MacBook Air 13" Mid 2013 Teardown

We aired out the new MacBook's internals on June 11, 2013.

Written By: Brittany McCrigler

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INTRODUCTION

Apple used its Worldwide Developers Conference to yet again debut a new MacBook Air model. Join us as we see what 12 months of vintaging has done for the 13" variety of Cupertino's prized ultra-slim laptop.

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[video: https://www.youtube.com/watch?v=52lw4kNgtWk]

🔧 TOOLS:

- MacBook Pro and Air 5-Point Pentalobe Screwdriver (1)
- Phillips #00 Screwdriver (1)
- T5 Torx Screwdriver (1)
- Spudger (1)
- T8 Torx Screwdriver (1)

Step 1 — MacBook Air 13'' Mid 2013 Teardown

- A day after its announcement, the newest 13" MacBook Air is in our hands. Let's see what it's got.

  - 4th generation Intel Core i5 processor with Intel HD graphics 5000

  - 128 GB flash storage (configurable to 512 GB)

  - 4 GB LPDDR3 RAM, configurable (but not upgradable) to 8 GB

  - 13.3" 1440x900 pixel display (~128 ppi)

  - 802.11ac Wi-Fi connectivity

  - Dual microphones

Step 2

- Externally, the 2013 MacBook Air is nearly identical to its predecessor, including the model number (A1466).

- The right side ports haven't changed a bit, with the new MacBook sporting the same lineup of SD card reader, USB 3.0, and Thunderbolt port.

- A 180° rotation gives us a glimpse of the only noticeable change to the outer case: two ports for the dual microphones along the left side.

Step 3

- We heard all the new stuff was *inside the computer*, so we grabbed our unfortunately necessary [Pentalobe bit](#) to open 'er up.

- As we've come to expect by now, MacBooks of all shape and size are easy to open with the appropriate tools at hand.

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Step 4
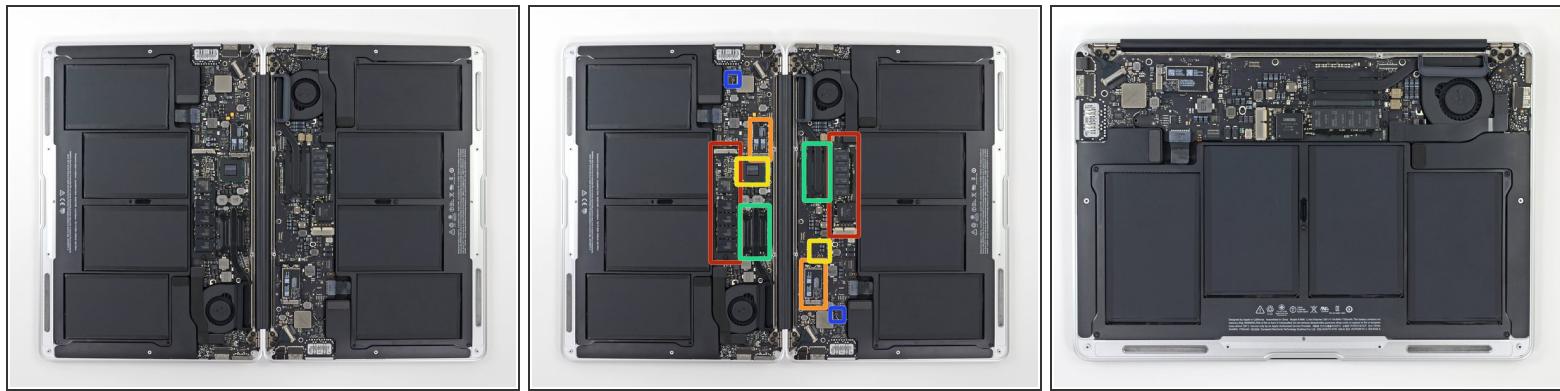
- We can spot the differences between the 2012 (left) and 2013 (right) MacBook Airs, but can you? Let's see if you see what we see.

  - Smaller SSD module

  - Updated AirPort card

  - No separate platform controller hub

  - New heat sink clamp

  - Opposite-facing speaker cable connector

- We could nitpick the differences between the two models all day, but we'd rather get back to disassembling the new guy.

Step 5
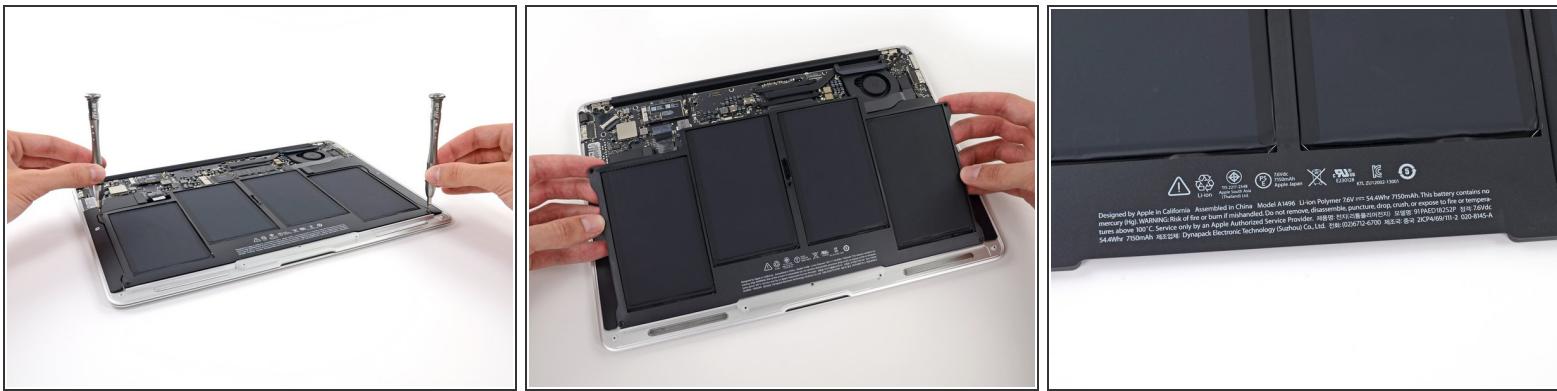
- When we want to fast-forward through battery removal we go double time on our screw removal.

  - *(i)* *iFixit fun fact:* All iFixit guide makers must be ambidextrous enough to simultaneously use two screwdrivers.

- The 7.6 V, 7150 mAh battery inside this year's Air is an upgrade from the 2012's 7.3 V, 6700 mAh power source and contributes to the claimed 12-hour battery life.

- Increased capacity isn't the only addition to the new battery—important information is now printed in ~~Chinese~~ Korean as well as English.

Step 6
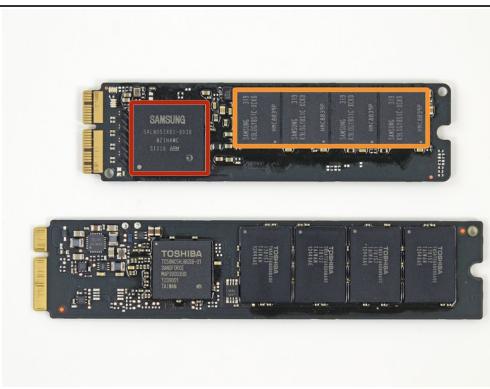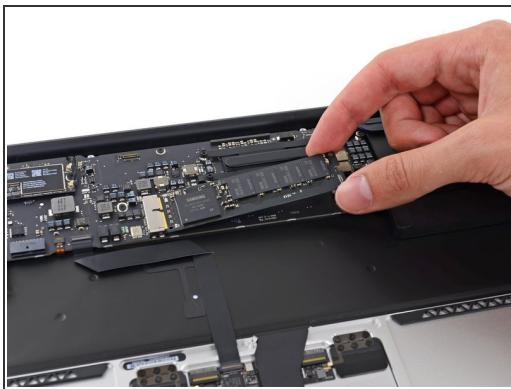
- In order to achieve flash storage that's "up to 45 percent faster" than the previous model, Apple switched from SATA to PCIe, and turned to its best pal in the industry: Samsung.

- In this case we find:
  - Samsung S4LN053X01-8030 (ARM) flash controller
  - 8 x Samsung K9LDGY8SIC-XCK0 16 GB flash storage
  - Samsung K4P2G324ED 512 MB RAM (the same RAM used in the Raspberry Pi)

- ⓘ We didn't run any tests to verify that the PCIe-based Samsung SSD is indeed that much faster than last year's Toshiba SATA module, but we can definitely say that the drive is smaller and not compatible with previous MacBook Air models, making it harder to find parts if you want to upgrade.

Step 7
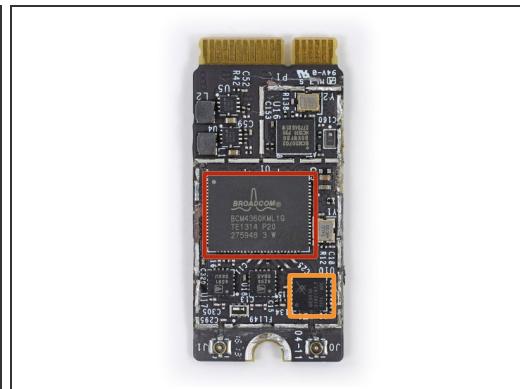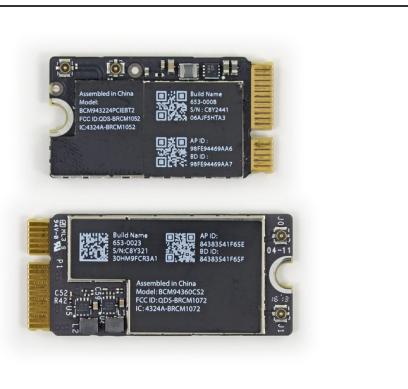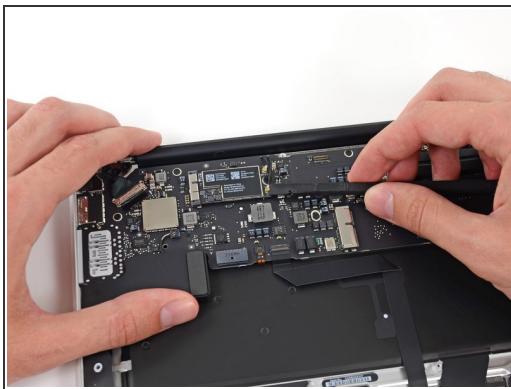
- Next out is the totally redesigned AirPort card, providing 802.11ac Wi-Fi connectivity.

  (i) While the current and prior generations' Airport cards will fit in each others' logic board slots, their different lengths will prevent you from fastening them down. We haven't yet tested for compatibility beyond this.

- At the heart of the card we find a Broadcom BCM4360, which enables operation on the 5 GHz band at speeds up to 1.3 Gbps and communication via Bluetooth 4.0.

- Also on the board is a Skyworks SE5516 dual-band 802.11 a/b/g/n/ac WLAN front-end module.

Step 8
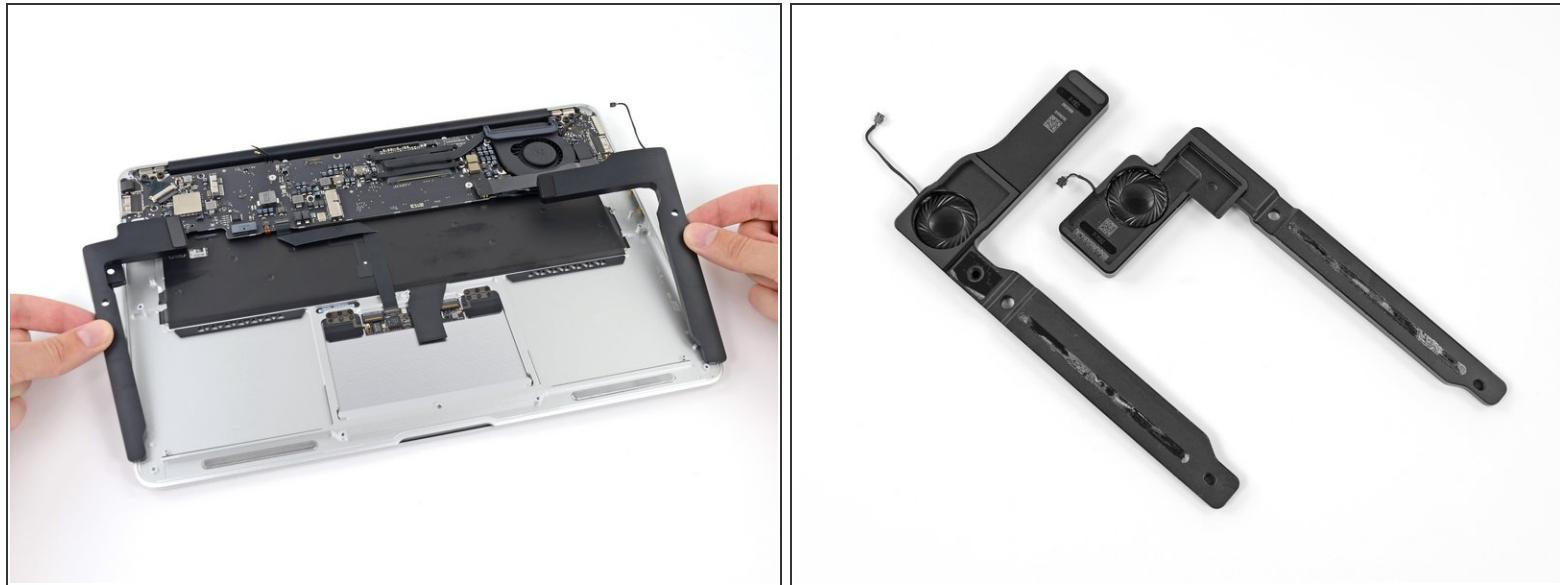
- What's that sound? Oh, it's just the MacBook Air's stereo speakers.

- Other than the aforementioned change in the direction of one of the speaker cables, these appear to be the same speakers found in last year's model.

- Some [computer](#) and [smartphone](#) manufacturers like to emphasize an industry partner's audio systems in their marketing. Apple is not one of those companies, simply listing the noisemakers in the MacBook Air as "stereo speakers."

Step 9
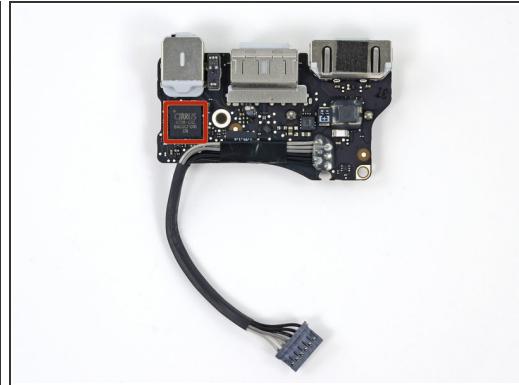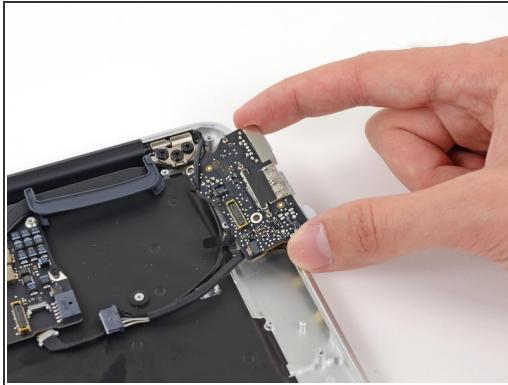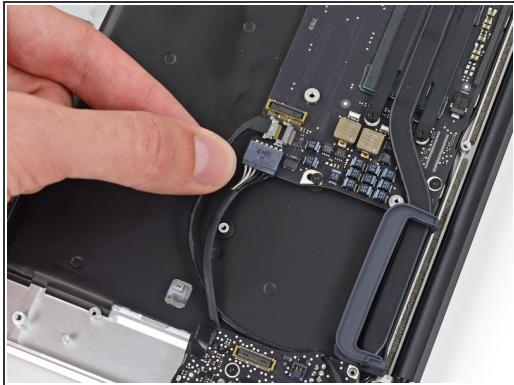
- The I/O board in the MacBook Air is mostly unchanged from last year, except that it no longer has a socket for the iSight cable.

- We find a Cirrus chip marked 4208-CRZ next to the headphone jack. This appears to be a two-channel version of the CS4207 low power HD audio codec with headphone amp.

Step 10
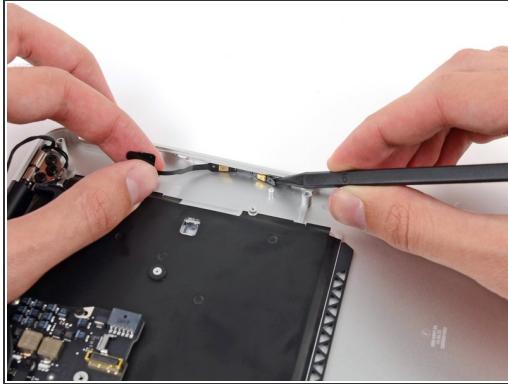
- If one microphone was good in last year's MacBook Air, then two microphones in this year's model must be better!

- As in the iPhone, the Air's dual microphones help cut out background noise while you're making a FaceTime call or dictating important memos.

Step 11
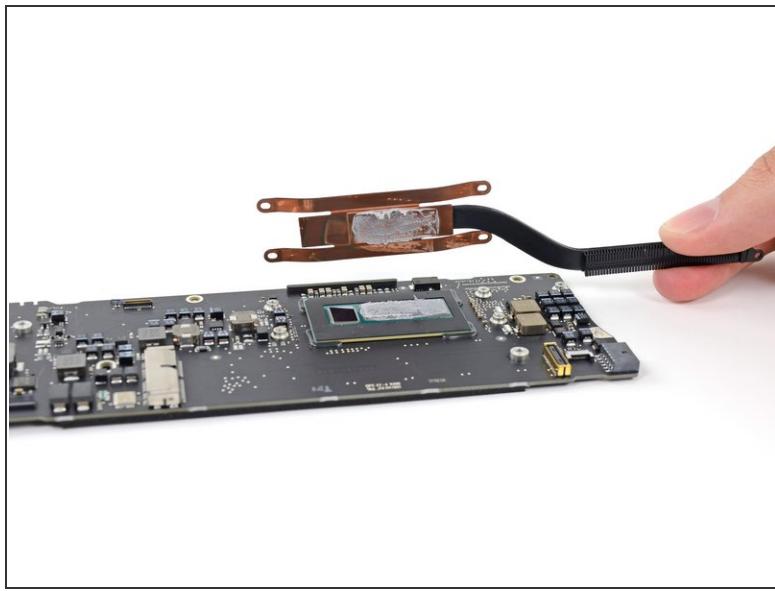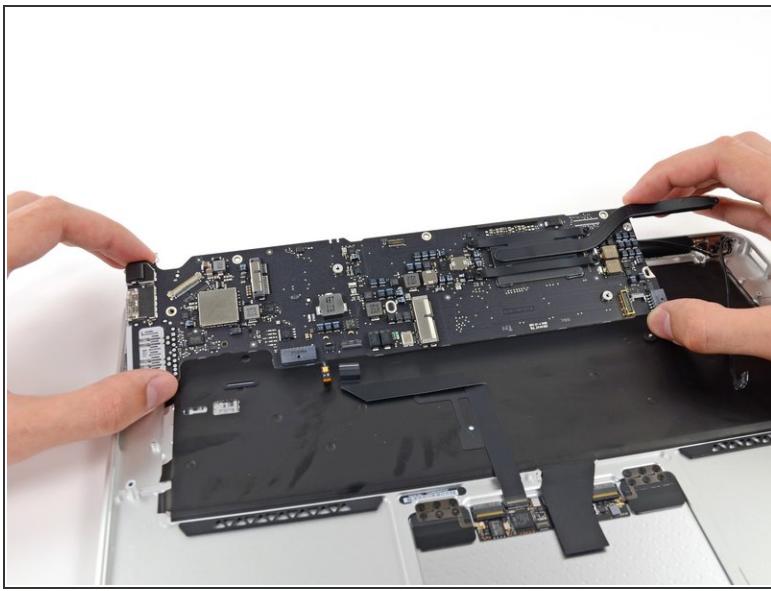
- Goodnight logic board.

- Goodnight heat sink.

- (i) Intel's fourth generation Core i5 processor appears to integrate the platform controller hub (PCH) right next to the CPU, a departure from the prior design's segregated chips.

- The new heat sink design allows it to cover both chips, but Apple only put thermal compound on the CPU.

  - We won't complain too much though, as the old design left the PCH out in the hot with only the lower case as a heat sink.

Step 12
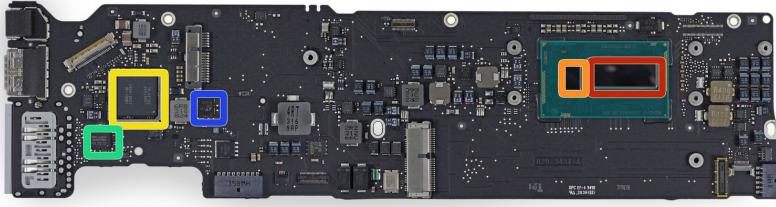
- Let's take a closer look at the logic board:

  - 1.3GHz (with Turbo Boost up to 2.6 GHz) dual-core Intel Core i5 processor, with integrated Intel HD graphics 5000

  - Intel platform controller hub (unmarked)

  - Intel DSL3510L Thunderbolt controller

  - Genesis Logic GL3219 USB 3.1 Gen 1 hub controller

  - Linear Technology LT3957 inverting controller

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Step 13
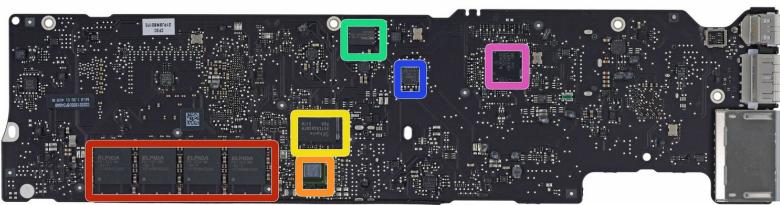
- On the flip-side we find:

  - Elpida F8132A1MC LPDDR3 RAM 4 x 1 GB modules for 4 GB total

  - Broadcom BCM15700A2

  - Hynix H5TC4G63AFR 8 Gb synchronous DRAM

  - MXIC MX25L6406E 64 Mb serial flash

  - Texas Instruments TPS51980A synchronous buck controller

  - 980 YFC LM4FS1BH

Step 14

- As in most other unibody MacBooks, the Air's trackpad is held to the upper case with six tiny Phillips screws and comes out without much hassle.

- In addition to a plethora of connectors, we find the following chips on the trackpad board:
  - STMicroelectronics STM32F103VB microcontroller
  - MXIC MX25L2006E 2 Mb serial flash
  - Broadcom BCM5976A0KUB2G trackpad controller

- Finally, we free the display assembly from the upper case by removing the Phillips screws that secure the two hinges.

Step 15

- MacBook Air 13" Mid 2013 Repairability Score: **4 out of 10** (10 is easiest to repair).

  - Once you manage to take off the bottom cover, all the parts are pretty easily replaceable.

  - Proprietary screws on the case require the right screwdriver.

  - All the components—including RAM and SSD—are proprietary.

  - As with the prior iterations, this MacBook Air's biggest detractor is the lack of upgradeability. The RAM is still soldered to the logic board, and SSDs are not compatible between generations.

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