



# Samsung Galaxy Tab Teardown

In-depth teardown of the Samsung Galaxy Tab.

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## INTRODUCTION

Join us as we take a look into Samsung's 7-inch Android tablet! Serious props to [Richard Lai](#) and [Engadget](#) for helping us get our hands on this out-of-this-world hardware. Thanks, guys!

It's time to stand up for our right to repair. We're taking action against made-for-obsolescence devices with our [Self-Repair Manifesto](#)!

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### TOOLS:

- [Heat Gun](#) (1)
  - [iFixit Opening Picks set of 6](#) (1)
  - [Metal Spudger](#) (1)
  - [Phillips #00 Screwdriver](#) (1)
  - [iFixit Opening Tools](#) (1)
  - [Tri-wing Screwdriver](#) (1)
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## Step 1 — Samsung Galaxy Tab Teardown



- The Samsung Galaxy Tab has landed in the hands of iFixit.
- Long rumored to be the "iPad Killer," join us as we assess this rumor and once and for all determine where the Galaxy Tab stands in the realm of tablets.
- Tech Specs:
  - 1 GHz ARM Cortex-A8 Hummingbird Multimedia Applications Processor based on the ARMv7 architecture.
  - 16 or 32 GB internal storage capacity + microSD external expandable storage.
  - 512 MB total DDR RAM
  - 3.2 MP rear facing camera and 1.3 MP front facing camera.
  - Android 2.2 (Froyo) + Samsung TouchWiz

## Step 2



- Differentiating the look of all-screen devices has become a challenge, but Samsung pulled it off by making the white back cover stand out against the iPad-esque front face.
- The capacitive controls along the bottom edge of the front panel are standard Android controls found on mostly all touchscreen phones.
- The 3.2 MP rear facing camera with an LED flash is a bit sub-par for a device of this caliber, seeing how a much smaller device like the [Droid 2](#) is packed with a 5 MP imager.

## Step 3



- The Galaxy Tab has ports for headphones, the sim card, microSD (support for up to 32 GB), and a USB dock connector.

## Step 4



- Side comparison of the Galaxy Tab and the iPad.
- Measuring 190.1 x 120.6 x 12.0 mm, the Galaxy Tab is dimensionally smaller than its competitor. The iPad measures in at 242.8 x 189.7 x 13.4 mm.
- Volumetrically, the Galaxy Tab measures 275.1 cm<sup>3</sup>, whereas the iPad measures 617.2 cm<sup>3</sup>.

## Step 5



- Enough ogling. Let's search for some screws.
- Prying off a plastic pad on both sides of the Apple-esque dock connector reveals two tri-wing screws.
- Tri-wing screws are a pretty low level solution to tamper proofing a product. We have a 26 piece bit driver kit (that includes the tri-wing bit) on hand to continue the carnage.
- How Apple-esque is the dock connector? Check out a side-by-side comparison of the USB cables and see for yourself.

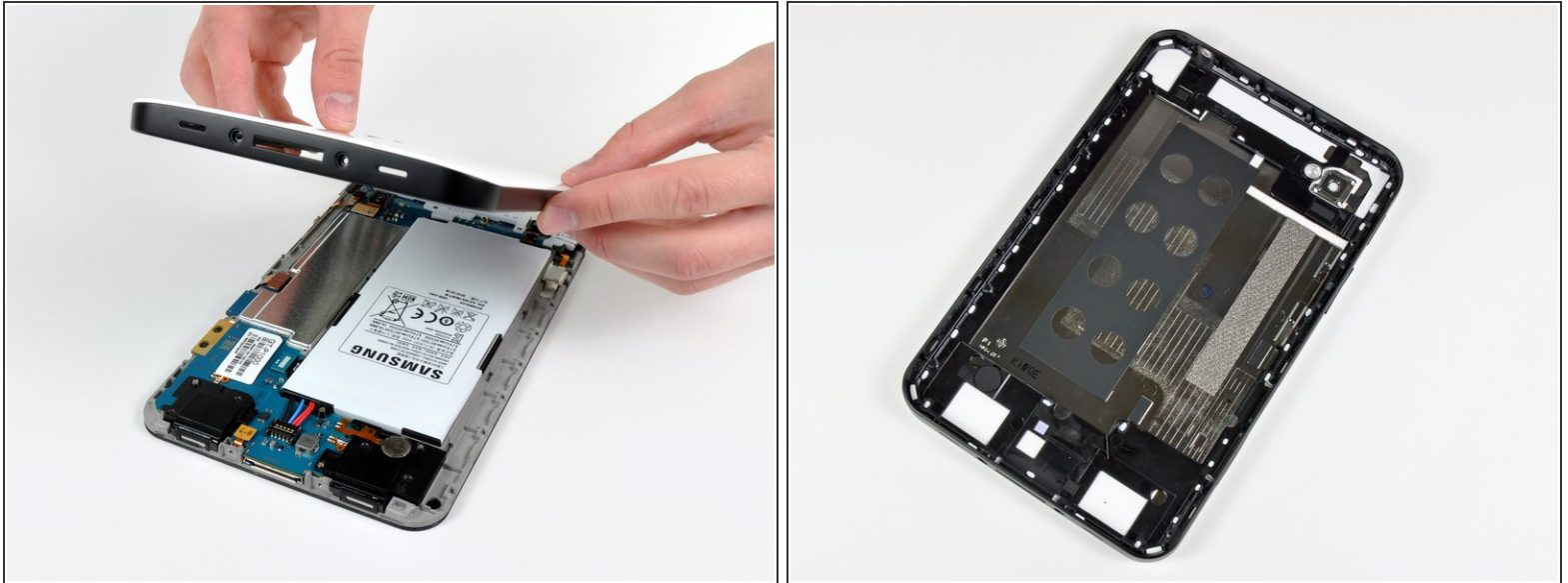
## Step 6



- Using a combination of plastic opening tools and guitar picks, the front panel is pried upward around its perimeter to release it from the plastic rear case.
- Luckily, the Galaxy Tab doesn't use any self destructing [copper retaining clips](#) like the [iPad](#).

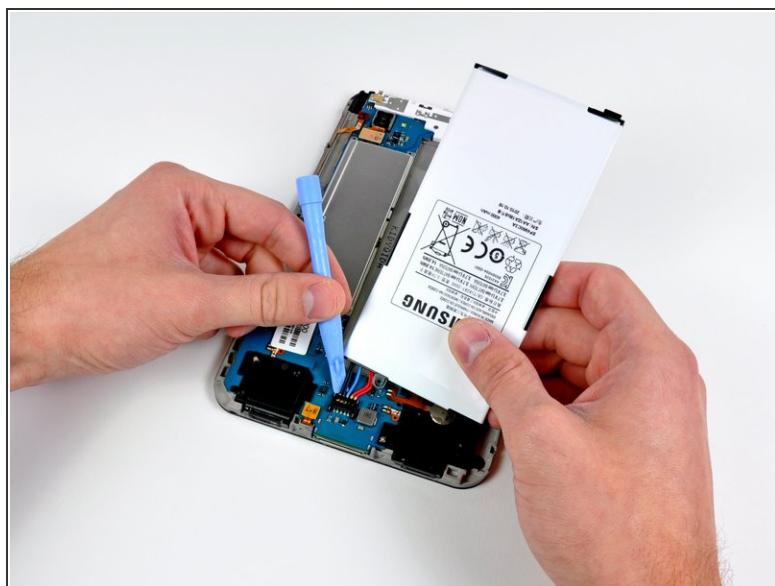


## Step 7



- After all the plastic tabs have been released, the rear case can be removed from the Galaxy Tab.
- The inner face of the rear case has a heavy strip of EMI shielding where it rests against the processor and memory chips on the motherboard.
- The rear case's plastic construction will no doubt aid in wireless reception. Using plastic allowed Samsung to bypass the [creative measures](#) used by Apple's iPad designers to aid in signal transmission.

## Step 8



- Nearly half of the Galaxy Tab's real estate is engulfed by the battery.
- The battery is secured to the rear panel by a single Phillips screw.
- Disconnecting the battery requires prying the battery connector out of its socket on the motherboard.



## Step 9



- The 3.7V Li-Ion battery inside the Galaxy Tab lists a capacity of 14.8 Watt-hours or 4000 mAh.
- Samsung claims that the battery provides enough juice to watch seven hours of movies.
- ❗ That seven hours isn't quite enough to last you though your [favorite movie trilogy](#), something that the iPad would handle with ease.
- Weighing in at 81 grams, the Galaxy Tab's battery is about 55% the weight and 60% the capacity of the iPad's [hulk](#) of a battery.
- As highlighted in the third picture, the Galaxy Tab's battery is approximately half the size of the iPad's battery.

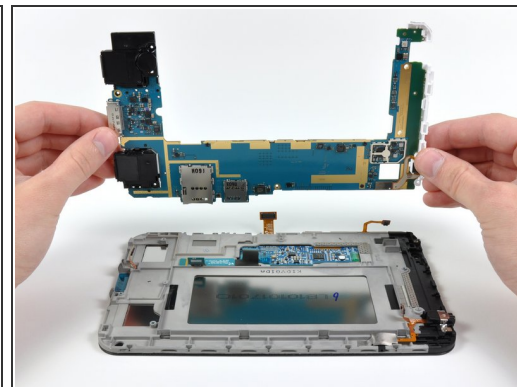
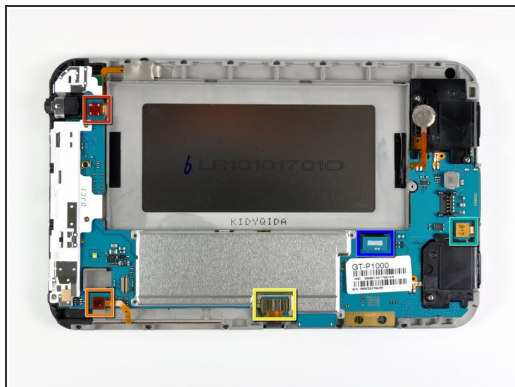
## Step 10



- The rear-facing camera connector is pried up from its socket on the motherboard with the edge of an opening tool.
- Say goodbye to the rear-facing camera...

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## Step 11



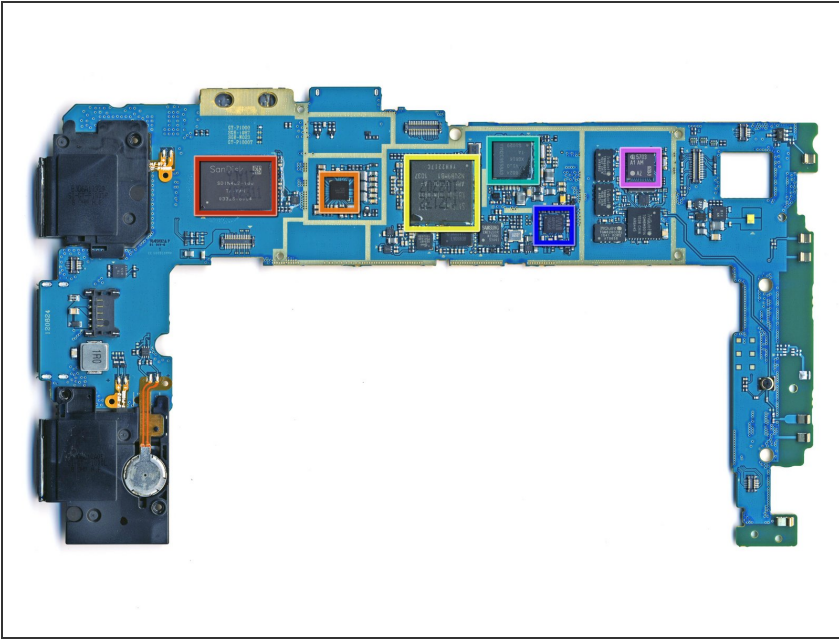
- Removing the motherboard requires disconnecting several connectors:
  - Headphone jack/microphone cable
  - Volume control cable
  - Touchscreen cable
  - Control button LED cable
  - Display data cable
- The motherboard is secured the rear panel by seven Phillips screws.
- Removing the motherboard requires lifting it away from the rear panel.

## Step 12



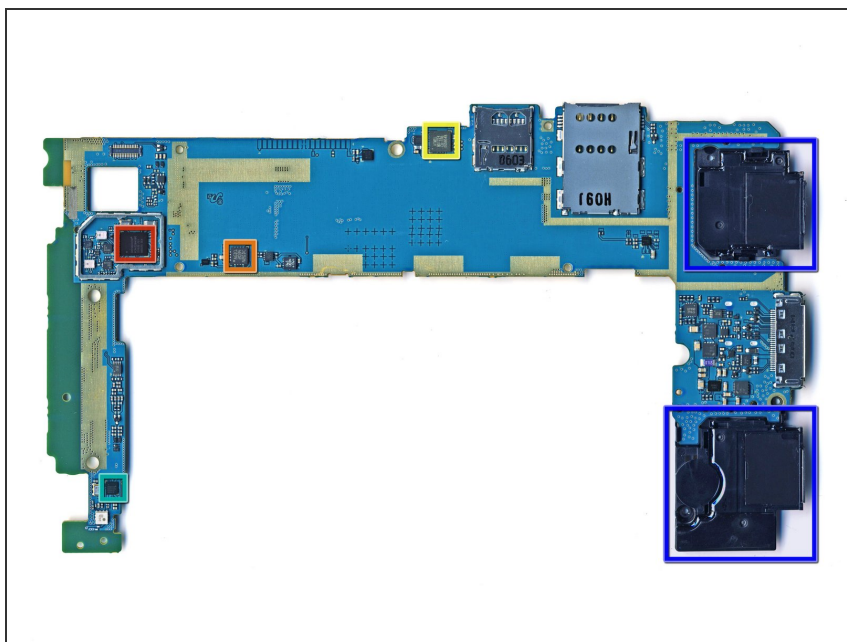
- The front facing camera easily separates from the motherboard assembly.
- Let's lift that ugly EMI shield so we can take a peek at the Galaxy Tab's circuitry.

## Step 13



- i** Front side of the motherboard. These identifications are credited to [UBM TechInsights](#).
- Let's examine the lineup:
    - SanDisk SDIN4C2-16G (MLC NAND Flash 16 GB)
    - Maxim 8998 (Power Management IC)
    - Samsung S5PC110A01 + Samsung KB100D100YM (1GHz Hummingbird Multimedia Applications Processor + 8 Gb of MLC Flex OneNAND, 1 Gb of OneDRAM, and 3 Gb of mobile DDR).
    - Infineon PM9801 (X-GOLD 616 HSDPA/HSUPA/EDGE Modem Solution)
    - Wolfson Microelectronics WM8994 (Audio Codec)
    - Infineon PMB5703 (RF Transceiver)

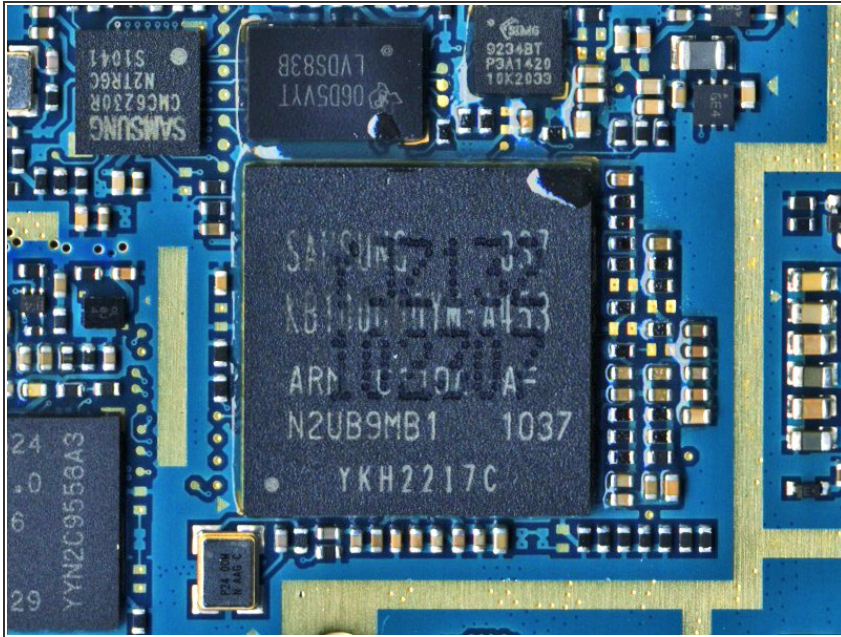
## Step 14



- Back side of the motherboard.
- Chip lineup continued:
  - Broadcom BCM4329 (Bluetooth/FM/WLAN receiver)
  - STMicroelectronics L3G4200D (Gyroscope)
  - ATMEL MXT224 (touchscreen controller)
  - Broadcom BCM4751 (GPS receiver)
- Two loudspeakers near the dock connector provide on-board audio for the Galaxy Tab.



## Step 15



- So what makes the Samsung Galaxy Tab a true iPad competitor? The answer lies in the processor.
- The Galaxy Tab is powered by the Samsung S5PC110A01 Multimedia Applications Processor.
- Much like the iPad's [A4 processor](#), the 1 GHz Hummingbird processor is an [ARM](#) processor featuring package-on-package construction to improve the speed and efficiency of internal processes.
- Samsung takes advantage of the Package-on-Package architecture by embedding 8Gb of MLC Flex OneNAND, 1 Gb of OneDRAM and 3Gb of Mobile DDR into the processor.
- The iPad's A4 processor embeds two layers of RAM (Samsung K4X1G323PE) into the processor's three layers.

## Step 16



- One Phillips screw secures the headphone jack/microphone assembly to the rear panel.
- After lifting it off some adhesive, it can be removed from the Galaxy Tab.
- Luckily, the headphone jack is completely separate from the motherboard, making replacement trivial if you happen to break it when you drop your Galaxy Tab with the headphones plugged in.

★ Apple had similar ideas on the [iPad](#).

## Step 17



- After prying it up from the chassis and unlocking the ZIF socket, the display data interconnect cable can be removed from the front panel assembly.

## Step 18

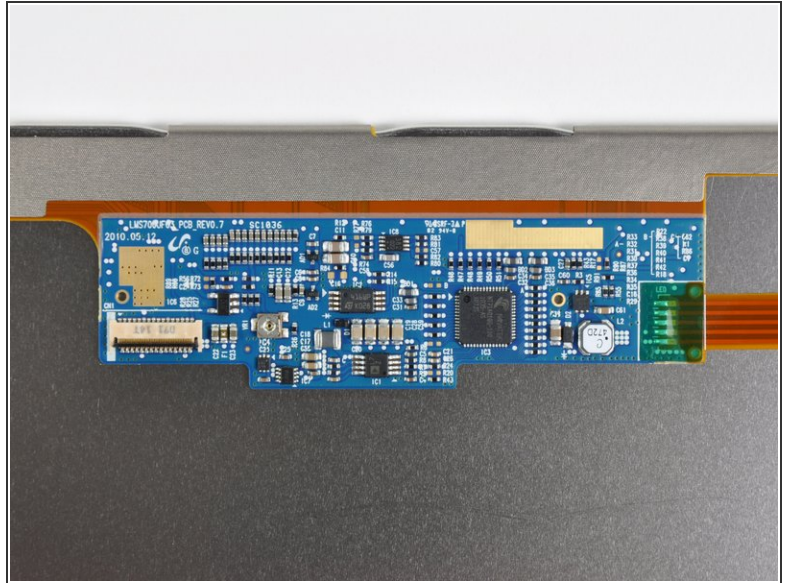


- Unfortunately, a fair amount of heat is required to remove the front panel.
- After a few blasts with a heat gun and some nervous prying, the front panel can be separated from the chassis.
- The digitizer element was produced by Atmel and is bonded to a [Corning Gorilla Glass](#) front panel.

⚠ Apparently, the Galaxy Tab can also double as [body armor](#).



## Step 19



- The screen on the Galaxy Tab is a Super TFT LCD, allowing for better image quality and viewing angle than a typical LCD.
- Although the resolution of the Galaxy Tab's screen (1024x600) is less than the resolution of the iPad (1024 x 768), the Galaxy Tab has a more pixels-per-inch (169 for Galaxy Tab vs 132 for the iPad).
- 169 ppi is nice, but nowhere near dense enough for us. We vastly prefer the [iPhone 4's](#) 326 ppi retina display.

## Step 20



- Samsung Galaxy Tab Repairability: **6 out of 10** (10 is easiest to repair)
  - All of the components are accessible without soldering.
  - The battery is user-replaceable.
  - Tri-wing screws were used to deter would-be repairers, but can be easily thwarted with one of iFixit's bit driver kits.
  - A heat gun is required to access the LCD.
  - Getting the Galaxy Tab open is quite a chore; plastic opening tools alone are not enough to do the trick.
- Much like its competitor, the [iPad 3G](#), the Samsung Galaxy Tab didn't stand a chance against iFixit's crafty handywork.
- That's it! Thanks again to Richard Lai @ Engadget for getting us the hardware.

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