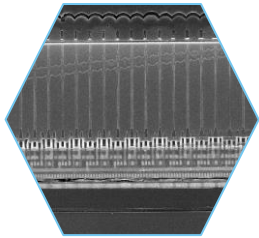




Smartphone Camera Module Comparison 2020 Vol 2: Focus on Samsung

Evolution of Samsung's smartphone camera since 2016 with detailed technical and cost analyses of the Galaxy S20 Ultra, Galaxy S10+, Galaxy S9+, Galaxy S8 and Galaxy S7.

Type of Camera	CM Tech.	OS	AF	VCL (mm)	Lens		Lenses Average (mm)
					Count	Material	
Front	SEMI2	No	Yes	0.7	1	Plastic	0.7
Rear Wide-Angle	SEMI2	Yes	Yes	7.5	1	Plastic	7.5
Rear Telephoto	SEMI2	Yes	Yes	10.0	1	Plastic	10.0
Rear Ultra Wide	SEMI2	Yes	Yes	1.5	1	Plastic	1.5
Front	SEMI2	No	Yes	0.7	1	Plastic	0.7
Rear Wide-Angle	SEMI2	Yes	Yes	7	1	Plastic	7
Rear Telephoto	SEMI2	Yes	Yes	10.4	1	Plastic	10.4
Rear Ultra Wide	SEMI2	Yes	Yes	1.5	1	Plastic	1.5
Front	SEMI2	No	Yes	0.7	1	Plastic	0.7
Rear	SEMI2	Yes	Yes	10.0	1	Plastic	10.0
Rear Telephoto	SEMI2	Yes	Yes	10.0	1	Plastic	10.0
Front	SEMI2	No	Yes	0.7	1	Plastic	0.7
Rear	SEMI2	Yes	Yes	10.0	1	Plastic	10.0
Rear Telephoto	SEMI2	Yes	Yes	10.0	1	Plastic	10.0
Front	SEMI2	No	Yes	0.7	1	Plastic	0.7
Rear	SEMI2	Yes	Yes	10.0	1	Plastic	10.0



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Smartphone market saturation has created a high-competition environment in which cameras play a central role in maintaining the CCM industry's momentum. Driven by the proliferation of cameras per mobile handsets; the global camera module industry reached \$31.3B in 2019, and should attain \$57.0B in 2025, according to Yole Developpement.

The present state-of-the-art of CMOS technology provides better resolution and smaller pixels, low power consumption and cost improvements. In this context, Samsung is a major player among CIS manufacturers and high-end smartphone suppliers. In recent years, we observed that Samsung has rolled-out multi-camera smartphones. Its technical choices are not always linear, showing Samsung is not afraid to innovate and test different solutions to enhance photography.

System Plus Consulting has produced a report completely dedicated to Samsung's technical choices. The report includes a complete technology and cost analysis of the Galaxy S7, Galaxy S8, Galaxy S9+, Galaxy S10+ and Galaxy S20 Ultra camera modules. These analyses include optical and SEM pictures of the CIS die, the lens module, the prism, the voice coil motor

(VCM) and the housing.

The report gives detailed technical information about the cameras, such as module surface, camera volume, number and type of lenses, resolution, pixel size, CIS technology node and others. Moreover, the report includes a summary of the other Samsung smartphone series, including the Galaxy Notes, Galaxy A series, Samsung Fold and Galaxy J.

COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Module cross-sections
- Sensor measurements
- Material analysis
- Manufacturing process flow
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AUTHORS



Alok Bharti has been involved in analyzing smartphones cameras and display. Alok graduated from the Cochin University of Science & Technology (India) with a Photonics Master. He also holds a certificate in business administration from the university, La Sorbonne (Paris, France).



As Head of Department Devices, **Elena Barbarini** is in charge of costing analyses for MEMS ,IC and Power Semiconductors. She has a deep knowledge of Electronics R&D and Manufacturing environment. Elena holds a Master in Nanotechnologies and a PhD in PowerElectronics.



Nicolas Radufe is in charge of physical analysis at System Plus Consulting. He has a deep knowledge in chemical and physical analyses. He previously worked in microelectronics R&D for CEA/LETI in Grenoble and for STMicroelectronics in Crolles.

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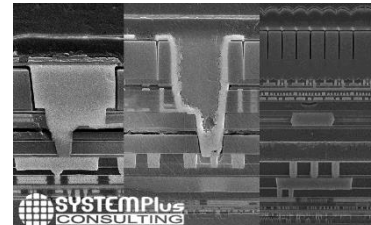
Smartphone Camera Module Comparison 2020 Vol. 1

Overview of the latest flagship smartphone cameras released in 2019 with detailed technical and cost analyses of the Huawei P30, Samsung Galaxy and Apple iPhone.
April 2020 - EUR 6,490*



Mobile Camera Module Comparison 2019

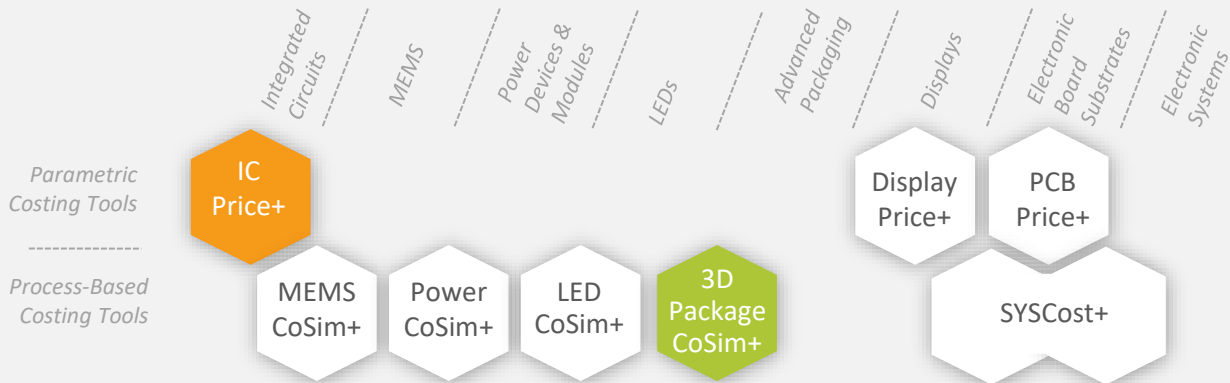
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Physical Analysis and Cost Comparison of 28 CMOS Image Sensors Found in Seven Leading Flagship Smartphone Cameras from Apple, Samsung, Huawei, Xiaomi, Oppo and Vivo.
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COSTING TOOLS



Our analysis is performed with our costing tools IC Price+ and 3D Package 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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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 YOUMAN
Eastern USA & Canada
+1 919-607-9839
chris.youman@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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