



# Samsung Galaxy S6 Teardown

We got our hands on the S6 on April 13th and got right inside.

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# Galaxy S6



# TEARDOWN

## INTRODUCTION

Samsung's Galaxy line of smartphones used to fare quite well in the [repairability](#) department, but last year's flagship S5 model took a tumble, [scoring a meh-inducing 5/10](#). Will the newly redesigned S6 lead us back into star-studded territory, or will we sink further into the depths of a repairability black hole? Hop aboard as we tear down the Samsung Galaxy S6!

Interested in the S6's curvy counterpart? Check out the [Samsung Galaxy S6 Edge Teardown](#).

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### TOOLS:

- [iOpener](#) (1)
  - [Heavy-Duty Suction Cups \(Pair\)](#) (1)
  - [Spudger](#) (1)
  - [Phillips #00 Screwdriver](#) (1)
  - [Tweezers](#) (1)
  - [iFixit Opening Picks set of 6](#) (1)
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## Step 1 — Samsung Galaxy S6 Teardown



- Compared with the S5, the S6 certainly looks good on paper. Its specs line up point-for-point with the flashy S6 Edge:
  - 5.1" Super AMOLED capacitive touchscreen (1440 x 2560 pixels, ~577 ppi, 16M colors)
  - Exynos 7 Octa 7420 Processor with integrated Mali-T760 GPU and 3 GB memory
  - 16 MP rear camera with HDR, LED Flash, and dual-video recording
  - Built-in wireless charging
  - 32, 64, and 128 GB storage options
  - Corning Gorilla Glass 4 backing
- It's got more power. It's got more pixels. Still, it feels like something's missing. We can't quite put our finger on it, so let's dig our fingers into it. It's teardown time!

## Step 2



- Just like its edgier sibling, the new Galaxy sports Gorilla Glass 4 on its front and back faces.
- A view of the edge of the Galaxy.
- ⓘ At .27 inches, the S6 comes in just a hair thinner than its sister Galaxy, the S6 Edge (.28 inches).
- Thinner, but not smaller—the S6 is slightly taller and wider than its sibling, and comes in a tiny bit (6 grams) heavier.

## Step 3



- The S6 Edge was monstrously hard to open, and odds are the S6 has the same nasty adhesive. This Galaxy looks sleek and talks tough, but we're packing heat—in the form of an [iOpener](#).
- After wrestling with a brief bout of [déjà vu](#), our trusty Heavy Duty Suction Cup and opening pick get us inside.
- ⓘ Looks like the S6 and S6 Edge are going to have a lot in common inside as well as out.

## Step 4



- The rear panels are so similar we had to put them to the side-by-side comparison test: as we should have expected, the S6 Edge (right) panel is slightly smaller than the standard S6 (left) panel.
- The adhesive stayed globbed to the midframe this time, hiding the screws. We had a moment of panic, thinking we'd have to go through the display, [S5-style](#).
- But after peeling up the adhesive, all screws are present and accounted for—and now, removed!

## Step 5



- It's time to blow this Galaxy wide open.
- Removing the midframe reveals... an S6 Edge?
- Maybe not—but it takes a keen eye to spot the difference. Apart from a slight rejiggering of the vibrator placement, these internals are a dead ringer for [that other flagship Samsung smartphone we tore down recently](#).

## Step 6



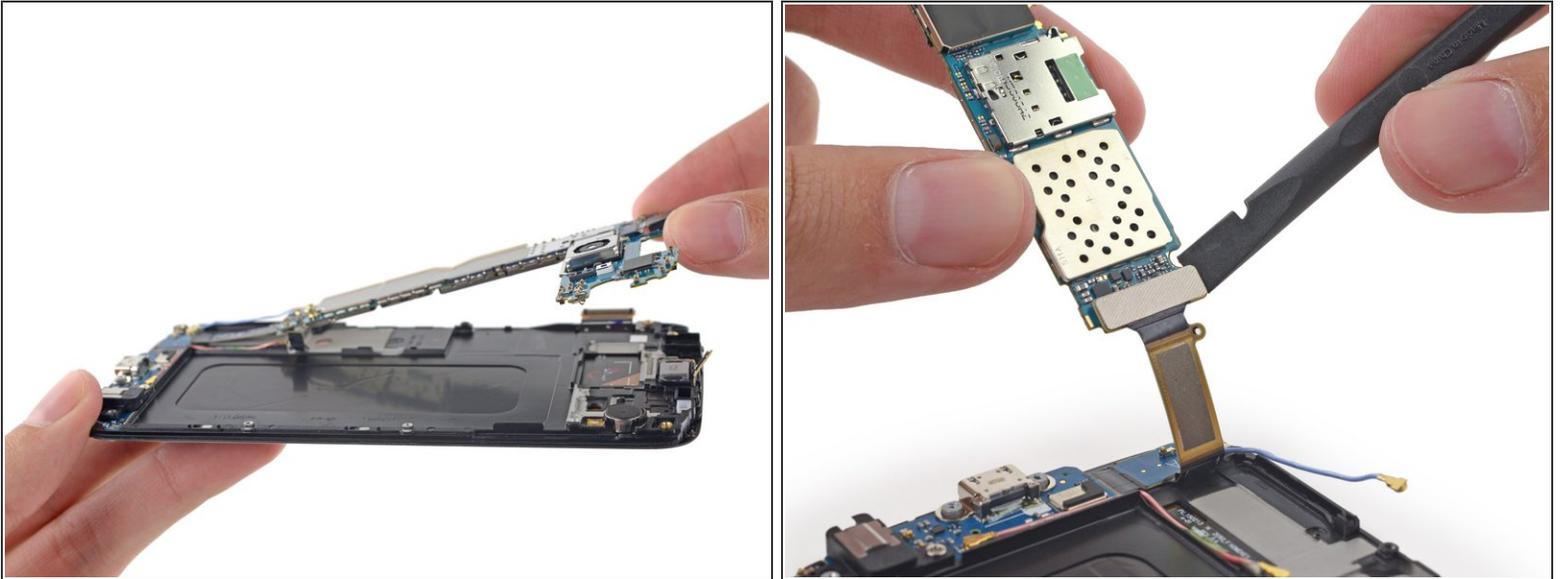
- Who runs the phone? Battery!
- Removing the battery from the S6 should be a little bit easier than from the [Edge](#). In the Edge, the battery cable was routed under the motherboard before connecting on top, necessitating removing the motherboard to get to the battery.
- Looks like with the bit of extra room inside the regular S6, Samsung was able to run the cable on top of the board, to save a step for battery removal.
- Also, thanks to the flat-screen design of the S6, it's easier to push an opening pick straight into the gap between the battery and display assembly, making it easier to cut the (just-as-strong) adhesive holding the battery.
- This hardly qualifies as a user-replaceable battery, but it is a bit easier than in the S6 Edge. Still, it's a flying leap backwards from previous Galaxies like the S5, where you could [replace the battery](#) using nothing but your wits, and you didn't even really need those.

## Step 7



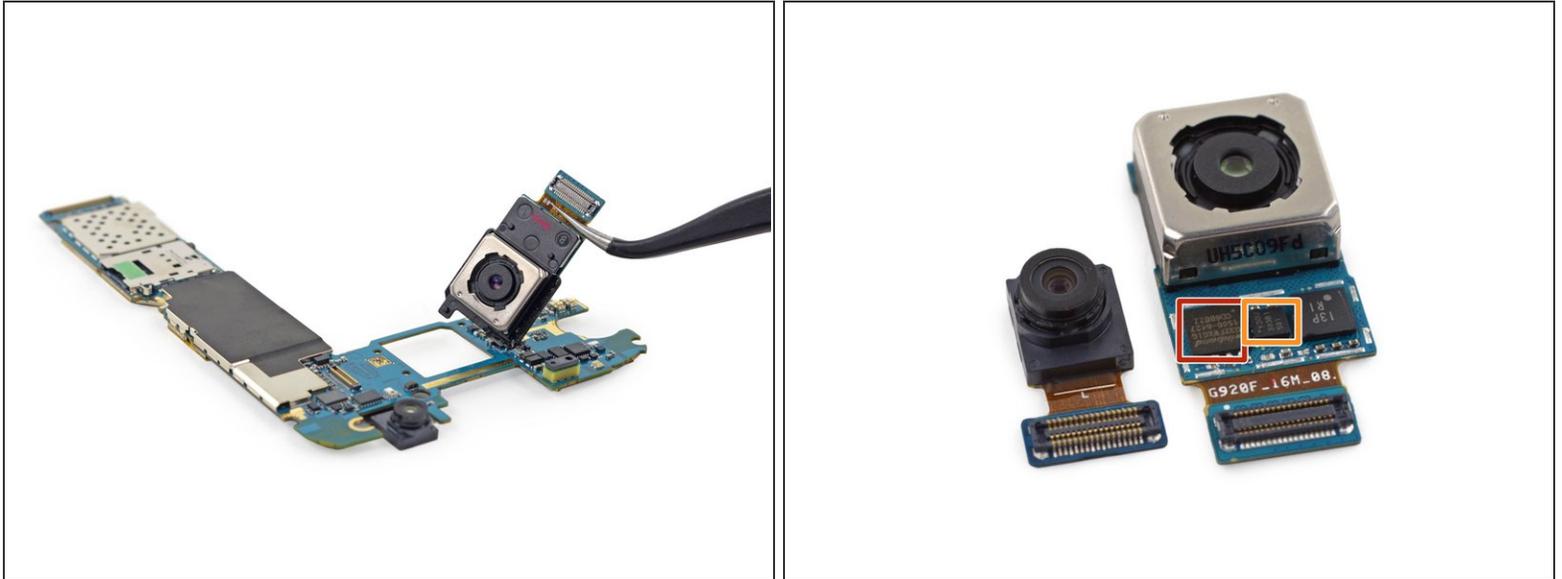
- The Galaxy sports a 3.85 V, 9.82 Wh battery, which Samsung claims will provide up to 23 hours of 3G talk time, 12 hours of Wi-Fi internet use, and up to 57 hours of music playback.
- With the transition to heavier case materials, perhaps Samsung was interested in cutting weight by trimming batteries. The 9.82 Wh battery in the S6 and 10.01 Wh battery in the [S6 Edge](#) feel pretty small compared to the [Galaxy S5](#)'s 10.78 Wh pack.
- The battery is quite a bit bigger than the 6.91 Wh we saw in the [iPhone 6](#), but arguably provides less talk time. It seems like that extra screen real estate takes a lot of juice.

## Step 8



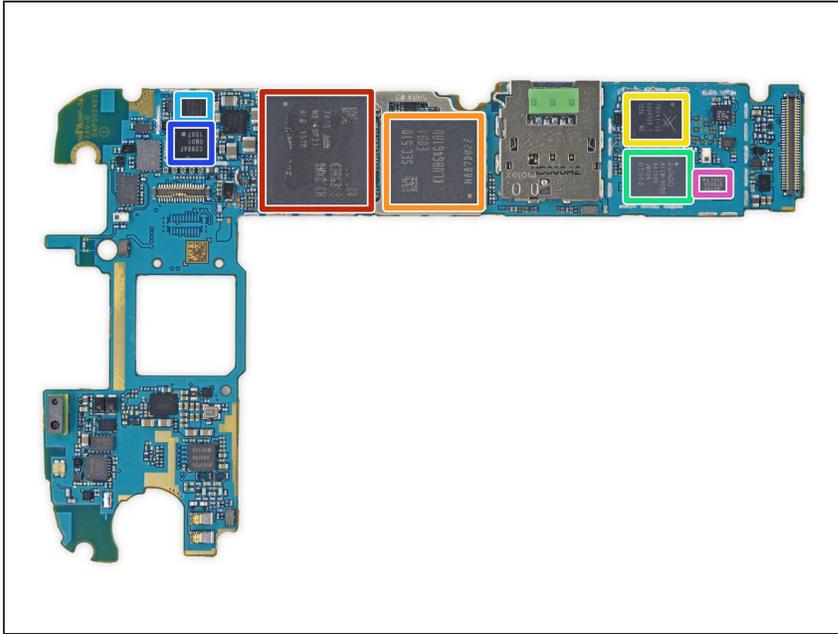
- The motherboard is still held by the gravitational pull of a pesky daughterboard connector. We quickly set to work with a spudger and lift off to get a closer look.

## Step 9



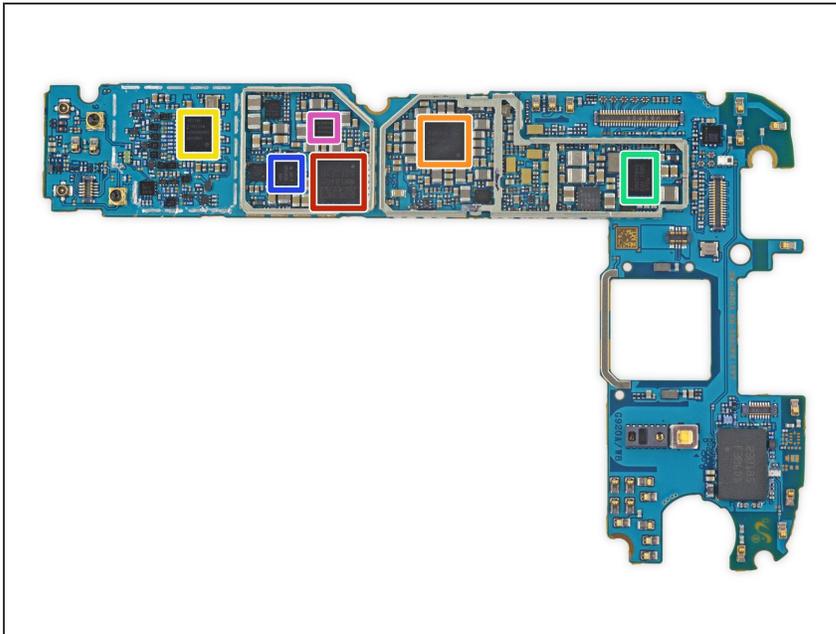
- We grab some tweezers and take a closer look at the Galaxy's cameras.
- The S6's 5 MP selfie camera is the spitting image of the front-facing camera we found in its sister Galaxy.
- The similarities don't end there. The 16 MP OIS rear-facing camera looks nearly identical to the one in the Edge. There is definitely some similar hardware on this PCB:
  - Winbond [W25Q32FW](#) Serial Flash Memory
  - InvenSense [IDG-2030](#) dual axis gyroscope for optical image stabilization

## Step 10



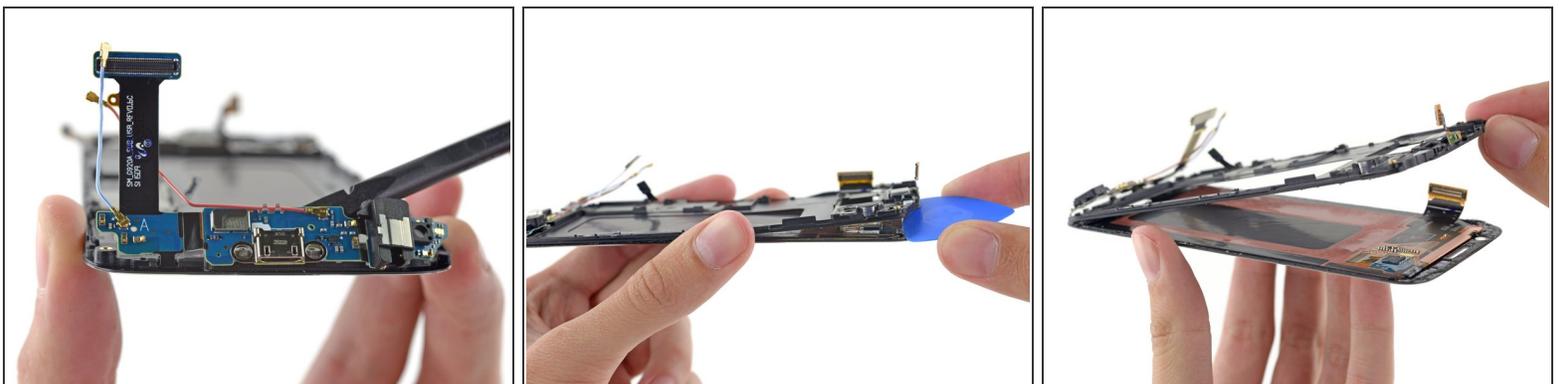
- We scope out the back side of the motherboard first, and find some familiar heavy hitters:
  - Samsung [Exynos 7420 Octa-core Processor](#) - 64-bit, 2.1 GHz Quad + 1.5 GHz Quad, with Samsung [K3RG3G30MM-DGCH](#) 3 GB LPDDR4 RAM layered in
  - Samsung KLUBG4G1BD 32GB NAND Flash
  - [Skyworks 78041](#) Hybrid Multimode Multiband (MMMB) Front-End Module (FEM)
  - Avago AFEM-9020 PAM
  - Broadcom [BCM4773](#) GNSS Location Hub
  - Samsung C2N8AF (possibly image processor)
  - Avago A7007 (seen previously in the Galaxy S5)

## Step 11



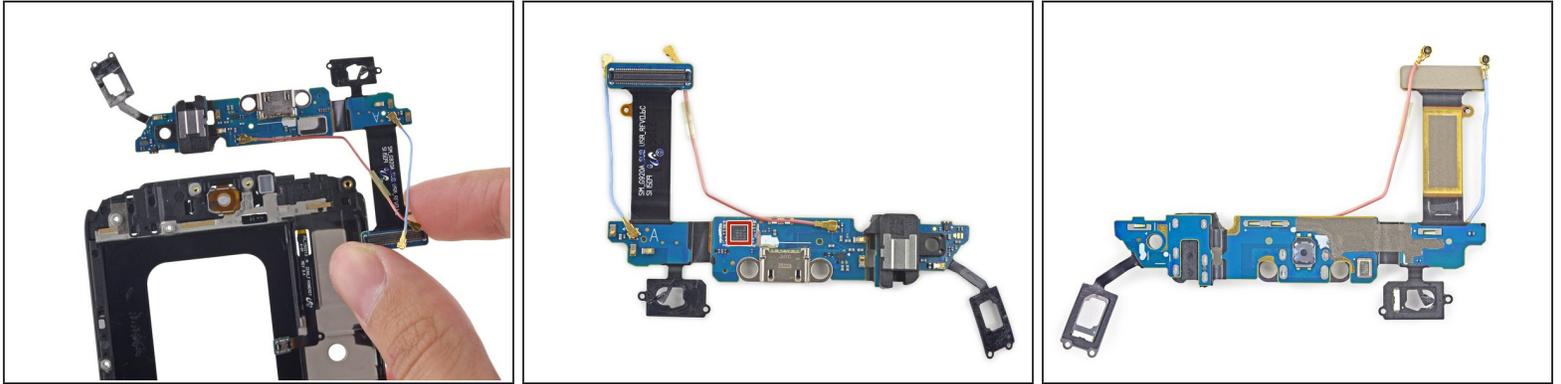
- A few more familiar faces grace the front side of the mobo:
  - Wolfson Microelectronics WM1840 Audio Codec
  - Samsung S2MPS15 (likely power management IC similar to the [S2MPS11](#))
  - Samsung Shannon 928 RF Transceiver
  - Maxim MAX77843 Companion PMIC
  - Maxim MAX98505 Class DG Audio Amplifier
  - Samsung Shannon 600B5D

## Step 12



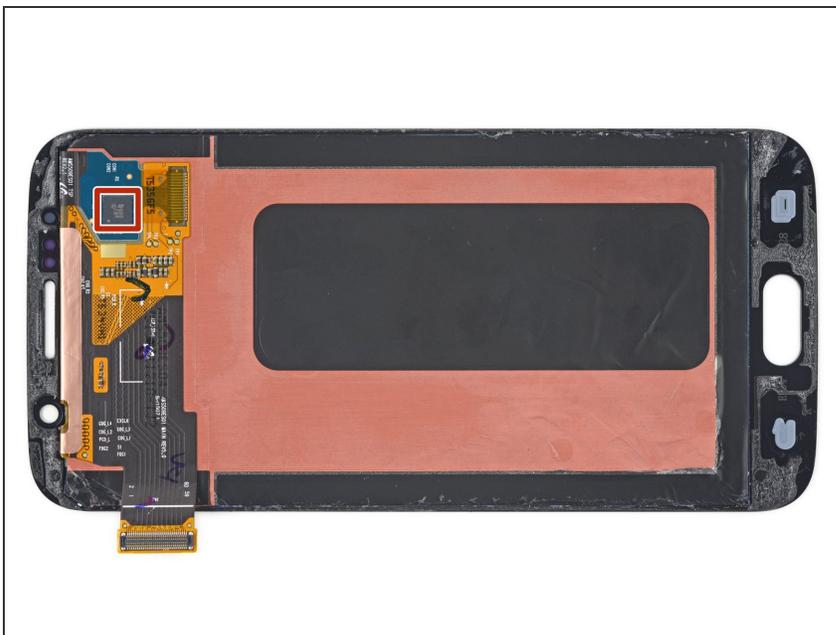
- We attempt to pry up the daughterboard, but are thwarted by soft button LED cables.
  - The soft button LED cables are trapped between the display and the display backing frame.
- So we pry up the display frame to release the daughterboard.

## Step 13



- Once extricated, the daughterboard provides a clear view of its audio jack and space-aged microUSB (2.0) port.
- This represents another seeming step backwards from the S5, which packed a 10x faster USB 3.0 port.
- Onboard, we spy a single IC:
  - Cypress 3175 1501 1885 (likely touch or fingerprint sensor controller)

## Step 14



- With the display removed, we find the same [STMicro FT6BH touchscreen controller](#) as the [S6 Edge](#).

## Step 15



## REPAIRABILITY SCORE:



- Samsung Galaxy S6 Repairability Score: **4 out of 10** (10 is easiest to repair).
  - Many components are modular and can be replaced independently.
  - The S6 doesn't have the S5's display-first entry, but the display still needs to be removed if you want to replace the USB port.
  - Unlike the S6 Edge, the battery can be removed without first ousting the motherboard—but tough adhesive and a glued-on rear panel make replacement more difficult than necessary.
  - Front and back glass make for double the crackability, and strong adhesive on the rear glass makes it very difficult to gain entry into the device.
  - Replacing the glass without destroying the display is probably impossible.