

iPhone 3GS Teardown



Step 1 — Teardown

We have the iPhone in hand!

We didn't have to travel quite as far as last year to get it. This year, it was only 5,400 miles away.

We lost the corporate jet due to the economic downturn. Our CEO had to settle for an Italian bi-plane. 47 hours later he was in London.

Apple claims the iPhone 3GS is "up to 2x faster." Why is the 3GS faster? We'll find out soon enough. According to rumors, the 3GS has a 600 MHz processor, 50% faster than the processor in the iPhone 3G.

Step 2

We won't bore you with a lengthy unboxing, since there's nothing new to see here.



Which one's the 3GS? They look identical.

Apple doesn't make it easy to identify your iPhone 3GS, as they're all labeled just "iPhone." However, the 3G is model A1241, while the 3GS is model A1303.





Step 3

The original iPhone was very difficult to open, but we expect the 3GS (like the 3G) to be quite serviceable. There are still two visible screws on the bottom of the phone, which is a good sign for easy opening.

Remove the two bottom screws with a Phillips #00 screwdriver.

Step 4

A small suction cup is your friend. A large suction cup may also be a fun toy.



There are seven numbered connectors on the 3GS, up from six on the 3G. Connector number seven is in the lower right corner, just above the dock connector.





Step 5

There are three cables holding the LCD and digitizer to the rest of the logic board. Disconnecting them is as easy as 1-2-3.

- 1: LCD panel
- 2: Digitizer
- 3: Ear speaker



Step 6



We're looking forward to the improved 3 megapixel camera on the 3GS. According to our good friend Richard Lai, "Camera quality is much improved from the 3G one, close up shots were possible down to about 5cm, brightness adjusts well when picking focus area." We've seen some pretty impressive shots already.

Fortunately, as in both the original and 3G iPhones, the camera's a separate component, so removal is possible if necessary for security purposes.

In each image, the left photo is from the iPhone 3G, the right photo is from the iPhone 3GS.

For those who really want to examine the pictures: hi-res1, hi-res2, and hi-res3.



Step 7

Here's the two halves.

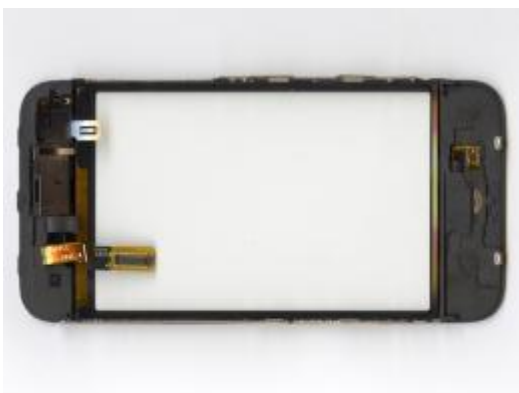
All the chips on the logic board are hidden beneath two large EMI shields. We'll have those removed in just a bit.



Step 8

Just like the iPhone 3G, the LCD is pretty easy to replace. After removing 7 screws, the LCD simply lifts out.

On the iPhone 3G, we see a lot more cracked digitizers than cracked LCDs. Replacing the digitizer is a little more work, and requires breaking out a heat gun or hair dryer.





Step 9

Here's the fabled "Do not remove" sticker. It didn't stop us last year, and it's certainly not going to stop us this year.



Step 10

Removing the logic board. Like the 3G, there is a single large PCB with all components.

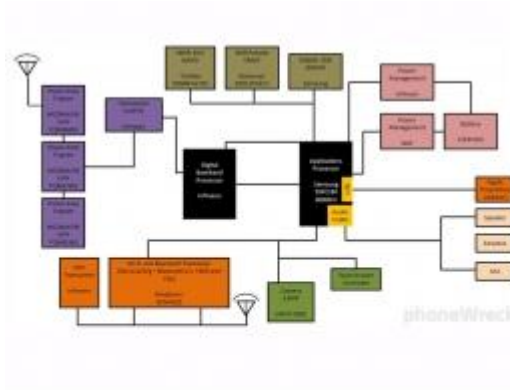
Step 11

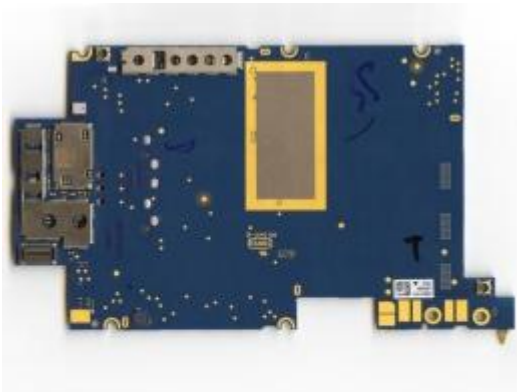
The main logic board. There's a lot packed in here. Here's a high-res image of this shot.

The Apple-logo chip is the primary Samsung ARM processor.

The 16 GB of Toshiba flash are now on the front of the board, just below the Samsung ARM.

phoneWreck sent us a great component diagram (second picture). They performed a thorough chip analysis of the iPhone 3GS, so check out their site!





Step 12

The other side of the logic board. You can see the battery contact pads in the lower right corner. Apple was again kind enough to not solder the battery to the logic board.

Here's a high-res image of this shot.



Step 13

Apple promises improved battery life with the 3GS. The battery is listed as 3.7V and 4.51 Whr. This comes out to 1219 mAh, compared to 1150 mAh on the 3G. That's only a 6% increase.



Step 14

Video recording is a long-overdue feature of the iPhone 3GS. The 3GS records video at 640x480 resolution and 30 fps.

The video recording quality appears acceptable, although not exceptional. You can see a video (taken using another iPhone 3GS) of us opening the phone.



Step 15

The 3GS offers Voice Control. We're not sure yet why this feature couldn't be added via software to earlier iPhones. Perhaps the voice recognition requires a better microphone than in earlier iPhones or a lot of processing power, or maybe Apple just wanted to differentiate the 3GS.

According to Richard Lai, the "Chinese (Cantonese) voice control works, but took a while to work out the magic words as there is no guide released yet (not out in Hong Kong until early July)." He also tested the "Chinese (Mandarin) and Chinese (Taiwanese), although the latter didn't work as well since [he doesn't] do the accent well."



Step 16

Here's all the parts.