

Semiconductors Market Brief

- China - Monthly - July 2020

Hui He

**Principal Analyst, China Semiconductor Intelligence
Service**

askananalyst@omdia.com

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Overall market dynamics

- **BeiDou-3's last global networking satellite has been launched, which means the success of China's BeiDou satellite navigation system and BeiDou network.**
 - BeiDou's satellite system comprises of a space, ground, and user section. The user section can be subdivided into upstream, midstream, and downstream industries.
 - Upstream is the basic component that is mainly composed of a baseband chip, radio frequency (RF) chip, board card, antenna, etc.
 - At present, the 40 nanometer (nm) complementary metal oxide semiconductor (CMOS) is a mature and cost-effective process for navigation and positioning chips. This can provide many advantages such as lower power consumption, lower costs, and lower risks. It will evolve and upgrade to a 22nm CMOS process in the future.
- **The construction of 5G base stations in China has entered a period of rapid development. The originally 600K units are planned to grow to 800K. At present, 400K units have been completed, and China's 5G mobile phone users have exceeded 100 million.**
- **Power semiconductor devices will be widely used in the construction of new infrastructure. Insulated-gate bipolar transistor (IGBT) is the core device for energy conversion and transmission. Shanghai Huahong Grace Semiconductor Manufacturing Corporation (HHGrace) has China's first 12-inch power device foundry production line.**

Industry highlights

- **Huawei's future is uncertain as US-imposed sanctions continue to escalate, which is having a great impact on the wafer foundry business**
 - HiSilicon's 5nm chip is expected to be the last generation in Huawei's own flagship platform. HiSilicon's total shipment volume of 5nm chips is expected to be about 10 million by September 2020 because of the restrictions imposed by the US sanctions on May 15, 2020.
 - SMIC also gradually stopped providing services for HiSilicon wafers.
 - There was a supply shortage of HiSilicon chips for some applications such as video surveillance.
- **Huawei must purchase chips from external partners**
 - Huawei issued an order to MediaTek for 120 million units.
 - Huawei signed a patent license agreement with Qualcomm.
- **The National IC Investment Fund Phase II (please refer to the appendix)**
 - China's National IC Fund Phase II, which was established in October 2019, was officially implemented in March 2020; it has amassed ¥200 billion in financing.
- **China's new national policies to promote the development of the integrated circuit (IC) industry (please refer to the Appendix)**

Huawei overtakes Samsung to become the world's largest brand in terms of mobile phone shipments

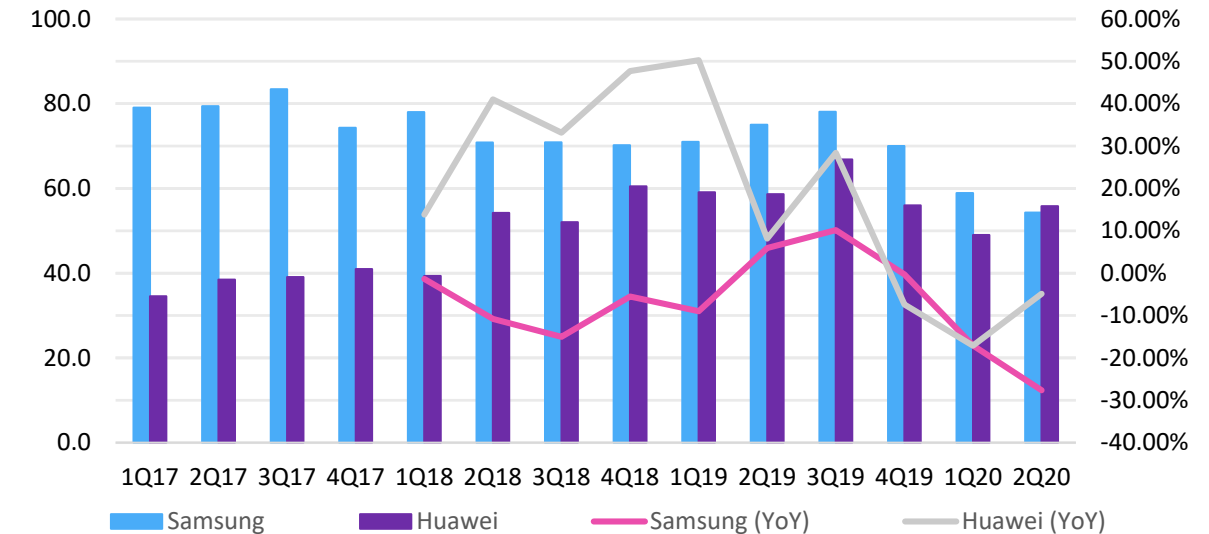
Table 1 : Global smartphone OEM shipment ranking

Rank	OEMs	2Q20		1Q20		2Q19		QoQ	YoY
		Shipment	M/S Shipment	M/S Shipment	M/S Shipment	M/S	M/S		
1	Huawei	55.8	20%	49.0	18%	58.7	18%	14%	-4.9%
2	Samsung	54.3	19%	58.9	21%	75.0	23%	-8%	-27.6%
3	Apple	39.9	14%	38.5	14%	35.3	11%	4%	13.0%
4	Xiaomi	28.9	10%	27.8	10%	32.4	10%	4%	-10.8%
5	OPPO	22.5	8%	20.4	7%	30.8	9%	10%	-26.9%
6	vivo	23.7	8%	19.5	7%	28.4	9%	22%	-16.5%
7	Motorola	7.4	3%	5.5	2%	8.3	3%	35%	-10.8%
8	LG	6.7	2%	5.4	2%	8.9	3%	24%	-24.7%
9	Tecno	5.3	2%	3.5	1%	3.9	1%	51%	35.9%
10	Realme	4.2	2%	6.1	2%	4.5	1%	-31%	-6.7%
	Others	31.1	11%	41.1	15%	45.7	14%	-24%	-31.9%
	Total	279.8	100%	275.7	100%	331.9	100%	1%	-15.7%

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Figure 1: Quarterly smartphone shipments - Huawei vs. Samsung



Source: Omdia

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- In the second quarter of 2020 (2Q20), Huawei's smartphone sales in a single quarter exceeded Samsung's for the first time, making Huawei the world's largest brand in terms of mobile phone shipments.

The major components suppliers for Huawei's flagship smartphone

Table 2: Huawei Mate20X/Mate 30 Pro 5G key component suppliers

Chip type	Mate 20X 5G	Mate 30 Pro 5G
Chipset	HiSilicon	HiSilicon
Memory	Toshiba, SK hynix	Toshiba, SK hynix
Display	BOE Technology	Samsung
Fingerprint	Goodix	Goodix
CIS	Sony	Sony/OmniVision
2G GSM PA	Skyworks	HiSilicon
WCDMA/LTE PA	Qorvo/Skyworks	HiSilicon
5G Sub-6GHz PA	HiSilicon	HiSilicon
Antenna switch	HiSilicon/Qorvo	HiSilicon/Murata
RF frond end	Qorvo/Skyworks	Qualcomm

Source: Omdia

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Table 2: Huawei Mate20X/Mate 30 Pro 5G key component suppliers (continued)

Chip type	Mate 20X 5G	Mate 30 Pro 5G
LNA/RF switch module	HiSilicon	HiSilicon
Filter	Murata	Murata
Duplex	Murata/TDK/Taiyo/Kyocera	TDK/Taiyo/Kyocera
Wireless transceiver	ST	ST
RF transceiver	HiSilicon	HiSilicon
NFC	NXP	NXP
G-sensor	AKM	AKM
Gyro	InvenSense	InvenSense
Pressure sensor	Bosch	Bosch
Wireless charger IC	ST	ST

Source: Omdia

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The major components suppliers for Huawei's flagship smartphone

Table 2: (continued)

Chip type	Mate 20X 5G	Mate 30 Pro 5G
Battery management IC	Halo Micro	Halo Micro
Audio PA	Cirrus Logic	Cirrus Logic

Source: Omdia

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- The semiconductor device suppliers that Huawei buys from are increasingly inclined toward European and Japanese companies.
- Huawei has been able to achieve self-sufficiency for its main chip package and some key RF components.
- It is gradually increasing its adoption of domestic semiconductor suppliers (e.g., Goodix, OminiVision, Halo Micro).

Appendix

China's National IC Fund Phase II

Table 3: China's National IC Fund Phase II investment list
(millions of yuan)

Company name	Investment date	Amount (millions of yuan)	Major products
UNIS (Spreadtrum and RDA)	March 17, 2020	2,250	System-on-chip (SoC) and RF frontend (RFFE) in mobile devices, the Internet of Things (IoT), connectivity, security, and set-top boxes (STBs)
Telink	March 26, 2020	27	Bluetooth, Zigbee, low-power wireless personal area networks (LoWPANs), and low-power 2.4Gb
SMIC	May 16, 2020	10,555	Advanced process technology, especially in SMIC South
SMIC	July 7, 2020	3,517.5	Advanced process technology, especially in SMIC South

Source: Omdia

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China's central government's IC industry incentive policy

Table 4: Policy

Policy	Contents
IPO	Supports eligible enterprises in listing on the science and technology innovation board and the growth enterprise market. Also, speeds up the listing audit process
Financing	Encourages enterprises that meet the requirements to issue various bonds and bills. Also, speeds up medium- and long-term loan support for such enterprises
R&D	Supports the R&D of qualified enterprises with the national key R&D plan
Education	Establishes IC as a first-class discipline

Source: Omdia

Table 5: Import preferences

Process	Enterprise	Commodity
<65nm	Produce logic, memory	
<250nm	Special process (mask, >8" silicon producers)	Raw materials, consumables, special building materials and supporting system for purification room, IC product equipment spare parts
<500nm	Compound IC manufacturers and advanced packaging and testing enterprises	Raw materials, consumables

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China's central government's IC industry incentive policy

Table 6: Comparison

Header row	Header row	Header row	Header row
<28nm	Ten years tax exemption	<65nm <130nm	Five years tax exemption and five years of half tax Two years tax exemption and three years of half tax
Key IC and software enterprises	Five years tax exemption followed by a tax rate of 10%	Key IC and software enterprises	Two years tax exemption, three years of half tax followed by tax rate of 10%

Source: Omdia

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Appendix

Further reading

[Mobile Phones & Electronics Market Tracker - China](#) (June 2020)

[OEM Semiconductor Spend Tracker](#) (July 2020)

[Application Market Forecast Tool AMFT - China Local Design](#) (July 2020)

[IC Design Industry Market Tracker - China](#)

Author

Hui He, Principal Analyst, China Intelligent Service
askananalyst@omdia.com

Appendix

Omdia Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help you. For more information about Omdia's consulting capabilities, please contact us directly at consulting@omdia.com.

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Asia Pacific

E: customersuccess@omdia.com

08:00 – 18:00 GMT + 8