



# MacBook Air 13" Mid 2012 Teardown

The Mid 2012 MacBook Air 13" has succumbed to our spudgers on June 12, 2012.

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## INTRODUCTION

Apple announced the updated MacBook Air yesterday at WWDC, so, naturally, we're taking one apart. Join us as we dig into the new 13" MacBook Air, equipped with USB 3.0 and MagSafe 2.

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## TOOLS:

- [P5 Pentalobe Screwdriver Retina MacBook Pro and Air \(1\)](#)
- [Phillips #00 Screwdriver \(1\)](#)
- [Spudger \(1\)](#)
- [T5 Torx Screwdriver \(1\)](#)
- [T8 Torx Screwdriver \(1\)](#)

## Step 1 — MacBook Air 13" Mid 2012 Teardown



- It's so light that it almost floats off the table...
- So, what did Apple manage to pack into its ultra-slim ultrabook this time?
  - Intel Ivy Bridge Core i5 processor with Turbo Boost
  - Intel HD Graphics 4000
  - 128 GB flash memory
  - 4 GB 1600 MHz DDR3L RAM
  - USB 3.0
  - MagSafe 2

## Step 2



- Even with the amazingly slim profile, Apple managed to cram some nifty ports on the new Air.
- *(i)* Although we would never accuse the Air of being bulky, we were surprised that Apple didn't make this iteration thinner than the previous model.
- Accompanying the audio jack on the left side of the MacBook are the new MagSafe 2 connector and the first of two USB 3.0 ports.
- On the opposite side, we find an SD card reader, the second USB 3.0 port, and—of course—Apple and Intel's brainchild: the Thunderbolt I/O.

## Step 3



- This is very unlike Apple; even though the MacBook Air is only slightly refreshed, they gave it a new model number: A1466.
- We get pretty excited about new model numbers because they make it much easier for us to help people [ID their Macs](#) for service.

*i* Only time will tell if the new MacBook Pro with Retina display will finally break the A1278 chain, but that discussion is for another time.

## Step 4



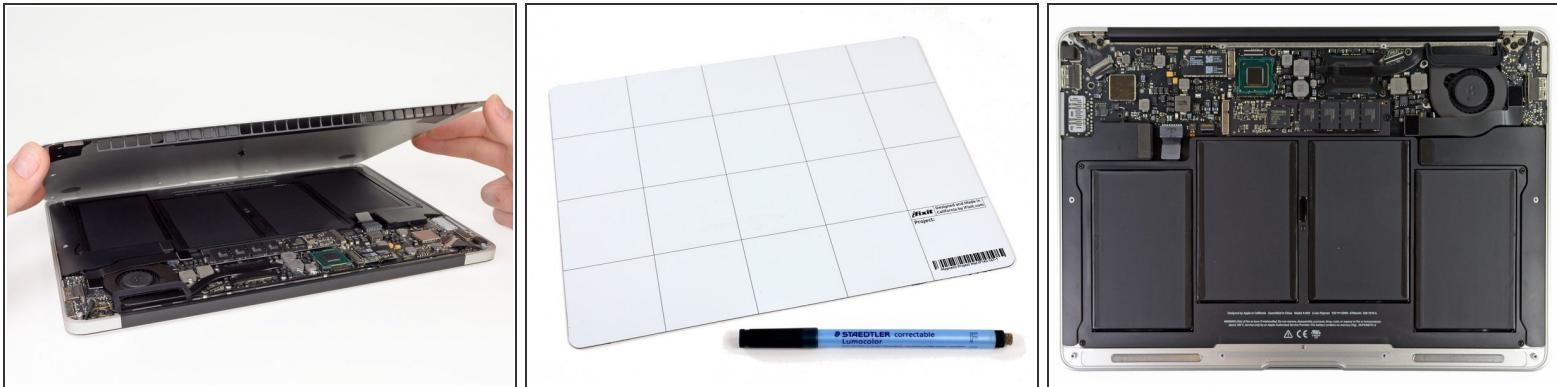
- MagSafe 2 is a luxury reserved (so far) for the new MacBook Air and the Retina display-equipped MacBook Pro.
- As you can see, the new MagSafe 2 connector (bottom) is much thinner and wider than its predecessor. This is pretty significant, because the thickness of Apple's devices seems to be limited only by the size of their ports.
- *(i)* Imagine how thin of a device they could make if all communication and charging were done wirelessly...
- Apple sells a [\\$10 MagSafe 2 adapter](#), so you don't have to throw away your 27" Thunderbolt Display. Phew.
- Apple never stops tweaking the details; they moved the symbols from the [rear side of the ports](#) to the front. If you're in a pinch and have to differentiate a Mid 2012 MacBook Air from a Mid 2011 model, just look at what side of the ports the symbols are on.

## Step 5



- There was tension in the Air as we encountered a few unknown sized, Apple-proprietary, pentalobe screws on the back of the new Air.
- Fortunately, we have tools for that. Our [pentalobe screwdriver](#) made quick work of those pesky proprietary screws.
- By the way, we don't just make awesome teardowns—**we sell [parts](#). And [tools](#)! Lots and lots of tools.**
- Like this [handy-dandy electronics tool kit](#) that we used to take apart the new iPad. You know you want one. It'll pay for itself the first time you use it!
- We sell [Mac parts & upgrades](#), parts for [iPhone screen repair](#), kits for fixing the infamous [Xbox Red Ring of Death](#), and tons more.
- **We need your support** to continue building the [free repair manual](#) for everything in the world.

## Step 6



- After removing the screws, the back comes off to reveal the internals.
- Keeping all the screws we removed organized is easy with our [Magnetic Project Mat](#).
- As with most mobile devices, the majority of the space is filled by the battery.
- The inside of this newly configured Air is very similar to [last year](#), with a few minor layout changes.

## Step 7



- A connector and some T5 screws are all that stand between us and ultimate power—or at least the power source for the Air.
- This battery is the exact same model as the one found in the [Mid 2011 MacBook Air](#), so it comes as no surprise that the 13" model has the same 7 hour battery life as its predecessor.

ⓘ We'll go ahead and answer the question before it's asked: yes, you can swap 2011 and 2012 batteries. We're not really sure why you would, though, considering they are exactly the same.

## Step 8



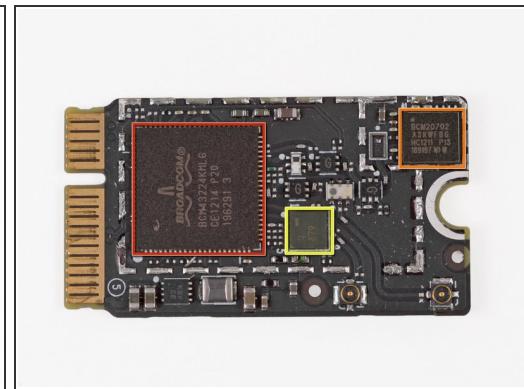
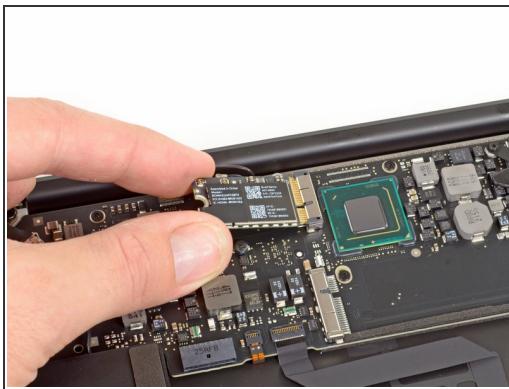
- At first glance, the 128 GB SSD is *almost* exactly the same as last year's.
- But upon closer inspection, the connector for this model's flash memory module is slightly different than last year!
- The SSD looks to be a completely new design. The new unit appears to be based on a SandForce controller chip, but stamped with Toshiba markings.

## Step 9



- By the way: we also make software for teaching people to do things. [Dozuki](#) makes it easy to create vibrant how-to manuals.
- Dozuki is great for:
  - [Standardized work instructions](#): improve quality by documenting how to get things done, one step at a time.
  - [Building product support sites](#): make your customers love you by teaching them how to do amazing things.
  - [Training and e-learning software](#): we've used Dozuki to teach over ten million people to repair electronics.
  - [Online community platform](#): build a knowledge base of expert knowledge with Answers, the Q&A engine that drives the popular [iFixit Answers](#).

## Step 10



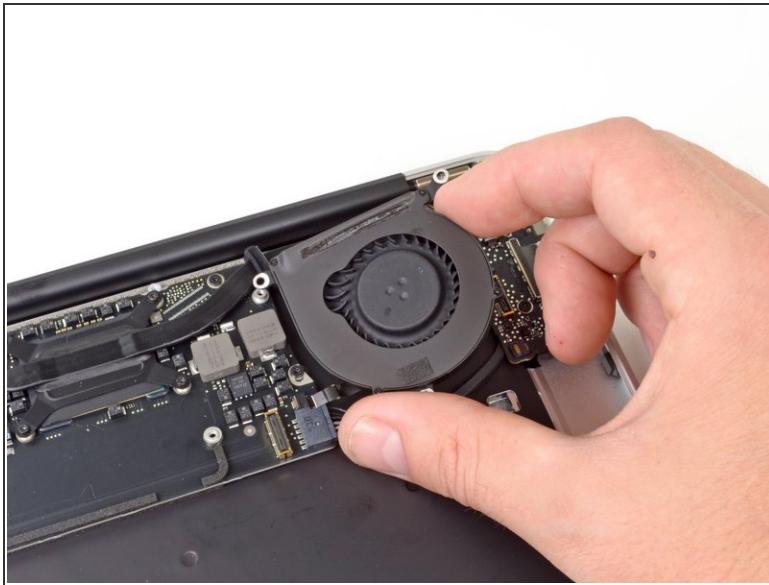
- We would tell you that this Broadcom BCM 943224 module looks just like the Mid 2011 MacBook Air's [wireless board](#), but you would accuse us of being repetitive.
- Instead, let's focus on what's different. Apple rotated the "Assembled in China" sticker 90° and flipped the internal code sticker a whopping 180°!
- In case you thought we were joking, taking the EMI shield off reveals the same chips as last year:
  - Broadcom [BCM4322](#) Intensi-fi® Single-Chip 802.11n Wi-Fi Transceiver
  - Broadcom [BCM20702](#) Single-Chip Bluetooth 4.0 Processor with [Bluetooth Low Energy \(BLE\)](#) support
  - Murata antenna switch module

## Step 11



- Next up are the speakers.
- The new Air boasts stereo speakers for all your Apple party needs. Just in case you want to party like it's [2011](#) or [2010](#)...
- You may be asking, "What's that black stick being used to remove the speaker?" That is a [Spudger](#). It's [ESD](#) safe and heat/solder resistant. It's a must for working with sensitive electronics.

## Step 12

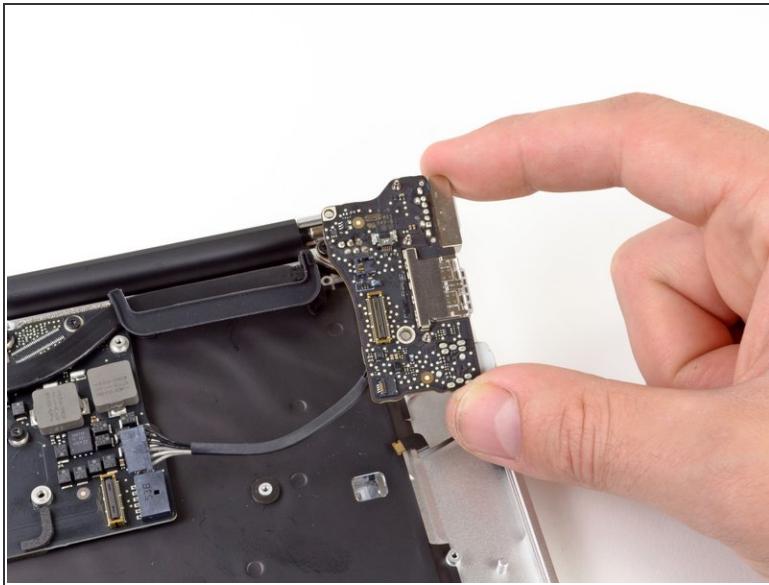


- A few more Torx screws hold the lonely fan in place.
- We were hoping to find a new asymmetrical fan, and we were not disappointed!

ⓘ The wider gaps in the fan blades are around 3.6 mm, while the narrower ones are approximately 2.8 mm.

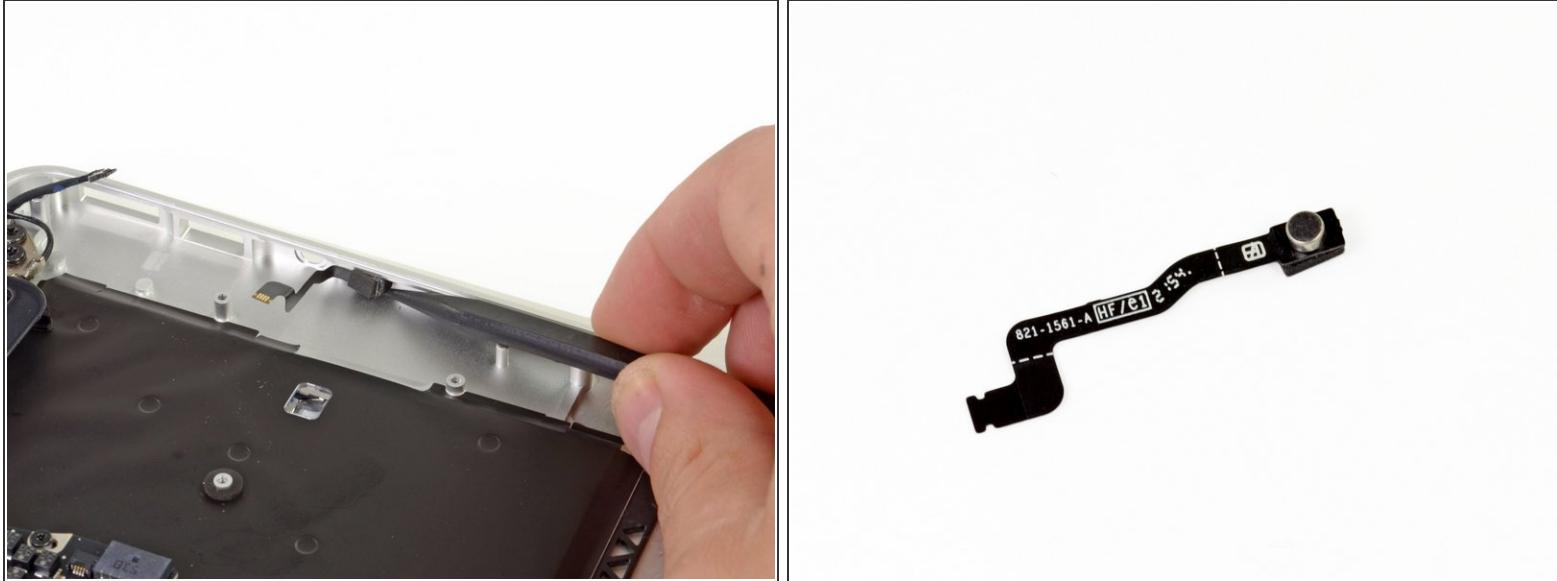
- If you're not familiar with all the hype, the "asymmetrical" design of the fan blades is supposed to disperse sound across a wide range of frequencies, rather than just one, making fan noise "hardly perceivable."

## Step 13



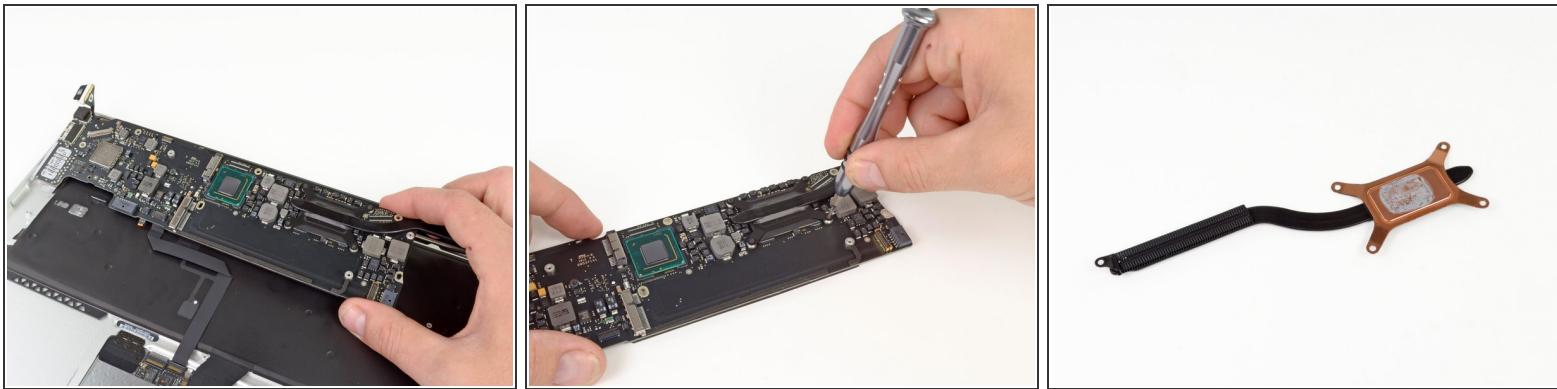
- Next out is the left side I/O board, featuring the slimmed down MagSafe 2 port.
- Sitting side-by-side with MagSafe 2 and USB 3.0, the standard 3.5 mm headphone jack looks quite plain and outdated. How long must we wait until Apple announces "The [New Jack](#)"?

## Step 14



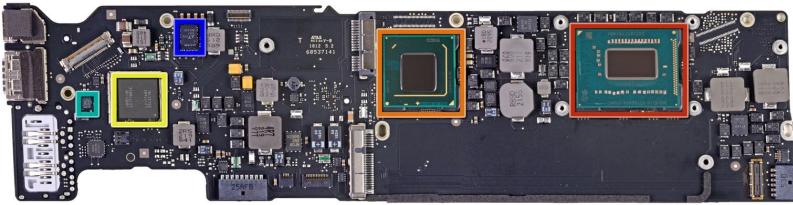
- With dictation coming in [OSX Mountain Lion](#), you're going to want to make sure you've got a brand spankin' new microphone.
- "MacBook, send a message to my iPhone so that I can talk to Siri."

## Step 15



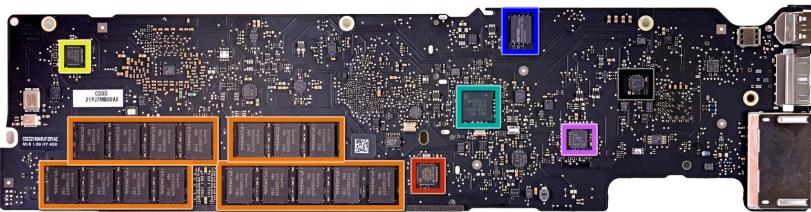
- Boom! There goes the logic board.
- Bam! There goes the heat sink.
- Even with a new processor lineup, the thermal management system looks pretty much the same as last year. It truly is a testament to modern processor efficiency to see such a small heat sink on a dual-core processor that can crank out up to 2.8 GHz.

## Step 16



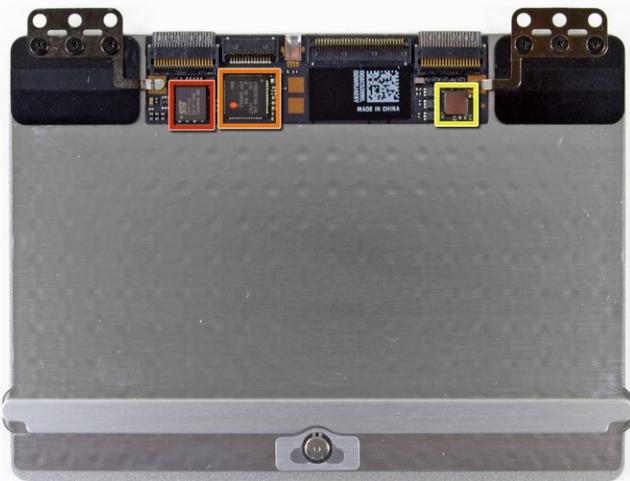
- Here's what we found on side A of the logic board:
  - Intel [Core i5-3427U](#) 1.8 GHz dual-core processor (Turbo Boost up to 2.80 GHz) with Intel HD Graphics 4000
  - Intel E201B953 SLJ8B Platform Controller Hub
  - Intel DSL3510L Thunderbolt controller
  - Texas Instruments [TPS2561](#) dual channel power switch
  - Linear Technology [LT3957](#) inverting converter

## Step 17



- Flipping the logic board to side B we find:
  - SMSC [USB25138](#) USB controller
  - Hynix [H5TC2GB3CFR](#) DDR3L SDRAM
  - MAXIM 15120G
  - Texas Instruments [Stellaris LM4FS1AH](#) microcontroller
  - Macronics MXIC MX25L6406E serial flash
  - Texas Instruments TPS51980 synchronous buck controller
  - Texas Instruments CD3210

## Step 18



- Good news everyone! If you're ever faced with a nonfunctional trackpad, It seems replacing the trackpad remains as easy as ever.
- A few notable chips we found on the trackpad:
  - Silicon Storage Technology 25VF020
  - Cypress Semiconductor CY8C24794 Microcontroller
  - Broadcom BCM5976A0KU826

## Step 19



- The display assembly is screwed to the upper case with six T8 Torx screws.
- Because the display assembly is one of the few moving parts in the MacBook Air, these screws have to be pretty staunch.
- In order to save weight in the MacBook Air, there is no protective front glass covering the LCD like there is on the MacBook Pro. This is also the reason for the aluminum bezel.

## Step 20



### REPAIRABILITY SCORE:



- MacBook Air 13" Mid 2012 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.
- *i* This is a difficult machine for us to recommend because of the lack of upgradeability. The RAM and SSD are not currently upgradeable, although SSD options may become available in time. While Apple's continued use of proprietary screws is helping our booming tool sales, it's a bad thing for consumers.