MacBook Pro 13" Two Thunderbolt Ports 2019 Teardown

The MacBook Pro line just got simpler. Or did...

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INTRODUCTION

The MacBook Pro line just got simpler. Or did it? The 13” model still comes in two flavors, but they’re harder to tell apart—the only clue being the number of ports. Did Apple keep the entry-level model and find room for a Touch Bar somehow, or is this new model a stripped-down version of the existing (expensive) Touch Bar design? Or is it something entirely new? Let’s shake all the parts loose and see what falls out.

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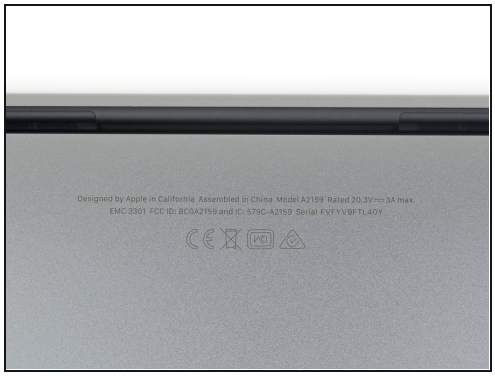
TOOLS:

P5 Pentalobe Screwdriver Retina MacBook Pro and Air (1)
Suction Handle (1)
iFixit Opening Picks (Set of 6) (1)
iOpener (1)
Tweezers (1)
T3 Torx Screwdriver (1)
T5 Torx Screwdriver (1)
Spudger (1)
Halberd Spudger (1)

Step 1 — MacBook Pro 13" Two Thunderbolt Ports 2019 Teardown







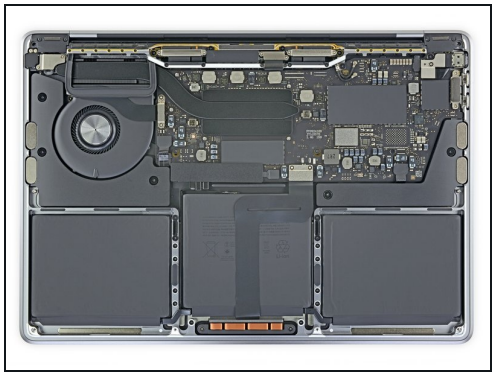
- Before we get too far, let's take a look at what this model brings to the lineup:
  - 13.3” LED-backlit IPS “Retina” display with 2560 × 1600 resolution (227 dpi), P3 color gamut
  - 1.4 GHz quad-core Intel Core i5 (Turbo Boost up to 3.9 GHz) with integrated Intel Iris Plus Graphics 645
  - 8 GB of 2133 MHz LPDDR3 onboard memory
  - 128 GB, 256 GB, 512 GB, 1 TB, or 2 TB PCIe-based SSD
  - Two Thunderbolt 3 (USB-C) ports supporting charging, DisplayPort, Thunderbolt, USB 3.1 Gen 2
  - Apple T2 custom coprocessor

ⓘ Despite looking pretty familiar, this MacBook sports a new model number: A2159, and EMC 3301.

Step 2





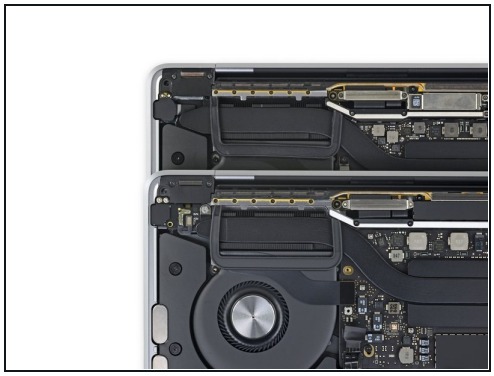


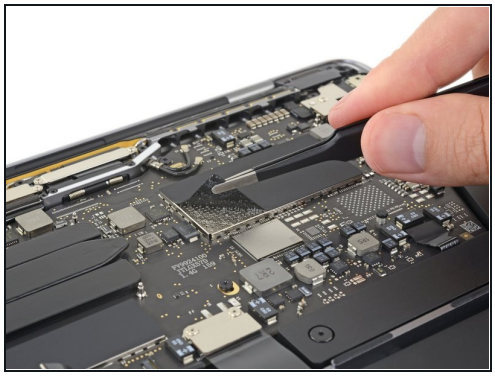
- We're pleased the headphone jack is back, even if it is hanging out all by itself. (Two ports plus a headphone jack still feels a bit stingy on a "Pro" machine, right?)

- By now, the opening procedure is old hat. Dispatching a handful of pentalobe screws and clips lets us peer into a MacBook Pro that looks ... surprisingly similar to the older function key model, actually.

- The new 58.2 Wh battery capacity slightly exceeds the 54.5 Wh battery found in the old function key model. Maybe that's how it keeps up with the added Touch Bar, Touch ID sensor, and T2 chip while keeping the same 10-hour battery life.
  - It even bests the 58.0 Wh battery in the more expensive 13" model—which has more cores and TDP to power.

Step 3



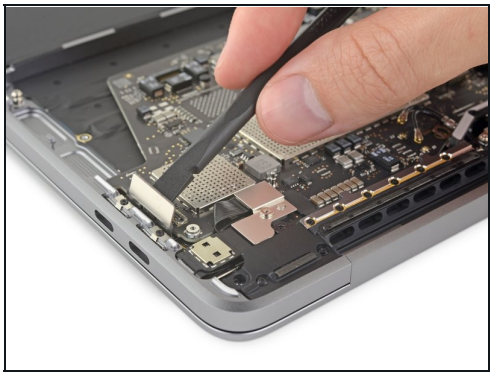


- To make room for the Touch ID sensor alongside the Touch Bar, Apple seems to have trimmed a little mass off the heat pipe, left of the exhaust. Compare the 2016 "Function keys" version (top of image) to this year's model (bottom).
  - Should we be worried? Cooling already seemed like it was getting short shrift on these ultra-thin "Pro" laptops. The 15W TDP on this year's processor is no lower than the one from 2016.

- We twirl away the pancake screw from the battery connector and kill power—with a little help from our Manta driver kit.

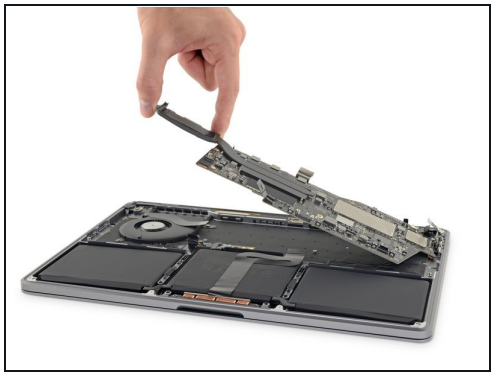
- Where the 2016 model's modular SSD used to live, we peel back a sticker—only to find a soldered-down shield. Unsurprising perhaps, but still disappointing—one of the last upgradeable components on the MacBook Pro line is totally gone.

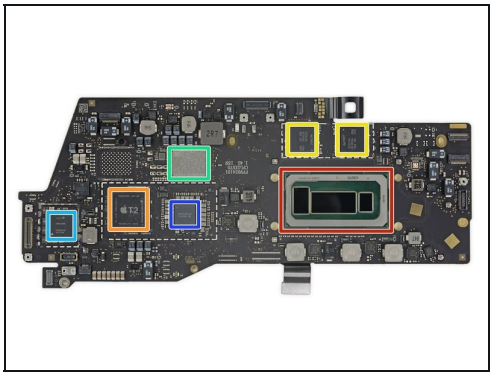
Step 4

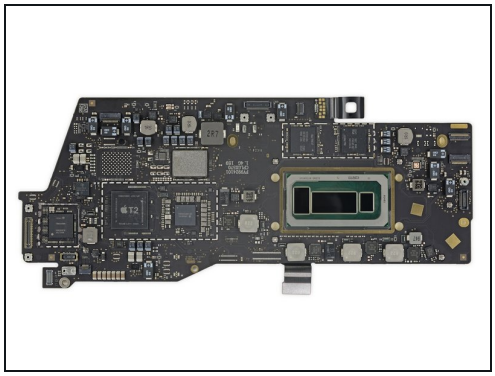




- The speaker opposite the fan also looks emaciated compared with its 2016 predecessor.
  - Apple's audio engineers are basically wizards, but we're skeptical that even wizards could maintain the same sound quality in a speaker this much smaller.
- Only a few Torx screws secure these speakers—they're not glued down like on so many other models. Replacement almost couldn't be easier.
- This modular Thunderbolt breakout board makes for a nice upgrade—last time, these were soldered to the logic board. This new configuration is more akin to the rest of the modern Pro line.
- A little farther and we're treated to another modular masterpiece: the headphone jack module. It includes the headphone jack, microphone, and Touch ID connector, and can be easily replaced without dragging along an expensive logic board.

Step 5

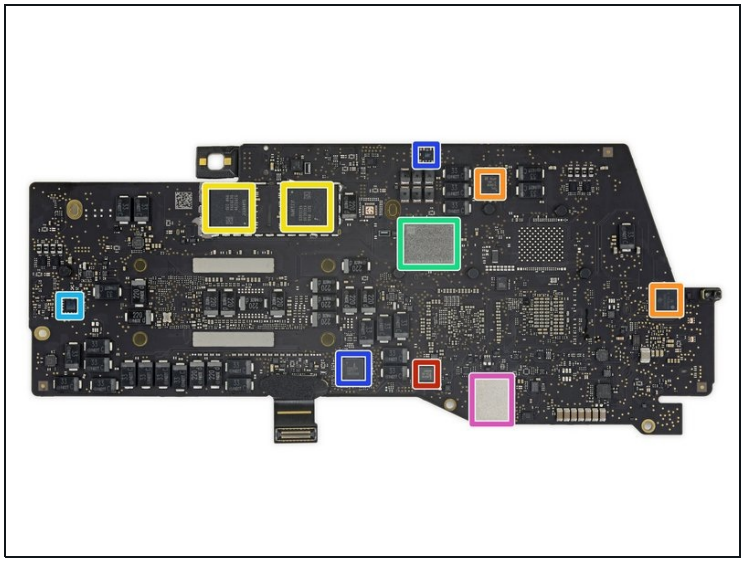


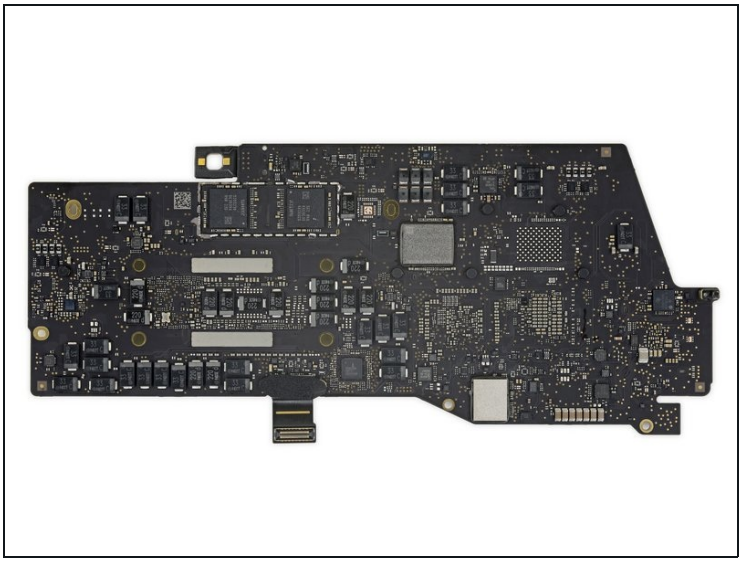




- Let's lift the logic board and see what it's hiding:
  - Intel SREZ2 Core i5-8257U processor
  - Apple APL1027 339S00604 T2 coprocessor
  - 2x Samsung K4E6E304EC-EGCG 2 GB LPDDR3 RAM (4 GB total on this side)
  - Toshiba TSB 42260 F1473 TWNA1 1914 64 GB flash storage
  - Intel JHL7540 Thunderbolt 3 controller
  - 338S00466-A0 (likely an Apple PMIC)

Step 6





- And we find even more buried underneath:
  - NXP 80V18 secure NFC module
  - Texas Instruments CD3217B12 and TPS51980B (likely power controllers)
  - 2x Samsung K4E6E304EC-EGCG 2 GB LPDDR3 RAM (for 4 GB on this side, and 8 GB total)
  - Toshiba TSB 42260 F1473 TWNA1 1914 64 GB flash storage (for 128 GB total)
  - Cirrus Logic CS42L83A audio codec
  - Intersil 95828A HRTZ X915HKB and 9240H1 8905FD
  - Murata 1SA 339S00616 SS9521026 Bluetooth/Wi-Fi module

Step 7





- As for the keyboard, it's the same generation 3.5 butterfly switch design discovered in the earlier MacBook Pro refresh back in May.

Just like last time, this brand new MacBook Pro model is already included in Apple's Keyboard Service Program, along with the newly refreshed MacBook Air.

- It's a little unclear whether Apple *expects* these keyboards to continue needing repairs, or if this is just their way of reassuring traumatized customers that it's okay to buy.
  - Rumor has it that Apple will soon pull the plug on the butterfly design for good, returning to more reliable scissor switches—so maybe it's a little from column AA, and a little from BB.

Step 8



- We handled this one with a light *touch*, so that's all for now! We definitely found some surprises in this disfunction-keyed MacBook. Let's recap:
- The Touch Bar-ification brought a soldered SSD (bad), modular ports (good), a shrunken speaker and heat sink (eh?), and a T2 chip (wildcard).
- The keyboard gets its updated materials, but is still on the service program list. Like the butterfly, this keyboard design may soon prove ephemeral.

Step 9 — Final Thoughts



- The MacBook Pro 13" with Two Thunderbolt Ports earns a **2 out of 10** on our repairability scale (10 is the easiest to repair):
  - The trackpad can be removed without disturbing the battery.
  - Proprietary pentalobe screws continue to be hostile to repair.
  - The battery assembly is still very solidly glued into the case, complicating replacement of a consumable.
  - Soldered-down RAM limits upgradability and longevity.
  - The SSD is no longer replaceable—but as it was previously a proprietary drive, the newly soldered storage has about the same effect for the average fixer.