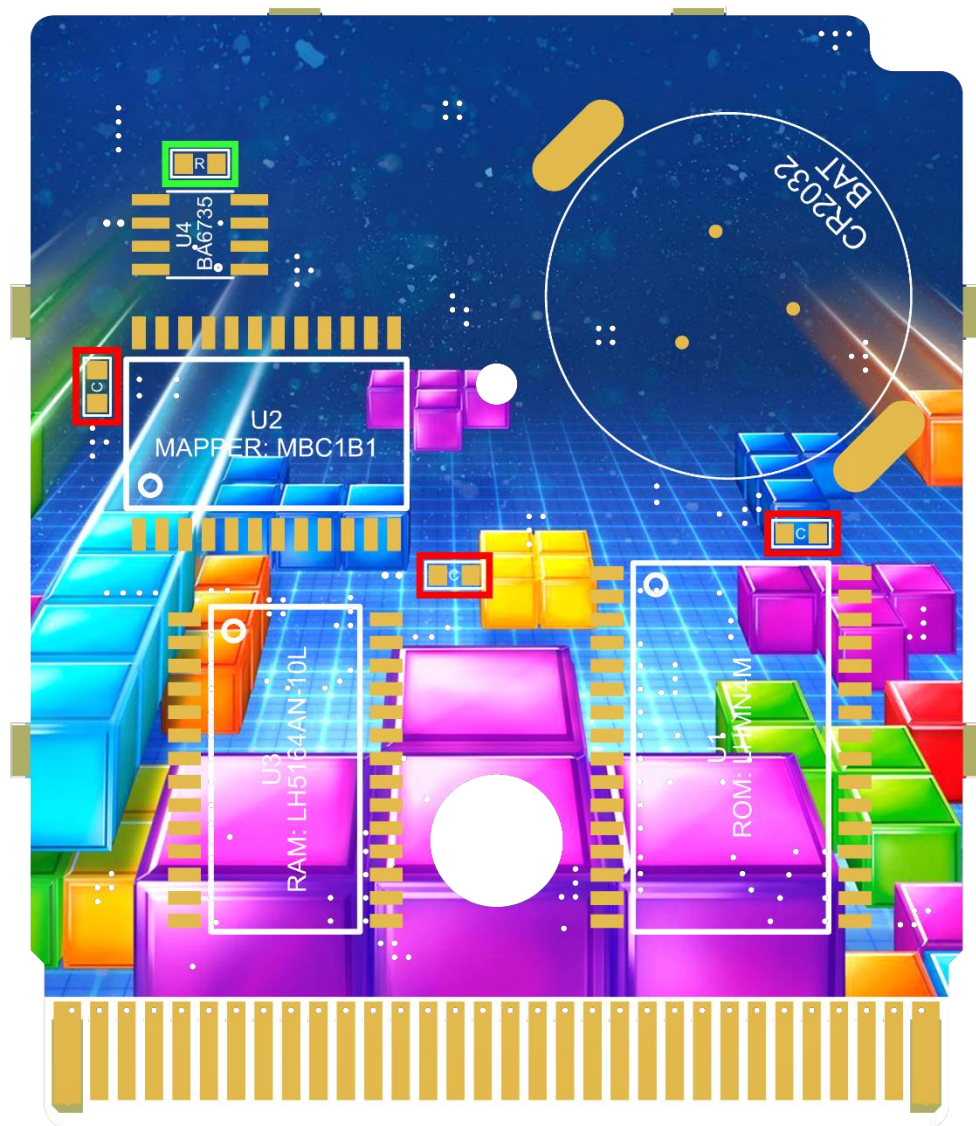
4. SOLDERING THE FOUR CHIPS

Start by soldering the U2 MAPPER chip first. It's the only chip whose pins point upwards and downwards. It's important to start with this one so that the upper and lower chips don't interfere.

PHOTO showing the U2.

Once soldered, you can solder the other 3 chips in any order. However, **in this photo, I've marked the pins that you might find more difficult to solder** as they are connected to GND/ground, and when applying heat with the soldering iron, it dissipates very quickly if the PCB isn't hot enough.

IMPORTANT NOTE: When soldering each chip, make sure you do it in the <u>correct position</u>. **You'll see that both the chip and the soldering site are marked with a circle indicating pin number one**.
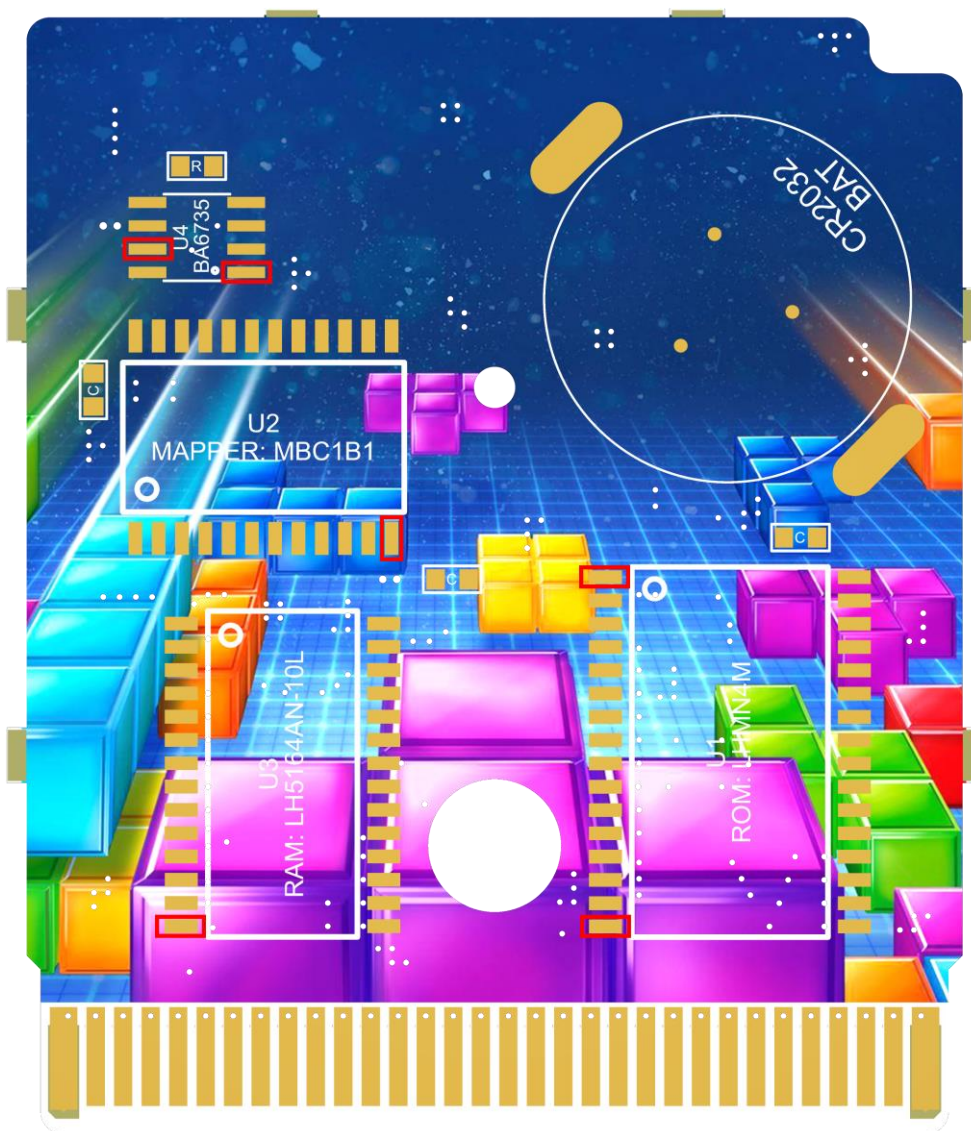
5. SOLDERING THE BATTERY HOLDER

The installation of this component has two parts:

First, add flux and solder to make a small ball on these pads. The goal is for them to protrude very slightly from the PCB, so they make contact with the battery. Don't add too much solder, just enough so that when you run your finger over the pad, you can feel it protruding. Do this with all three pads.

PHOTO showing the round pads.

Second, solder the metal piece that will hold the battery in place. You must centre it properly, otherwise, the cartridge shell may not close afterward. If you prefer, you can solder one side first and check that it closes properly, then solder the other side to complete the installation.

PHOTO showing how to centre the battery holder.

Insert the battery into the battery holder. When you do this, you'll notice that the top tabs protrude too much. This prevents the cartridge shell from closing. You'll need to press them down slightly to make them flatter.

PHOTO showing how to flat the battery holder tabs.

6. CLEAN THE CIRCUIT

The installation is complete. If you haven't done so during the installation of each component, it's time to clean the circuit with isopropyl alcohol.

PHOTO showing the circuit veryyyyy clean!

7. DONE!

We now have our **Tetris DX** game with its new colorful circuit, new battery, and transparent shell, making it look truly amazing!

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PHOTOS

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