



MacBook Pro 15" Retina Display Late 2013 Teardown

Teardown of the 15" MacBook Pro Retina, October 2013.

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INTRODUCTION

We took apart the new 15" Retina MacBook Pro with the hopes that Apple made it more repair-friendly than the debut [Mid 2012 model](#). Unfortunately, things didn't really work out in our favor; in fact, they took a turn for the (slightly) worse.

Even the headphone jack is now soldered to the logic board, which is definitely a component that can wear out over time. Users don't have to be malicious or aggressive when using the port — cyclical stress can cause it to fail either way.

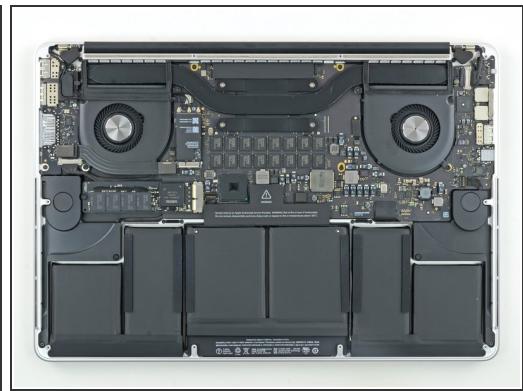
For those of us who care about repair, do note that this is now your only 15" option; **Apple stopped selling the non-Retina 15" MacBook Pro**.

Want to learn more about repair, and inspire yourself to fix something? Check out [iFixit.org](#).

TOOLS:

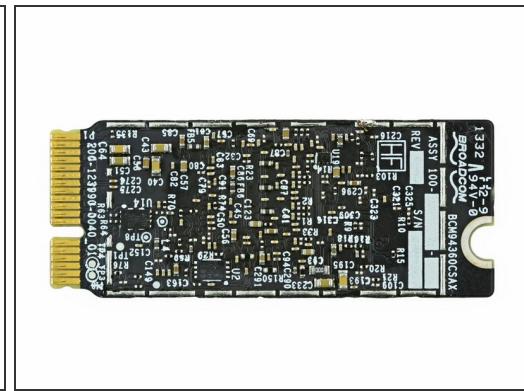
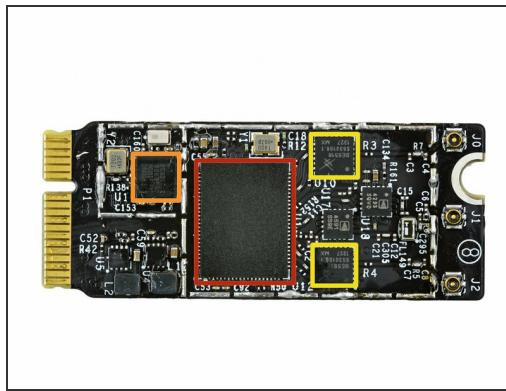
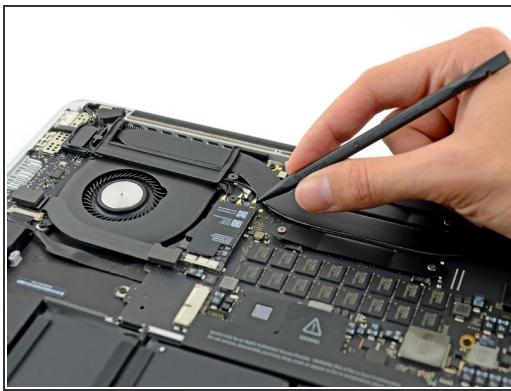
- [MacBook Pro and Air 5-Point Pentalobe Screwdriver \(1\)](#)
- [T5 Torx Screwdriver \(1\)](#)
- [Plastic Cards \(1\)](#)
- [Spudger \(1\)](#)

Step 1 — MacBook Pro 15" Retina Display Late 2013 Teardown



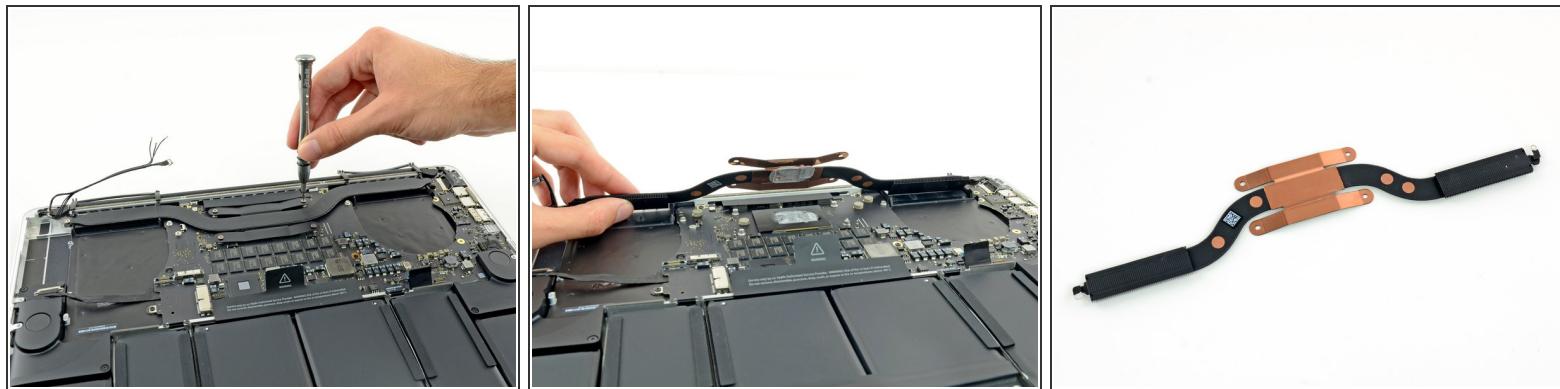
- This top-tier machine from Apple packs some impressive specs:
 - 2.0 GHz quad-core Intel Core i7
 - 8 GB of 1600 MHz DDR3L onboard memory
 - 256 GB of PCIe SSD goodness
 - Intel Iris Pro Graphics
 - 720p FaceTime HD camera
 - 802.11ac Wi-Fi wireless networking
 - Bluetooth 4.0

Step 2



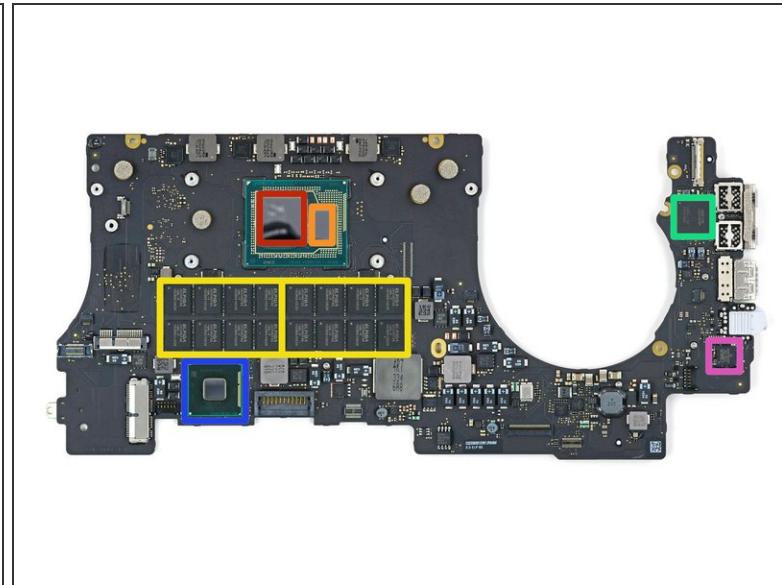
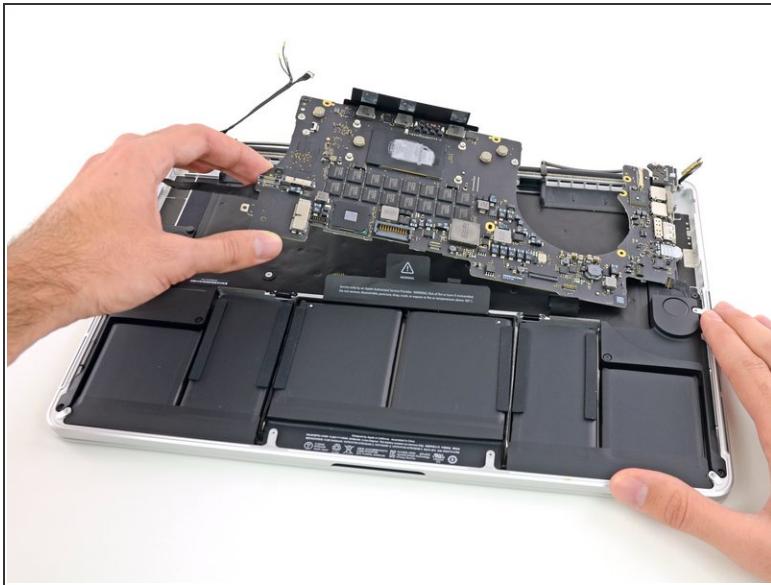
- Easy-upgrade #2: Add a new Airport card that supports 802.11ac Wi-Fi.
 - Apple's go-to provider of 802.11ac support is again at work. The Broadcom [BCM4360](#) on this Airport card enables operation on the 5 GHz band at speeds up to 1.3 Gbps.
 - A Broadcom [BCM20702](#) Single-Chip Bluetooth 4.0 Processor gets Bluetoothy things done for your convenience.
 - Also in residence are a pair of Skyworks [SE5516](#) dual-band 802.11 a/b/g/n/ac WLAN front-end modules.

Step 3



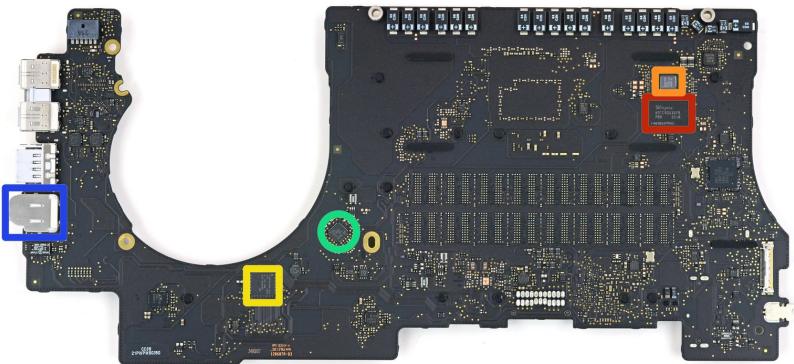
- One of the few differences: The 15" MBP now has a sleekified heat sink with just a single thermal pad, thanks to the more closely integrated GPU—which we attribute to the "Haswellification" process, as we call it.
- *i* Another effect of Haswelling your MacBook: This model claims to deliver an extra hour of battery life with the same capacity cells. The more efficient processor likely contributes much to that extra hour of looking at [pictures of cats](#) on the internet.

Step 4



- The most noteworthy revisions come on the logic board, including the all-new Haswell Core i7 processor, Iris Pro Graphics, and Thunderbolt 2 support:
 - 2.0 GHz quad-core Intel Core i7 processor (Turbo Boost up to 3.2 GHz) with 6 MB shared L3 cache and Iris Pro graphics
 - 128MB eDRAM cache
 - Elpida [J4208EFBG](#) 512 MB DDR3 SDRAM (16 chips for 8 GB total)
 - Intel [DSL5520](#) Thunderbolt 2 Controller
 - Intel Platform Controller Hub
 - Cirrus 4208-CRZ Audio Codec, similar to Cirrus [CS4207](#)

Step 5



- Back of the logic board:
 - SK Hynix [H5TC4G63AFR](#) 512 MB DDR3 SDRAM
 - Broadcom BCM15700A2
 - Cypress Semiconductor [CY8C24794-24LTXI](#) Programmable System-on-Chip
 - Texas Instruments TPS51980
- The headphone jack is now soldered onto the logic board—break yours (easily doable through normal wear and tear) and you're looking at a thousand dollar repair

Step 6



- The moment of truth is now upon us—is the battery any easier to take out than the previous, horribly glued-in disaster?
- We're holding our breath as we gently test the waters with a plastic card...
- ...And half an hour and several skinned knuckles later, we exhale that breath in a great sigh of disappointment. The battery has the same excessive adhesive, and is just as nearly-impossible to safely remove as before.
- So much for evolution of design.

Step 7



- MacBook Pro with Retina Display 15" Late 2013 Repairability Score: **1 out of 10** (10 is easiest to repair).
- Proprietary pentalobe screws prevent you from gaining access to anything inside.
- As in the MacBook Air, the RAM is soldered to the logic board. Max out at 16GB now, or forever hold your peace—you can't upgrade.
- The proprietary SSD has changed to a PCIe format, but still isn't a standard 2.5" drive. However, it is a separate daughter card, and we're hopeful we can offer an upgrade in the near future.
- The lithium-polymer battery is glued rather than screwed into the case, which increases the chances that it'll break during disassembly. The battery also covers the trackpad cable, which tremendously increases the chance that the user will shear the cable in the battery removal process.
- The display assembly is completely fused, and there's no glass protecting it. If anything ever fails inside the display, you will need to replace the entire, extremely expensive assembly.

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