



# iPod Nano 5th Generation Teardown

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## INTRODUCTION

We've got our hands on the new iPod nano 5G, now with a video camera! We got our nano early on the morning of September 10, 2009.

Want up-to-the-minute updates? Follow [@ifixit on twitter](#).

Check out the YouTube [video](#) of the teardown!

## TOOLS:

- [Tweezers](#) (1)
- [iFixit Opening Tools](#) (1)
- [Spudger](#) (1)

## Step 1 — iPod Nano 5th Generation Teardown



- Apple's got a routine going with the nano. Never fail, come September, we get a new one.
  - [1G](#) - September 7, 2005
  - [2G](#) - September 12, 2006
  - [3G](#) - September 5, 2007
  - [4G](#) - September 9, 2008
  - 5G - September 9, 2009
- This is the first time Apple's had a similar exterior design two releases in a row. The rear-mounted video camera is the only clear sign that we have a new device in our hands.
- Notice the white wrapper around the packaging. Not even Apple employees got to sneak a peek at this one.

## Step 2



- Shiny!
- Many of the new features include a pedometer, voice recorder, voiceover, a genius mix feature, FM radio, a speaker, oh, and a little thing called a VIDEO CAMERA!
- The one thing the nano didn't receive this release is a capacity upgrade. Like the 4th Gen, this nano comes in 8 and 16 GB capacities.
- You can [[www.twitter.com/ifixit](http://www.twitter.com/ifixit)] follow us on twitter] to get all the latest updates as we're doing the teardown!

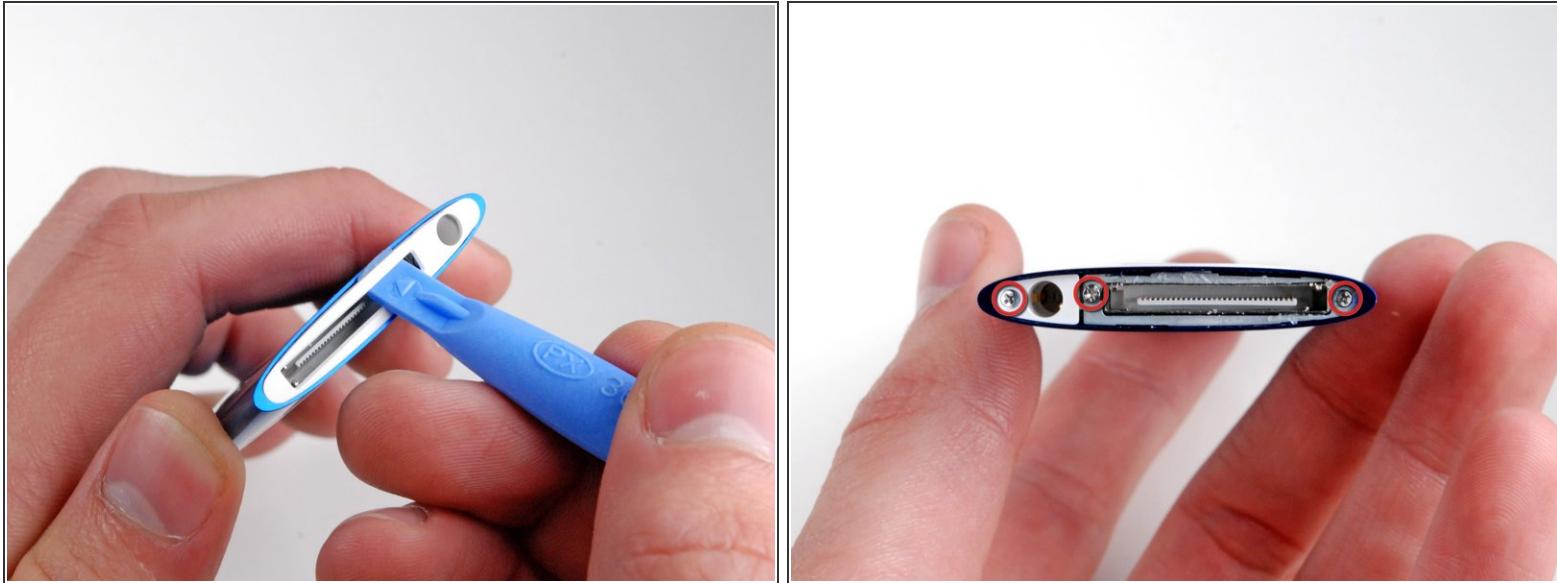
## Step 3



- A video camera finally comes to the iPod line. Surprisingly, it's in the nano, and not the touch.
- According to Apple, the video camera offers:
  - H.264 VGA video
  - 640 by 480 pixels
  - Up to 30 frames per second
  - AAC audio

*i* Can you take photos? NO. There is no still camera option in the nano 5th Generation probably due to the low resolution of the VGA camera.

## Step 4



- A [Plastic Opening Tool](#) makes quick work of the plastic bezel surrounding the dock connector.
- There's not much to see here yet. We're working on getting to the good stuff...
- So far, there's a lot in common with the [4th Gen nano](#).

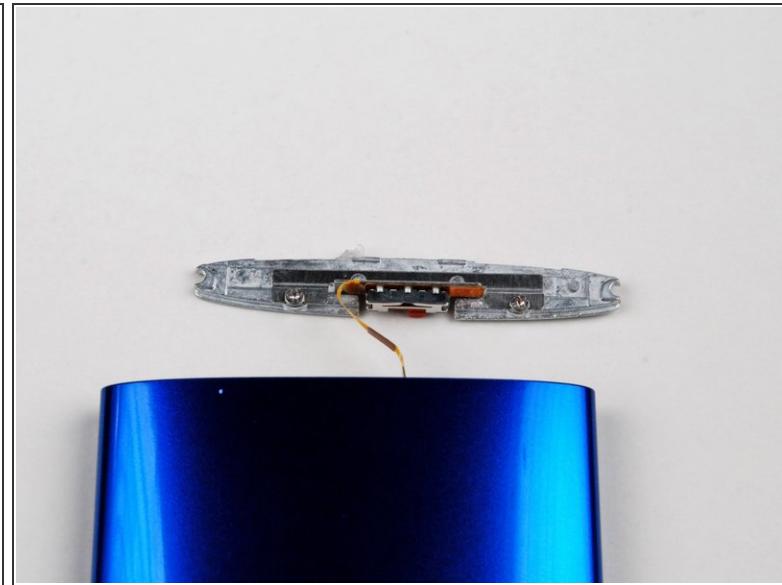
## Step 5



- No surprises here. This design is identical to the 4th Gen nano. Even though the exterior hold switch is near the edge of the iPod, the internal hold switch is actually in the center of the iPod.

**⚠ Shameless plug:** We sell hundreds of [iPod parts](#) for repairing your [iPod nano](#) or replacing an aging [iPod battery](#).

## Step 6



- Unlike some earlier iPods, the hold switch isn't directly attached to the logic board.
- That's a really thin ribbon cable. Then again, there's not a lot of data that needs to go through it.

## Step 7



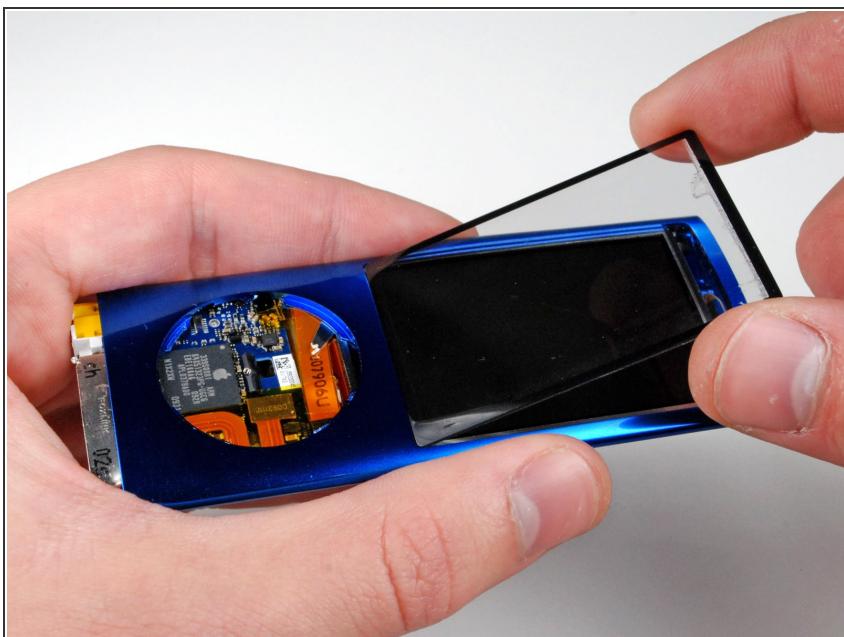
- The camera bezel appears to be keeping the iPod's insides from coming out.
- Eine Deutsche Rasierklinge should fix that...
- The microphone by the camera ensures you get sound with your VGA moving pictures.
- Use a pin to remove the small white retainer from between the camera and microphone holes. This keeps the components from sliding toward the bottom of the nano.

## Step 8



- Apple has redesigned the click wheel on this nano. Instead of being (fairly permanently) affixed to the case, we were able to rotate and lift the click wheel.
- You can use a [spudger](#) to completely remove the click wheel without taking the rest of the iPod apart.

## Step 9



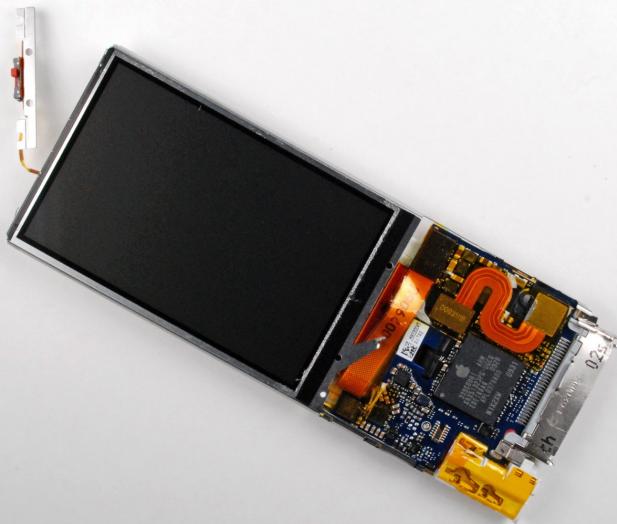
- There's a thick slab of glass covering the LCD. Unlike the iPhone, we haven't seen issues with broken glass on the nanos.
- If you want your screen to look nice, don't touch it. Fingerprints are quite noticeable on the glass.

## Step 10



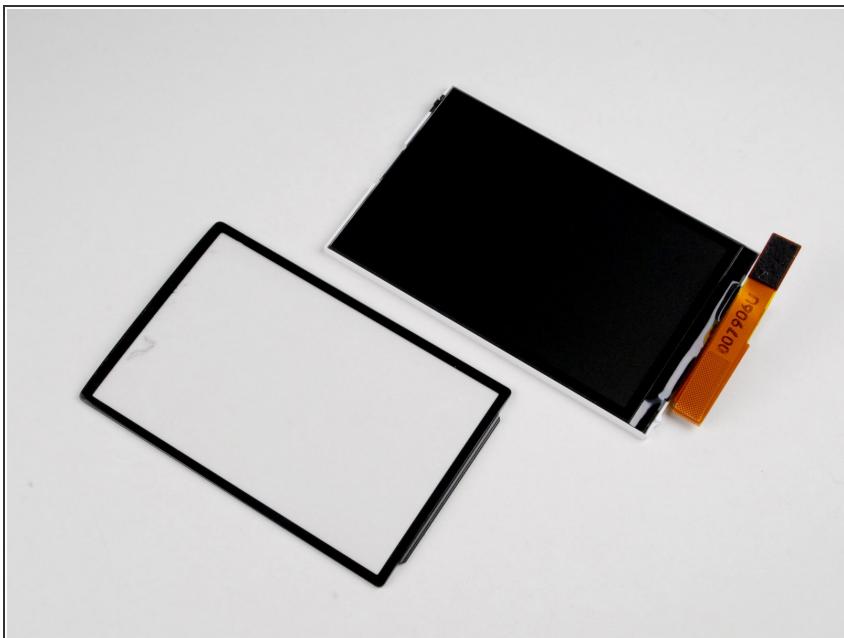
- Removing the internals... It's a tight squeeze, but we got them out. Getting this iPod open wasn't easy. We don't recommend trying this at home. Take great care not to scratch the screen on the sharp recess for the click wheel, bend up slightly if necessary.
- **i** We wish Apple would put a little effort into making iPods repairable, instead of forcing people to [throw them away](#) when they break. Recent iPods have become increasingly difficult to successfully repair.
- This iPod employs copious amounts of glue and adhesive to hold everything together. That makes it easy for Apple to put together, but hard to take apart.

## Step 11



- iPod, sans casing.
- The tolerances on this iPod are incredibly tight, there's no wasted space inside.

## Step 12



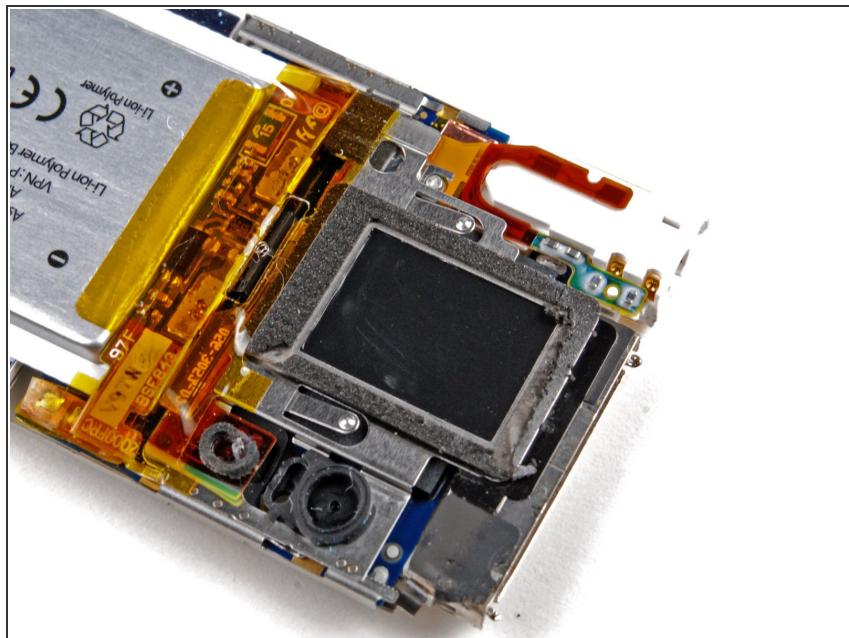
- The new nano features a larger display (2.2" and 240x376). This is the same width as the 4th Generation nano, but 56 pixels taller. On a pixel basis, that's 17.5% more screen real estate.
- Apple keeps putting bigger screens in the same size devices. The footprint of the iPod nano has stayed the same over the last four years, but this display has four times the pixels of the original nano.

## Step 13



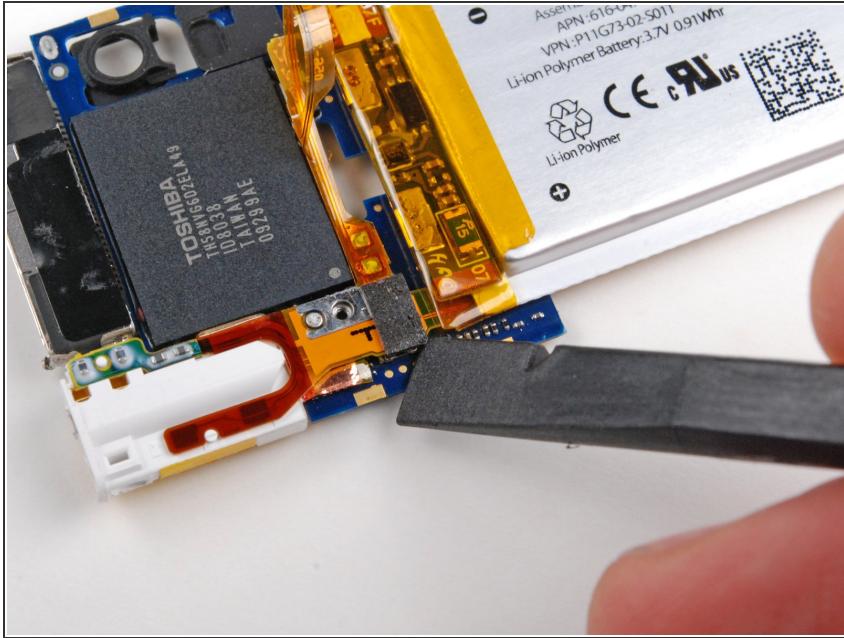
- The battery. Apple warns you right from the get-go that your iPod may melt and/or spontaneously combust: "Potential for fire or burning." We assume they mean burning. It is assembled in China, so we'll give them a little slack.
- Supposedly if you burn this battery, it will burn.
- It's readily apparent the battery has not changed much. Just compare it to the [battery of yesteryear...](#)

## Step 14



- Here's the speaker. Like the [Touch 2nd Gen](#), the audio simply comes out the bottom of the iPod.
- For something only about a millimeter thick, it's not really fair to complain about audio quality.

## Step 15



- Removing the connector that connects the microphone, speaker, hold switch, and headphone jack to the logic board.

## Step 16



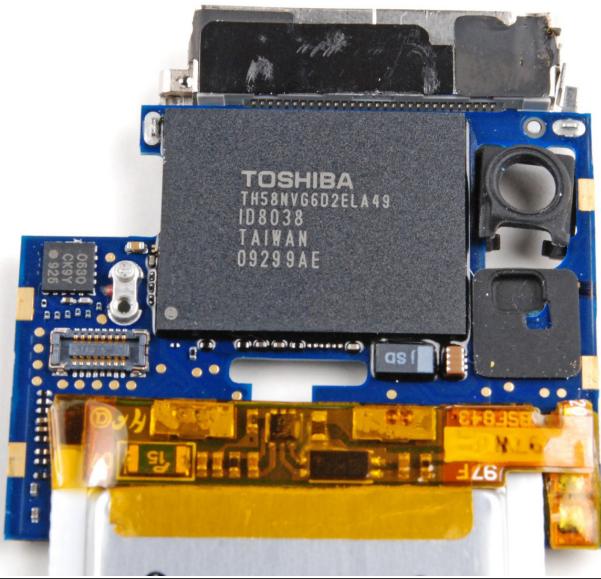
- Removing the camera.
- It's nice to see that the camera's a separate module and not integrated into the board.

## Step 17



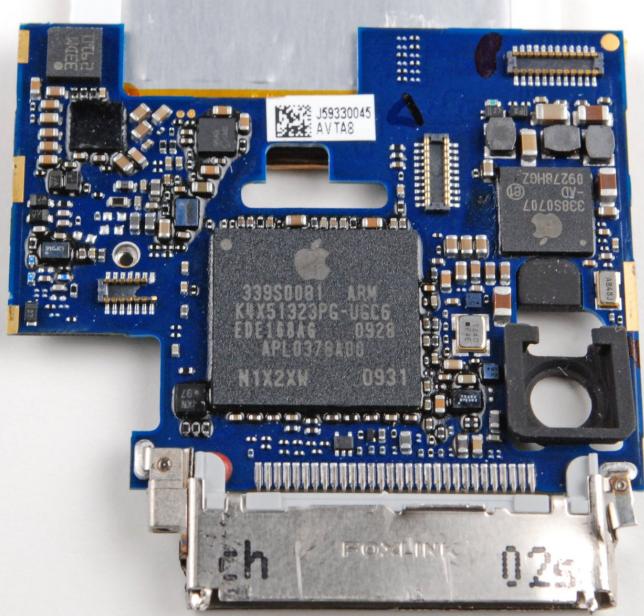
- The camera, in all its VGA resolution glory. The camera itself is less than 3 mm thick.
- Space may have been a factor in not including a better camera. Excluding its mount, the camera in the iPhone 3G is about 6 mm thick. The 5th Gen nano is 6.2 mm thick at its thickest point.
- Unlike the nano, the touch, at 8.5 mm thick, could conceivably support an iPhone-sized camera, although it would certainly be an engineering challenge.

## Step 18



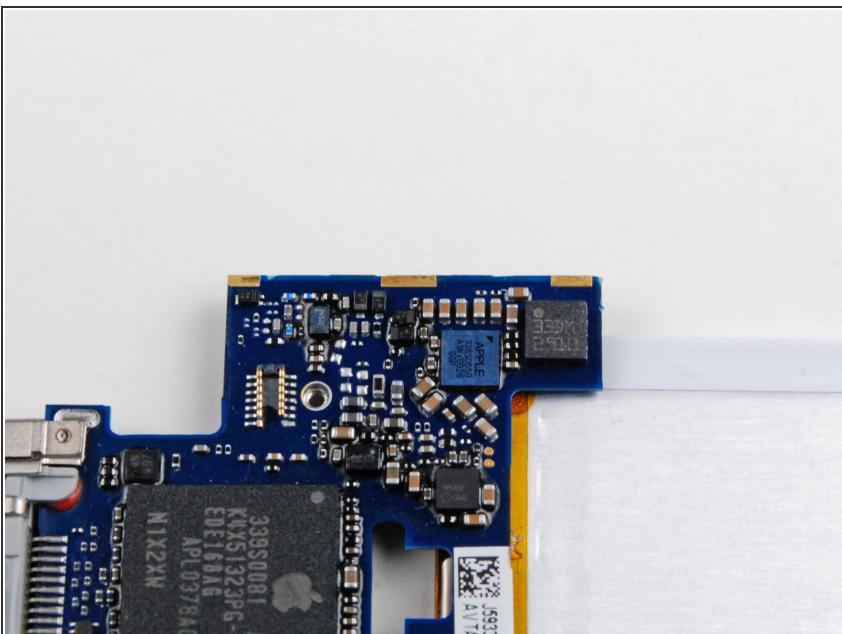
- In our iPod, Toshiba is the source for the 8 GB of flash memory. On the chip:
  - TH58NVG6D2ELA49
  - ID8038
  - TAIWAN
  - 09299AE
- It looks like this was made in Taiwan in week 29 of 2009 (mid-July).
- Also visible to the right of the Toshiba chip is the rubber mounting fixture for the camera, assumedly to dampen vibrations.

## Step 19



- The front of the logic board.
- The main ARM processor dwarfs everything else on the board. Similar to previous iPods, we expect this is an Apple-branded Samsung processor.
- Here's the markings from the processor:
  - 339S0081 ARM
  - K4X51323PG-UGC6
  - EDE168AG 0928
  - APL0378A00
  - N1X2XW 0931

## Step 20



- The shiny chip is visible from this angle:
  - 338S0559
  - ATWV0926
  - SGP

## Step 21



- ~ The End ~
- Credits:
  - Pictures and hardware analysis: iFixit
- Flying to Pennsylvania to take apart the new iPod nano for you: iFixit's summer intern.
- Want a programming job with us? We're [hiring](#).