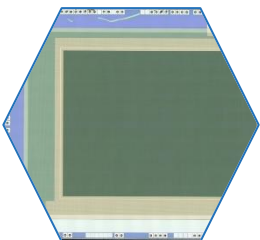
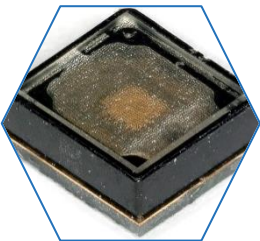




3D Time-of-Flight Module in Meizu 17 Pro

The first 3D ToF camera from Samsung with Lumentum's VCSEL.



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The consumer 3D sensing module market is expected to reach \$8.1B in 2025, up from \$2B in 2019, according to the "3D Imaging & Sensing 2020" report from Yole Développement. In this context, Samsung has entered the Time of Flight (ToF) sensing market by introducing its first near infra-red (NIR) camera found in the Meizu 17 pro's ToF module.

This full reverse costing study has been conducted to provide insights into technology data, the manufacturing cost and selling price of the rear ToF module in the Meizu 17 pro.

The 3D sensing module is packaged in one metal enclosure and includes a new Back-side Illumination (BSI) NIR CMOS Image Sensor (CIS) from Samsung. The sensor features 7 μm pixels and a resolution of 0.3 Mpixels. The ToF uses a vertical cavity surface emitting laser (VCSEL) coming from Lumentum.

A wafer level chip scale packaging (WLCSPP) driver integrated circuit from PhotonIC generates the pulse and drives the VCSEL's power and beam shape.

Along with the complete technical analysis of the 3D depth sensing system, this report analyses the cost and estimates the price for the system. It also includes a technical and cost comparison with the rear 3D sensing system in the Galaxy Note 10+ and the iPad pro.

COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated sales price
- Comparison with ToF in Galaxy Note 10+ and in iPad pro

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AUTHORS

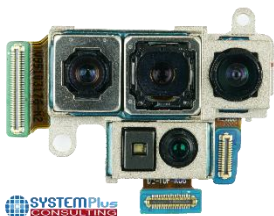


Taha Ayari, PhD is involved in analyzing compound semiconductor devices within Power Electronics and Compound Semiconductors team. Taha holds a PhD in Electrical and Computer Engineering from Georgia Tech Lorraine.



Dr. Youssef El Gmili has joined System Plus Consulting's team in 2019 after ten years passed on high level research and development on microelectronics. He holds a Master Degree in Microelectronics, and a Phd in Physics/Materials Science.

RELATED REPORTS



Samsung Galaxy Note 10+ 3D Time of Flight Depth Sensing Camera Module

Deep analysis of the rear 3D sensing module with Sony's 2nd Generation CIS.

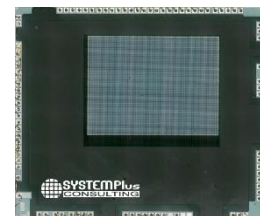
January 2020 - EUR 3,990*



Apple iPad Pro LiDAR Module

The first 3D direct Time-of-Flight (dToF) CMOS image sensor from Sony with dedicated Lumentum VCSEL.

June 2020 - EUR 3,990*

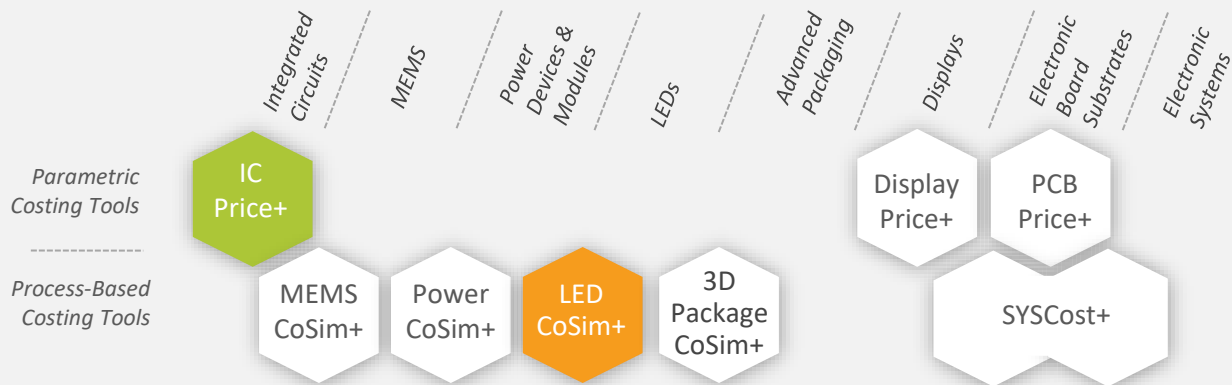


Sony's 3D Time-of-Flight Sensing Solution in the Huawei P30 pro

Deep analysis of the rear 3D sensing module with Sony's CIS and Lumentum's flood illuminator.

February 2020 - EUR 3,990*

COSTING TOOLS



Our analysis is performed with our costing tools IC Price+ and LED CoSim+.

System Plus Consulting offers powerful costing tools to evaluate any process or device, the production cost and selling price, from single chip to complex structures. All these tools are on sale under corporate license.

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The tool performs the necessary cost simulation of any Integrated Circuit: ASICs, microcontrollers, memories, DSP, smartpower...

LED CoSim+

Process-based costing tool to design and evaluate the cost of any LED process flow.

ABOUT SYSTEM PLUS CONSULTING

WHAT IS A REVERSE COSTING®?

Reverse Costing® is the process of disassembling a device (or a system) in order to identify its technology and calculate its manufacturing cost, using in-house models and tools.



CONTACTS

Headquarters
22, bd Benoni Goullin
Nantes Biotech
44200 Nantes
France
+33 2 40 18 09 16
sales@systemplus.fr

Europe Sales Office
Lizzie LEVENEZ
Frankfurt am Main
Germany
+49 151 23 54 41 82
llevenez@systemplus.fr

America Sales Office
Steven LAFERRIERE
Western USA & Canada
+1 310-600-8267
laferriere@yole.fr

Chris YOUUMAN
Eastern USA & Canada
+1 919-607-9839
chris.youuman@yole.fr

Asia Sales Office
Takashi ONOZAWA
Japan & Rest of Asia
+81 80 4371 4887
onozawa@yole.fr

Mavis WANG
Greater China
TW +886 979 336 809
CN +8613661566824
wang@yole.fr

Peter OK
Korea
+82 10 4089 0233
peter.ok@yole.fr

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- **COSTING SERVICES**
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www.systemplus.fr
sales@systemplus.fr

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