Synaptics launched the first optical fingerprint scanner on the market in 2018, with a lens-free solution. It was quickly followed by Goodix, also with a lens-free solution. This year, Goodix has launched its second generation optical fingerprint scanner, the first such product to use a lens.

The latest Goodix under-display optical fingerprint scanner has been found in Huawei P30 and P30 Pro, Vivo X23 and NEX S and other smartphones.

This scanner uses optical fingerprint technology that allows integration under the display. The new Goodix technology is radically different from those previously observed. Adding lenses reduces the pixel and CMOS image sensor die areas drastically, while keeping the same scanning area. The sensor die area and cost are much reduced.

Moreover, Goodix has developed a versatile interface component to reduce development time and cost. The sensor and interface component are assembled on an easily-customizable flex to adapt the fingerprint scanner to different smartphones.

The sensor has a resolution of 39,000 pixels, with a pixel density of 5,080ppi. The module's light source is provided by the OLED display. The sensor is connected by wire bonding to the flexible printed circuit and uses a CMOS process.

This reverse costing study provides insight into technological data, manufacturing cost, and selling price of the fingerprint sensor supplied by Goodix. It also compares it with the latest Synaptics fingerprint sensor in Vivo x21 and with the previous version of Goodix’s design.

**COMPLETE TEARDOWN WITH**

- Detailed photos
- Precise measurements
- Material analysis
- Manufacturing process flow
- Supply-chain evaluation
- Manufacturing cost analysis
- Selling price estimate
- Comparison with Synaptics’ FS9500 in Vivo x21 and Goodix’s 2017 design
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Goodix TC2403 (Huawei P30 Pro) vs Synaptics FS9500 (Vivo X21 UD)

Selling Price

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