

Semiconductors Market Brief - China - Monthly - May 2020

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Overall market dynamics

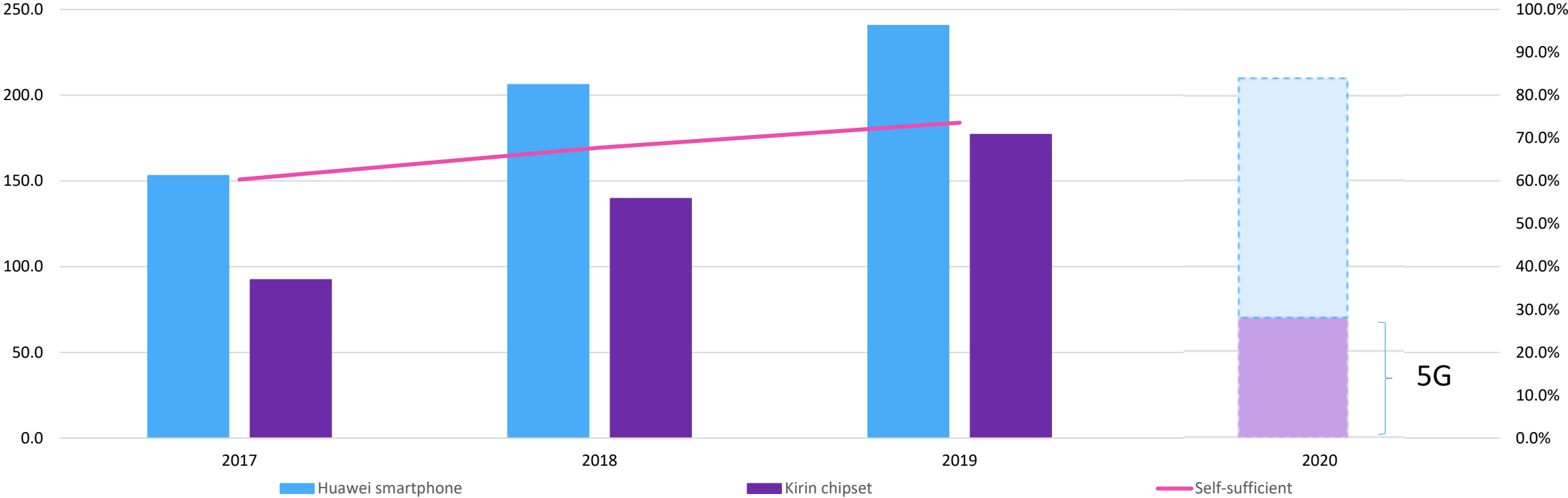
- According to SMIC's financial report for the first quarter of 2020 (1Q20), its revenue was US\$905.9 million, an increase of 35.3% year-over-year (YoY). At the same time, SMIC announced the mass production of the Kirin 710 LTE SoC (14nm), a smartphone platform, two years ago. This shows that SMIC has the capacity to mass-produce with the 14nm process. In 1Q20, the 14nm fin field-effect transistor (FinFET) contributed 1.3% revenue share.
- The Bureau of Industry and Security (BIS) announced its sanctioning of Huawei and HiSilicon's semiconductor business, mainly for equipment using US technology and electronic design automation (EDA) tools. Therefore, TSMC's 5nm and 7nm production lines will suspend the OEM business for HiSilicon. Additionally, Synopsys, Cadence, and Mentor can no longer provide the latest EDA tools to HiSilicon.
- OPPO (China's second smartphone OEM) is now actively developing its own chip design capability, including seeking top engineering talents from UNISOC and MTK. The purpose is to further improve the supply chain capability for smartphones.
- GLOBALFOUNDRIES's Chengdu fab (0.13–0.18 μ m) has completely shut down. The company is only focusing on another fab with 22nm fully depleted silicon-on-insulator (FD-SOI) technology.
- With the deployment of new infrastructure, the Internet of Things (IoT) has entered a period of rapid development. Cat-1 and NB-IoT have become mainstream communication technologies, and the integration with blockchain technology has become the basis for building the IoT ecosystem and realizing currency digitalization.
- CXMT, one of the leading DRAM integrated device manufacturers (IDMs) in China, signed the license with Rambus to obtain DRAM technology authorization.
- CXMT recently started its 19nm process mass production and its products are aimed at the embedded market as well as the PC DRAM module market.

Industry highlights

- **The BIS announced plans to protect US national security by restricting Huawei's ability to use US technology and software to design and manufacture its semiconductors abroad. (May 15, 2020)**
 - Semiconductor designs by HiSilicon are the direct product of certain US Commerce Control List (CCL) software and technology.
 - Chipsets, when produced from the design specifications of Huawei or an affiliate on the entity list by HiSilicon, are the direct product of certain US CCL software and technology.
- **HiSilicon has become one of the leading smartphone and base station core chip design companies, especially for 5G technology. Meanwhile, TSMC is the only available supplier of advanced semiconductor technology.**
 - Omdia estimates that Huawei and HiSilicon's chipset self-sufficient penetration has already exceeded 70%.
 - At present, HiSilicon has launched 5G SoC, as well as adopted 7nm and 5nm technologies.
- **National IC Investment Fund Phase II (please see 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.

Industry highlights (continued)

Figure 1: Huawei smartphone and Kirin chipset shipment trend



Source: Omdia

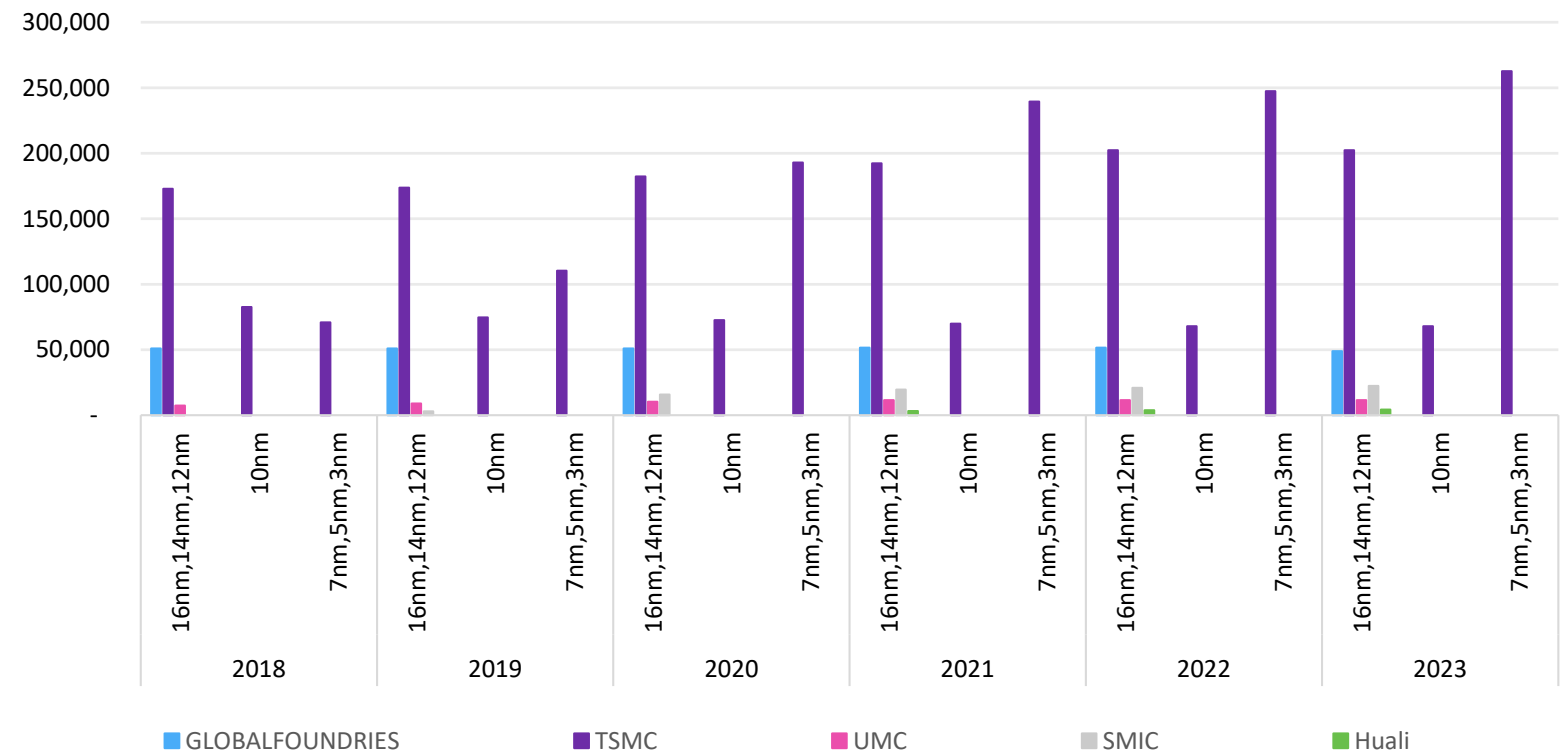
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Key findings: Advanced foundry technology allocation

- TSMC is the only foundry capable of providing processes at above 10nm in the world.

Figure 2: Total pure play foundry factory capacity and usage at feature sizes 0.016-micron and below



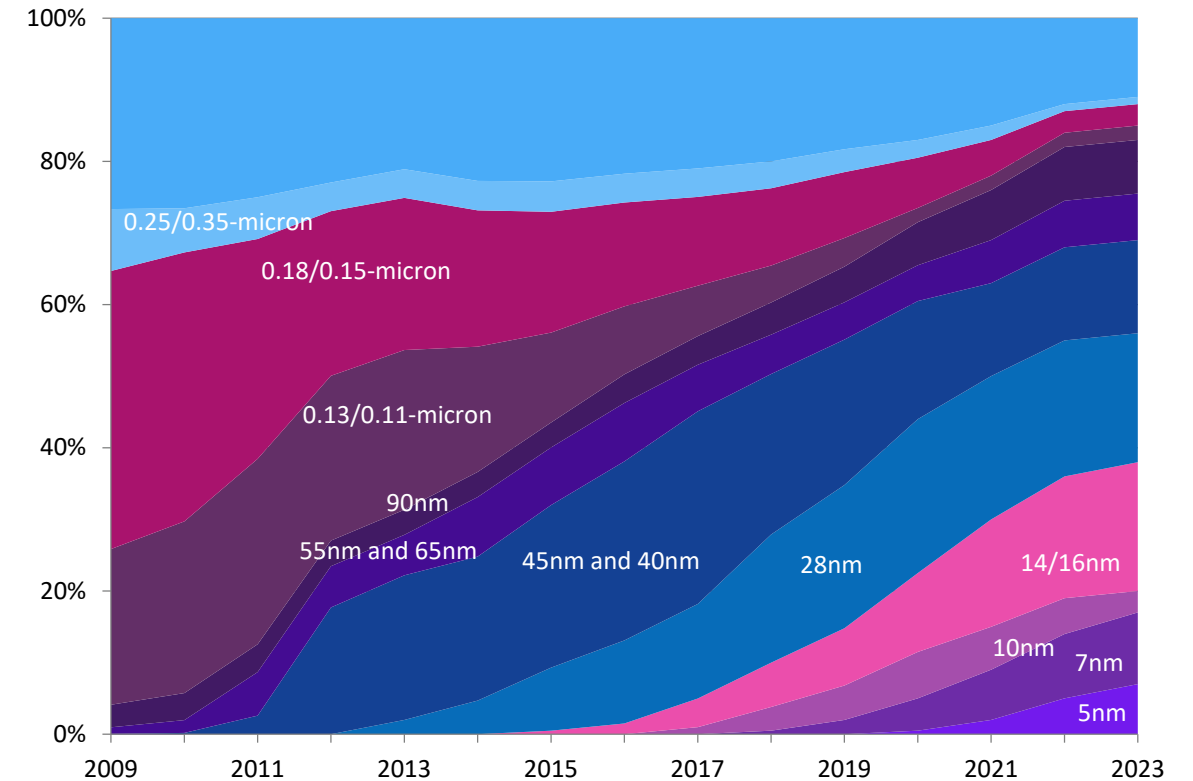
Source: Omdia

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China's fabless semiconductor technology migrations

- Leading Chinese fabless semiconductor companies must still use TSMC to manufacture advanced technology.
 - In 2019, HiSilicon became TSMC's largest client for 7nm technology, surpassing both Apple and Qualcomm.
 - SMIC has started shipping 14nm technology and is anticipated to ship 12nm technology in the third quarter of 2020 (3Q20).
 - Next-generation 7nm and 5nm technologies for artificial intelligence (AI) and 5G are currently being manufactured outside of China.

Figure 3: Percentage of Chinese IC design companies by process revenue, 2009–23



Source: Omdia

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Appendix

Appendix: China's National IC Fund Phase II

Table 1: China's National IC Fund Phase II investment list
(millions of yuan)

Company name	Investment date	Amount (¥ million)	Major products
UNIS (Spreadtrum+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 South SMIC

Source: Omdia

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Appendix

Further reading

Mobile Phones & Electronics Market Tracker - China

OEM Semiconductor Spend Tracker

Application Market Forecast Tool AMFT - China Local Design

IC Design Industry Market Tracker - China

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