Nintendo Family Computer (Famicom) Teardown

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INTRODUCTION

It's day four of our week of game console teardowns. We ~~stole~~ borrowed a hot tub time machine, went directly to 1983, and acquired a Japanese national treasure: the Famicom!

We partnered with Wired for this teardown to bring you a glimpse of one of the most popular game consoles ever. Check out their story!

For those of you born in this century, the Famicom -- short for Family Computer -- is the name of the Nintendo Entertainment System (NES) in Japan. Join us as we delve into the system that revolutionized the gaming world as we know it.

TOOLS:

- Phillips #00 Screwdriver (1)

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Step 1 — Nintendo Family Computer (Famicom) Teardown

- Our contestant hails from a mystical place, the land of the rising sun, Japan!

- The Nintendo Family Computer, released in 1983 in most of Asia, is the overseas brother of the Nintendo Entertainment System.

- Technical Specifications:

  - Ricoh 2A03 8-bit 1.79 MHz processor (based on the MOS Technology 6502 8-bit processor core)

  - 2KB (16Kb) on-board RAM

  - 2KB (16Kb) on-board Video RAM

  - PSG Sound

  - 256 x 240 pixels resolution

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Step 2

- Backside ports include:
  - AC adapter port
  - TV/Game switch
  - Channel selector switch
  - RF Audio/Video output
- Why are you looking so scared, little buddy? Don't worry -- our hands are gentle. We won't hurt you.

Step 3

- Fully assembled Nintendo Famicom console.

- The Famicom was the first console to popularize [D-pad](#) controllers to acquire user input. Departing from the era of joysticks, the inclusion of the D-pad allowed for quick and accurate controls.

- The controllers are similar, but not the same...
  - The first controller boasts the traditional layout: D-pad on the left, "select" and "start" buttons in the center, and "b" and "a" buttons on the right.

  - However, the second controller has a built-in microphone and a volume switch at the expense of the central "select" and "start" buttons... Cool!

  - This is the only console we know of that has a microphone on one of its standard controllers.

Step 4

- The Famicom's miniscule 4W power supply won't be popping fuses anytime soon.

  - (i) That's about 2.5% of the power that the Xbox 360 devours.

- Nintendo Famicom model number HVC-001, Made in Japan. We wouldn't want our Famicom any other way.

Step 5

- A quick removal of six Phillips screws and the bottom cover lifts right off.

- Just like the earlier retro consoles, Fami is super-easy to disassemble.

- (i) (yes, we named him Fami.)

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Step 6
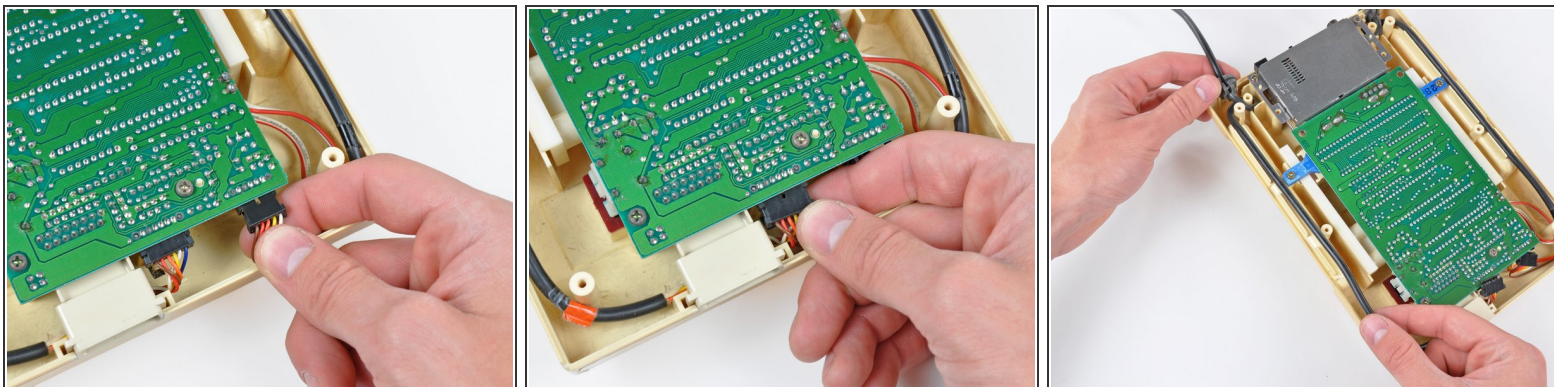
- Two antiquated connectors exchange signals between the controllers and the board.
  - (i) Want to disconnect a controller? Gotta remove the bottom cover -- but that's pretty much it.
- Controller II has an extra wire for microphone input and controlling the volume.
- After disconnecting them from the board, the controller cables can be lifted out of the case.

Step 7
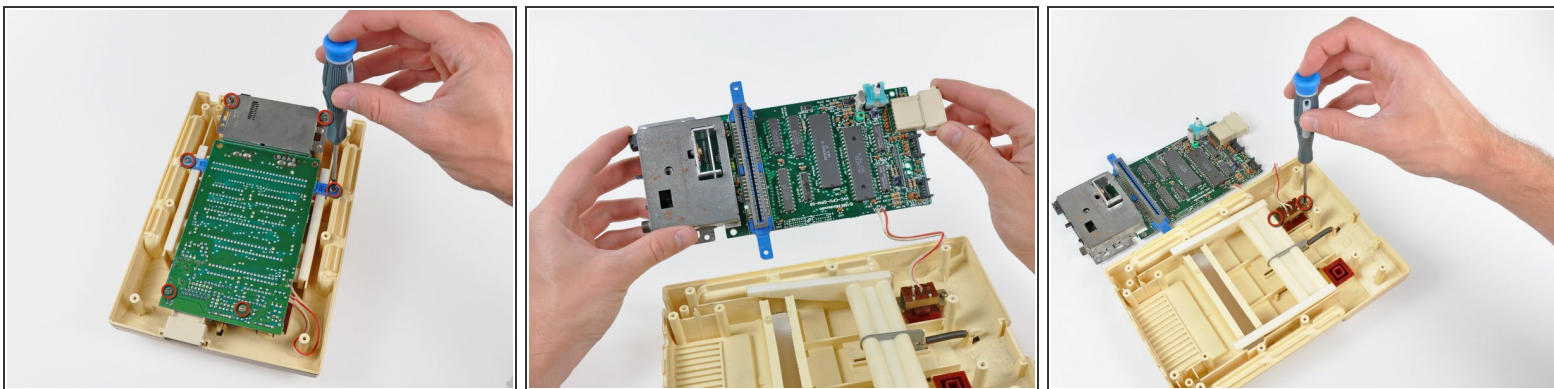
- Six Phillips screws secure the motherboard assembly to the outer case.
- Lifting the assembly out of the case gives us a good look at the archaic silicon that makes this thing tick.
- Two more Phillips screws secure the hefty power switch to the outer case.

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Step 8
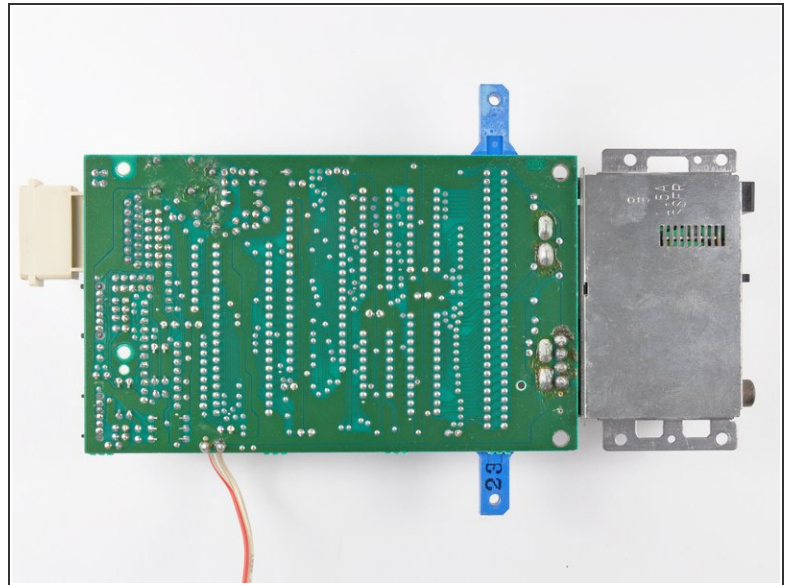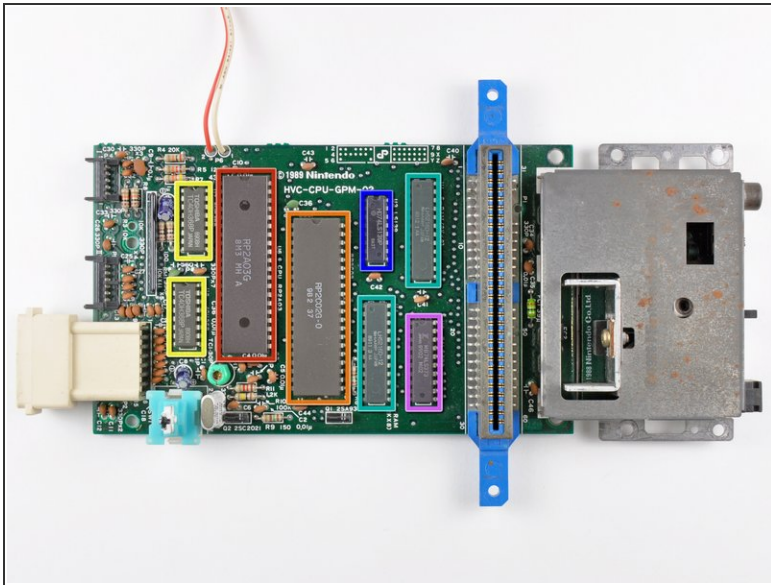
- Notable chips on the board include:

  - Ricoh RP2A03G 8-bit, 1.79 MHz CPU

  - Ricoh RP2C02G-0 8-bit, 5.32 MHz [PPU](#)

  - Toshiba TC40H368P hex bus buffers

  - Sharp LH5216D-12 static RAM

  - Hitachi HD74LS139P decoder/demultiplexer

  - Fujitsu MB74LS373

- Unsurprisingly, lead solder abounds on the bottom of the board. [RoHS](#) standards weren't established until 20 years after this puppy was made.
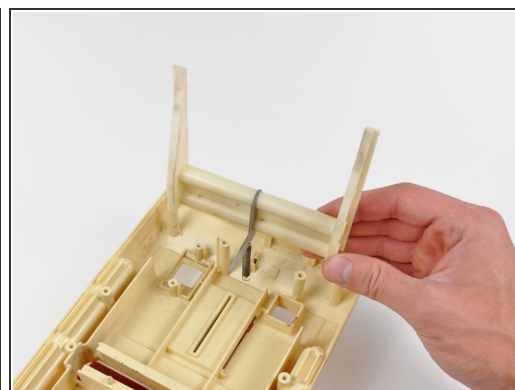
Step 9
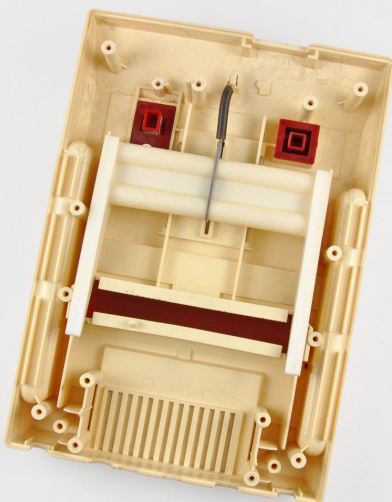
- Well hello there!

- "Shall I compare thee to an Xbox 360? Thou art more lovely and more temperate...But thy internal structure shall not fade...Nor shall time brag thou wand'rest in its shade...So long as gamers can breathe or eyes can see, So long lives this, and this gives life to thee."

Step 10

- After the motherboard assembly is out, the reset and power button covers can easily be removed.

- Unclipping a spring is all that's needed to remove the eject mechanism from the outer case.
  - ⓘ Ejecting a cartridge is accomplished by pushing two inclined planes underneath the cartridge until it pops up off the connector attached to the board.

Step 11
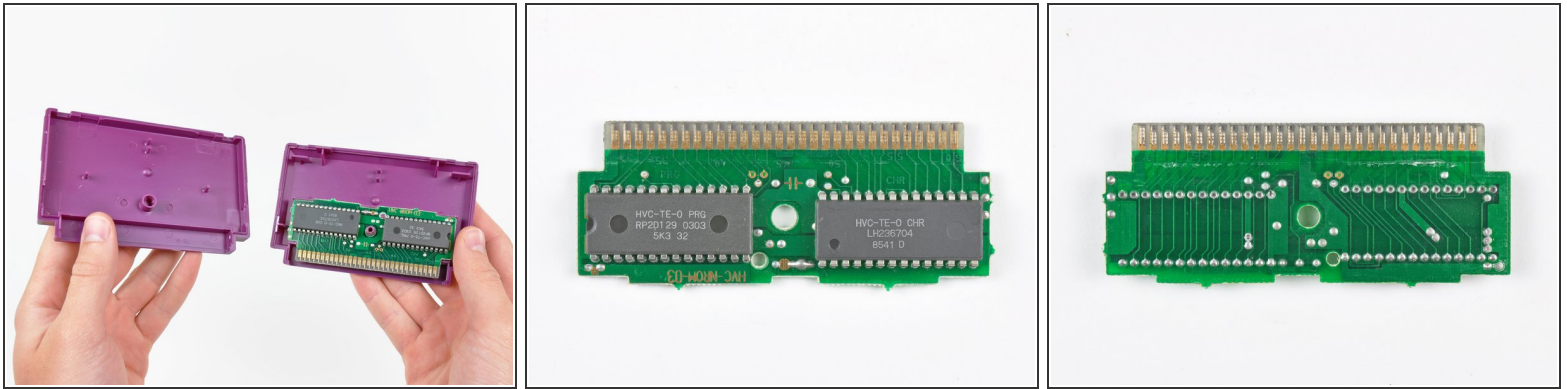
- ~~Breaking~~ Gently releasing the retaining clips holding the cartridge together reveals a 60 pin printed circuit board.

- Front and back sides of the Famicom cartridges:
  - (i) This PCB from a Tennis cartridge has two ROM packages -- totaling 24 KB -- soldered to one side.

  - For comparison, a single layer Blu-ray disc has a 25,000,000 KB capacity.

Step 12

- The final glorious spread, all secrets revealed.

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To reassemble your device, follow these instructions in reverse order.

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