Moto 360 Teardown
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https://learn.adafruit.com/moto-360-smartwatch-teardown

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A few Android Wear smartwatches have been released lately, and we decided to take a look inside the Moto 360 from Motorola. As usual with the small, water resistant devices we've been taking apart lately, the Moto 360 uses adhesives, flex PCB connectors, and other methods to keep the product compact, so some creativity is necessary to find your way inside. We took inspiration from iFixit's Moto 360 teardown but did not take care to be able to put it back together.
The Moto 360 comes in a round box, mimicking its round screen.

Inside the box is the watch, manual, and charger.
The watch charges inductively by resting on the included cradle.

Android Wear serves up notifications, Google Now cards, and accesses the watch's pulse oximetry sensor to show you your heartrate.
To soften adhesives, heat is useful! Make your own heat pack using some scrap fabric sewn into a pouch/bean bag, and fill it with rice.

Heat up the pack in the microwave for one minute, and use caution when taking it out because it will be hot!

If you're using it on electronics you want to use again, heat and cool the pouch several times first to remove any remaining moisture in the rice, or it will steam all over your gadget. You can also experiment with waterproof tablecloth fabric to insulate the hot pocket from your project.
After two minutes under the hot pack, we were able to pry the back sticker off, revealing a rubber surface and the pulse oximetry sensor.

Then we pried into the side to separate the screen from the inner puck of electronics.
The two are connected with a flex PCB connector.

We couldn't get the screen out of the round bezel but did remove the backlight.
Inside the puck is the main PCB with a battery on the back, and a plastic frame containing the bluetooth antenna. The matte grey shape pictured above is a ferrous sticker that improves the charging efficiency of the Qi charging circuit underneath.

Removing the ferrous sticker ruins the Qi charging coil but reveals the back of the pulse oximetry sensor and cool flex PCB connector.
The chips on the main PCB are underneath a protective can. The flat part of the can came out easily but the frame was soldered to the board.
To remove the frame, we set up the board in a panavise and carefully heated it at a hot air rework station while tugging on the frame with tweezers. One side at a time the can lifted, revealing the rest of the chips!

The chips on the board we could identify:

- **TMS320 ()** - DSP
- **AFE4490 ()** - pulseOx AFE
- **MxT112S ()** - captouch controller
- **ssd2848 ()** - solomon systech MIPI graphics buffer
- **2SB28 D9QRM 512MB RAM** - PoP above, TI Processor underneath
- **Toshiba 4B MMC flash ()**
• **WL1831 Ti WiLink** () - Wifi/BT/BTLE radio
• **wm7132** () - bottom port microphone
• **wm7121 ()** - top port microphone
• **tps659120 ()** PMU (dc/dc, linear, brownout, etc)
• **TUSB1211 ()** - USB PHY
• **bq5105 ()** - Qi LiPoly charger
• **CS53L30 ()** - Cirrus Logic CS53L30 Quad-Channel Microphone ADC

This was a fun and challenging teardown revealing some design and engineering behind this early-wave smartwatch.