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OVERVIEW OF GLOBAL SMART DEVICE SOC MARKET

Introduction of Smart Device SoC

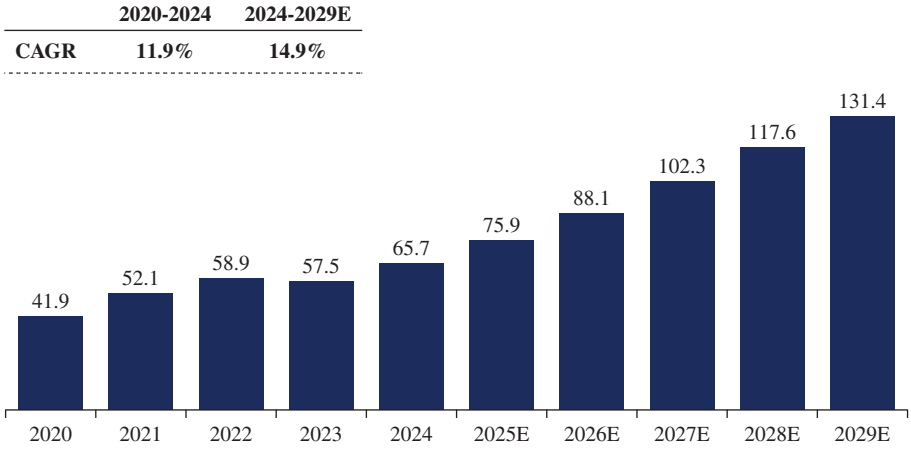
Smart device refers to the device equipped with operating systems, processing capabilities, and network connection functions, capable of running multiple applications and interacting with users. Typical smart device products include smart TV, smart set-top boxes, smart speakers, smart automobiles, smartphones, tablets, and wearable devices. Smart device SoC is the key hardware foundation, determining the functional boundaries, performance, energy efficiency of smart devices. It provides core computing power for smart devices, supporting the operation of complex operating systems and applications. The AI computing that can be integrated enable devices to possess edge AI processing capabilities, realizing experiences such as voice recognition, image processing, and real-time translation. SoC directly determines the response speed, battery life performance, multitasking capability, and interactive experience of smart devices, and it is the key engine driving the continuous evolution of smart devices.

Value Chain of Smart Device SoC Market

The upstream of the smart device SoC market focuses on providing the essential components and services needed for SoC design and production. The midstream is the core of the value chain, where SoC providers are primarily responsible for the research and development, design, and sales of the SoCs. In addition, the downstream focuses on integrating these SoCs into smart devices and delivering them to end users. This involves smart device brands and OEMs (Original Equipment Manufacturers), who work with telecom operators to distribute products to end users.

Market Size of Smart Device SoCs

Market size of smart device SoCs globally, in terms of revenue
USD billion, 2020-2029E

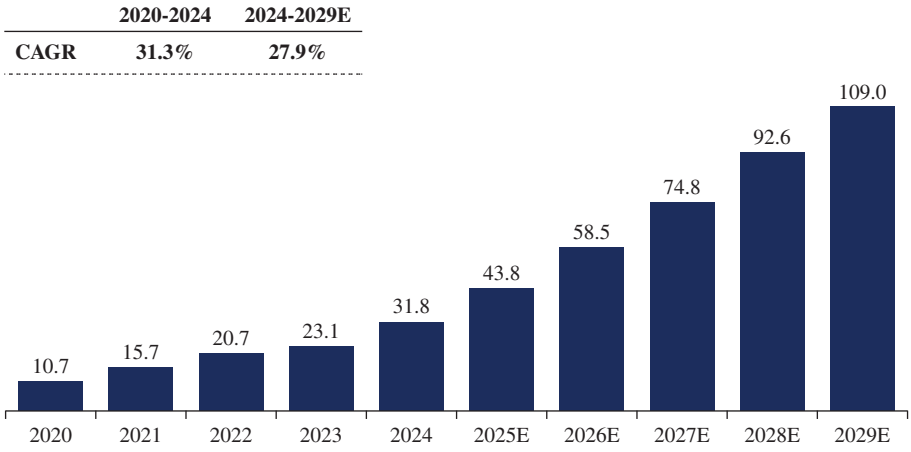


Source: Public Information; Frost & Sullivan

The advancement of AI algorithms represented by large models promotes the rapid adoption of AI models on devices. The launch of generative AI accelerates the migration of AI inference models to the edge, driving AI models to evolve toward lightweight, efficient, and customized forms. With the rapid growth of smart devices equipped with AI computing power, the demand for edge AI computing on low-power edge devices will also significantly increase. AI SoC, through integrating NPU and combining algorithm-IC collaborative optimization, can effectively unleash real-time inference and decision-making capabilities on the edge side, serving as important infrastructure for the penetration of AI on devices.

A smart device AI SoC is a SoC optimized specifically for AI workloads on smart devices, which usually involve matrix operations, convolutional neural networks, and other AI tasks, providing highly efficient parallel processing. Building on traditional smart device SoCs, smart device AI SoCs integrate modules designed for AI computation, making them particularly well suited for compute-intensive tasks. The AI accelerator, typically a NPU, is the key element that sets a smart device AI SoC apart from a smart device SoC.

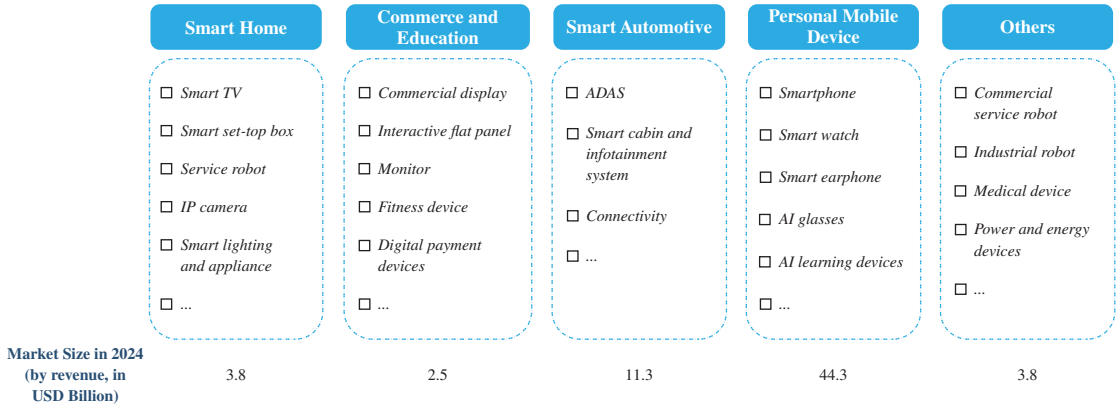
Market size of smart device AI SoC globally, in terms of revenue
USD billion, 2020-2029E



Source: IDC; Omdia; Frost & Sullivan

Applications of Smart Device SoCs

Smart device SoCs are mainly applied in smart home, commerce and education, automotive, personal mobile devices, and other applications such as industrial, medical, and power and energy.



Source: IDC; Omdia; TrendForce; Frost & Sullivan

Smart Home Applications

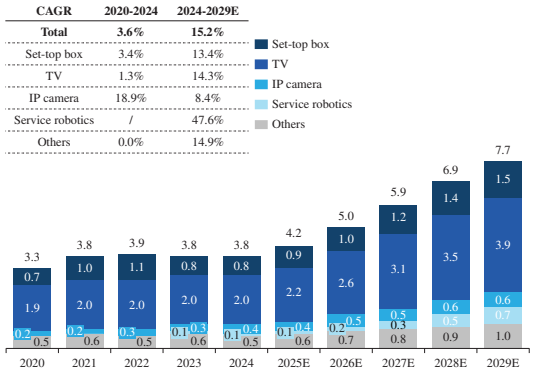
Market overview and size

Smart home devices include smart TVs, smart set-top boxes, IP cameras, service robotics, and others such as smart lighting and appliance, smart projectors, and smart doorbells. While AI advancements are continuously refining the viewing experience, smart home devices are expected to experience an increment. Among them, the global smart TV shipments are expected to grow from 206.1 million in 2024 to 248.3 million in 2029, with a CAGR of 3.8% from 2024 to 2029. And the global smart set-top box shipments are expected to grow from 150.0 million to 210.4 million in 2029, with a CAGR of 7.0% from 2024 to 2029. Meanwhile, the global consumer-grade IP camera market continues to grow steadily. The global shipments of consumer-grade IP camera increased from 76.4 million in 2020 to 158.0 million in 2024, and are expected to further grow to 301.3 million in 2029, with a CAGR of 13.8% from 2024 to 2029. With continuous innovation in AI and robotics technology, the home scenario has become one of the important landing scenarios for smart robots. Smart home service robot product categories continue to be enriched, expanding from the previous sweeping robot category to pool cleaning robots, lawn mowing robots, companion robots, and humanoid robots with general intelligence capabilities. The global shipments of smart home service robots are expected to rapidly increase from 23.0 million in 2024 to 77.9 million in 2029, with a CAGR

of 27.6% from 2024 to 2029. Moreover, with the development of wireless communication technologies such as 5G and Wi-Fi 7, connections between devices have become faster and more stable, laying the foundation for the popularization of smart appliances and lighting.

Market size of smart home device SoC globally by end device, in terms of revenue

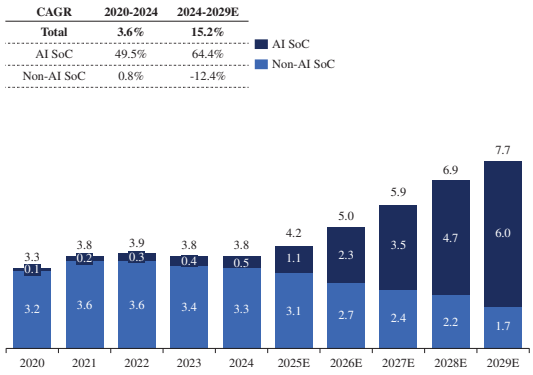
USD billion, 2020-2029E



Source: IDC; Omdia; Frost & Sullivan

Market size of smart home device SoC globally by type of SoC, in terms of revenue

USD billion, 2020-2029E



Source: IDC; Omdia; Frost & Sullivan

The penetration rate of AI SoCs in terms of revenue in smart home devices is expected to increase from 13.2% in 2024 to 77.9% in 2029.

Driving factors and development trends

Growing demands for intelligent experiences in home scenarios driven by popularity of IoT and AI technology. On the supply side, IoT enables various devices to realize interconnection, and AI endows devices with autonomous perception, learning, and decision-making capabilities. The combination of the two drives the continuous expansion of home smart device types with increasingly diversified application scenarios. On the demand side, consumers not only hope to remotely control home devices through voice or mobile devices, but also expect devices to realize automatic coordination with each other. Such demand drives home devices to rely on higher computing power, lower power consumption, and stronger connectivity, which are exactly the core capabilities provided by SoCs.

Increasingly improved home network infrastructure and continuous innovation of streaming content. In terms of network infrastructure, the improvement of global penetration rates of optical fiber, 5G, and gigabit broadband enables streaming media application, driving devices such as smart set-top boxes, smart TV, and projectors to upgrade toward higher resolution and increasing intelligent functions. Large screens are still the core carrier for users' living room entertainment, thereby driving the demand for high-performance multimedia SoC. The global smart set-top box penetration rate reached approximately 49.0% in 2024, with over 90% penetration rate in the Chinese market and less than 40% in the rest of the world, indicating significant untapped potential and strategic opportunities for expansion.

The application of AI on devices drives faster growth of AI SoC demand. As AI application gradually extend from the cloud to devices, smart devices at home increasingly need to complete AI tasks locally, such as voice recognition, image processing, and human-computer interaction, to enhance real-time performance and privacy protection capabilities. This transformation significantly raises devices' demand for AI computing power, and AI SoC is the core hardware carrier to meet this demand. Compared with traditional SoC, AI SoC integrates dedicated neural network acceleration units, which can efficiently run complex algorithms under power-constrained conditions, directly determining the experience level of smart home devices.

Continuous innovation of edge AI applications. Leading smart device providers are continuously accelerating the landing of AI application around smart home devices, such as realizing natural interaction through voice assistants, using AI algorithms for content recommendation, or introducing intelligent optimization in picture quality and sound effects. These innovations further enhance users' reliance on and stickiness to large-screen devices, thereby driving the demand for SoC with stronger AI computing power and connectivity, and promoting smart TV and OTT devices to continuously occupy an important position in smart home ecosystem.

The importance of operators in global smart home device market continues to increase. Operators usually have a large user base, which gives them natural scale advantages when deploying smart home devices. Operators are not only sales channels for smart home devices, but also key hubs connecting users, devices, content, and services. Through their own network infrastructure, they connect smart devices to cloud services and provide one-stop solutions including broadband, 5G, and various value-added services. This deep integration makes operators play an irreplaceable role in shaping users' smart home experiences.

Commerce and Education Applications

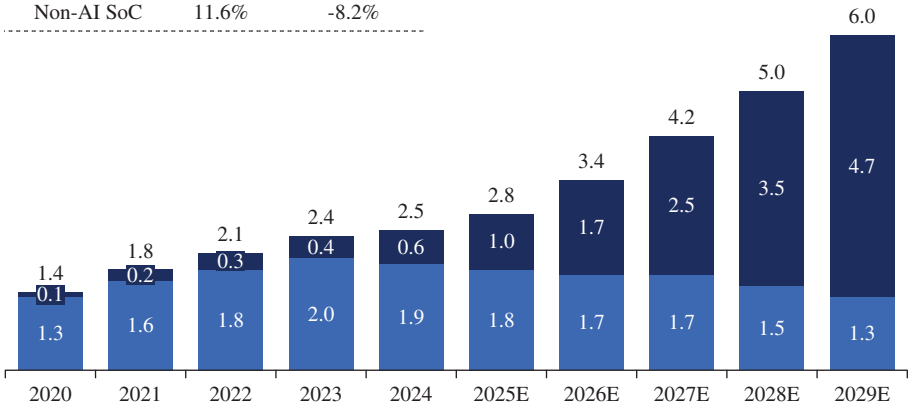
Market overview and size

Commerce and education scenarios have the most diversified smart device categories, including smart conferencing system, smart commercial display, smart interactive panels for education, smart fitness device, smart payment device, smart advertising device, smart access and attendance system, and smart control panel. The global commercial smart device shipments increased from 209.9 million in 2020 to 310.0 million in 2024, and are expected to further grow to 461.0 million in 2029.

Market size of smart device SoC for commerce and education globally by type of SoC, in terms of revenue

USD billion, 2020-2029E

CAGR	2020-2024	2024-2029E
Total	**15.6%**	**19.1%**
AI SoC	56.5%	50.9%
Non-AI SoC	11.6%	-8.2%



Source: Omdia; Frost & Sullivan

The penetration rate of smart device AI SoCs in terms of revenue in the commerce and education sector is expected to increase from 24.0% in 2024 to 78.3% in 2029.

Driving factors and development trends

With the continuous pursuit of intelligent and personalized customer experience, the smart device market centered on SoC is ushering in unprecedented development opportunities. In retail field, the popularization of smart payment devices greatly improves transaction efficiency and user experience by integrating AI recognition and multi-modal payment functions. In fitness industry, smart fitness devices realize real-time monitoring of exercise data, personalized course recommendations, and immersive interactive experiences through SoC. In advertising industry, smart advertising devices use the edge computing and AI capabilities of SoC to achieve precise delivery and interactive marketing. The vigorous development of these application scenarios together constitutes the main driving force of the commerce and education smart device SoC market.

Enterprises accelerating digital transformation has become a key strategy to enhance core competitiveness. This trend directly drives strong demand for smart conferencing systems, smart commercial displays, and smart control panels. SoC, as their core, provides powerful computing, graphics processing, and AI capabilities, enabling devices to support complex functions such as high-definition video conferencing and multi-point touch interaction. In the future, this market will continue to evolve toward high integration, edge AI, low power consumption, and integrated software and hardware, to meet the growing needs for digital and intelligent transformation.

Automotive Applications

Market overview and size

The trends of electrification, connectivity, and intelligence in automobiles drive the rapid growth of the global automotive electronics market. The global smart automobile sales increased from 41.2 million in 2020 to 65.7 million in 2024, with a CAGR of 12.4% from 2020 to 2024, and are expected to further grow to 95.8 million in 2029, with a CAGR of 7.8% from 2024 to 2029. Smart automobiles have higher requirements for the computing and data processing capability of SoC, as well as for image and video processing capability, bringing new development opportunities to the smart device SoC market.

In automobile, SoCs are widely applied in Advanced Driver Assistance Systems, smart cabin and infotainment systems, communication and connectivity, body control, powertrain, and transmission. For smart cabin, SoC empowers smart cabin systems to realize automatic adjustment of key cabin elements such as seats, air conditioning, and environment settings, as well as safety functions such as driver monitoring, through multi-screen interaction, multi-modal input, and AI recognition technologies, thereby improving comfort, personalized experience, and safety. For smart infotainment systems, SoC can integrate high-performance CPU, GPU, multimedia accelerators, and NPU modules, supporting high-definition video decoding (4K/8K), 3D graphics rendering, multi-screen display, and voice assistant functions,

thereby realizing multimedia processing and high-performance computing, voice interaction and natural language processing, intelligent human-computer interaction, real-time data processing, and edge computing.

Seamless communication and reliable connectivity are becoming the core driving force for the evolution of the smart automotive SoC market. As vehicles increasingly depend on real-time data exchange to enable functions, the design and performance requirements of SoC are being redefined. This is reflected in the growing need for ultra-low-latency communication channels, multi-protocol compatibility, and high-bandwidth data processing within the vehicle. Future smart automotive SoCs will not only handle local computation but also serve as high-speed communication hubs, supporting synchronized data flows from sensors to cloud platforms, enabling vehicle-to-vehicle and vehicle-to-infrastructure interactions, and delivering uninterrupted infotainment experiences across multiple devices. These trends push SoCs toward higher integration of communication modules, stronger AI-driven network optimization, and more efficient power management.

In terms of revenue, the global smart automotive SoC market increased from USD3.4 billion in 2020 to USD11.3 billion in 2024, with a CAGR of 35.0% from 2020 to 2024, and will further grow to USD39.2 billion in 2029, with a CAGR of 28.2% from 2024 to 2029. Particularly, in terms of revenue, the global smart cabin and infotainment SoC market increased from USD1.0 billion in 2020 to USD4.2 billion in 2024, with a CAGR of 44.9% from 2020 to 2024, and is expected to further grow to USD14.3 billion in 2029, with a CAGR of 27.6% from 2024 to 2029.

Driving factors and development trends

Increasing smart automobiles. Driven by consumers' growing demand for smart functions and automakers' pursuit of differentiated products in an increasingly competitive environment, smart automobile functions are rapidly expanding from high-end models to the mass market. Continuous innovation (including algorithm optimization and system architecture upgrades) has greatly reduced the cost of smart systems. Moreover, improvements in mass production capabilities and collaboration across the value chain promote the virtuous cycle of the entire industry.

Rising consumer demand for immersive experiences in vehicle systems. As users expect the in-vehicle environment to provide immersive and personalized experiences, the design and performance requirements of SoC are undergoing revolutionary changes. Future Smart automotive SoC become central brains integrating multi-modal perception, high-performance AI processing, and ultra-high-speed data transmission. They will support the synchronous display and interaction of multiple cockpit screens, realize AR navigation combined with real scenarios, and provide millisecond-level responsive intelligent voice services.

Increasing importance of automotive intelligence. As the automobile industry moves toward electrification and intelligence, the rapid advancement of vehicle electrification has placed higher demands on the speed and efficiency of signal transmission between components.

Traditional MCUs face challenges such as complex electronic and electrical architectures and massive data processing. SoC, with numerous advantages such as improved computing power, increased data transmission efficiency, low latency, reduced IC usage, and more flexible software upgrades, has become the mainstream trend in automotive ICs.

Personal Mobile Device Applications

Market overview and size

Smart personal mobile devices include smartphones, personal computers, tablet computers, smart watches, smart earphones, XR devices, and AI glasses. The global smart personal mobile device shipments increased from 1.4 billion in 2020 to 1.5 billion in 2024 and are expected to further grow to 2.0 billion in 2029. The smart personal mobile device market is highly fragmented, with continuous product form innovations.

In terms of revenue, the global smart personal mobile device SoC market increased from USD29.9 billion in 2020 to USD44.3 billion in 2024, with a CAGR of 10.3% from 2020 to 2024, and will further grow to USD71.9 billion in 2029, with a CAGR of 10.2% from 2024 to 2029. Compared with traditional smart devices such as smartphones and personal computers, the smart wearable device sector demonstrates a stronger growth in the forecast period. In terms of revenue, the market size of global smart wearable device SoCs is expected to rapidly increase to USD25.0 billion in 2029, representing a CAGR of 15.8% from 2024 to 2029. The continuous emergence of new product forms drives steady growth in SoC demand. For SoC providers, those with a rich product portfolio, general-purpose products, and technical capabilities have more opportunities to seize the growth opportunities brought by product form innovation and shipment surge in smart personal mobile device market.

Driving factors and development trends

Product innovation. Smart personal mobile devices are evolving toward more diversified and intelligent directions, such as AI learning devices, XR (Extended Reality) devices, and AI glasses. This evolution directly drives the demand for highly integrated, low-power, and powerful AI computing SoC. Therefore, SoC suppliers are actively developing customized ICs with higher heterogeneous computing capabilities and better energy efficiency ratios, to empower the next generation of smart personal mobile devices.

Widespread application of AI technology. AI is shifting from the cloud to the device, enabling smartphones, wearables, and smart earphones to directly perform data processing and decision-making locally. This implementation of end-side AI greatly improves product response speed, data privacy protection, and offline working capabilities, thereby generating urgent demand for SoC capable of supporting powerful AI computing.

Cost Structure of Smart Device SoCs

The major costs of smart device SoCs primarily consist of raw material costs and processing fees. Generally, the raw material costs account for 65% to 80% of the total costs for smart device SoCs, while the processing fees account for 15% to 25% of the total costs. The major raw material that a fabless smart device SoC company procure is processed wafers provided by foundries. Historically, from 2020 to 2024, the average price of processed wafers for smart device SoCs witnessed an increasing trend in 2021 and 2022 jointly due to a short-term supply shortage of processed wafers globally, while the average price began to decrease in 2023 and 2024 as a result of the recovery of the overall production capacity of foundries.

COMPETITIVE LANDSCAPE OF GLOBAL SMART DEVICE SOC MARKET

Rankings

In terms of related revenue in 2024, Our Company ranked the eleventh among all global smart device SoC providers, and ranked the fourth among all global smart device SoC providers who focused on providing SoCs and ranked the second among Chinese SoC-focused companies, with a market share of 1.2%. In terms of related revenue excluding revenue from smart personal mobile devices, Our Company ranked the third among all global smart device SoC providers who focused on providing SoCs.

Leading SoC-focused companies in global smart device SoC market, in terms of related revenue (2024)

Ranking	Provider	Related Revenue (USD billion)	Market Share
1	Company A	20.8	31.6%
2	Company B	7.2	10.9%
3	Company C	2.0	3.1%
4	Our Company	0.8	1.2%
5	Company D	0.7	1.1%

Source: Public Filings; Expert interview; Frost & Sullivan

Leading Chinese SoC-focused companies in global smart device SoC market, in terms of related revenue (2024)

Ranking	Provider	Related Revenue (USD billion)	Market Share
1	Company C	2.0	3.1%
2	Our Company	0.8	1.2%
3	Company G	0.5	0.7%
4	Company H	0.4	0.6%
5	Company I	0.3	0.5%

Source: Public Filings; Expert interview; Frost & Sullivan

Note: Company A is a public company listed on the NASDAQ and it is founded in 1985 and headquartered in the United States. It is a technology company specializes in the research and development of key components and solutions for modern electronics.

Company B is a public company listed on the Taiwan Stock Exchange and it is founded in 1997 and headquartered in Taiwan, China. It specializes in the design of semiconductor chips for wireless communications, AI computing, and other advanced technologies.

Company C is a private company founded in 2001 and headquartered in Chinese mainland. It specializes in communication semiconductor design, providing comprehensive solutions in chip design, wireless communication, and system integration across all major technologies.

Company D is a public company listed on the Tokyo Stock Exchange and it is founded in 2015 and headquartered in Japan. It is a global company that designs and sells SoC, providing custom semiconductor solutions for a wide range of applications, including automotive, data centers, and consumer electronics.

Company G is a public company listed on the Shanghai Stock Exchange and it is founded in 2015 and headquartered in Chinese mainland. It is dedicated to R&D in ultra-low power, intelligent audio-visual interaction, and wireless connectivity technologies.

Company H is a public company listed on the Shanghai Stock Exchange and it is founded in 2001 and headquartered in Chinese mainland. It focuses on mobile Internet and digital multimedia chip design, delivering professional SoC solutions for personal mobile information terminals.

Company I is a public company listed on the Shenzhen Stock Exchange and it is founded in 2017 and headquartered in Chinese mainland. It is dedicated to providing SoCs and solutions for edge devices across various scenarios.

In the smart home device sector, which covers smart devices such as smart set-top boxes, smart TVs, and other diversified AIoT devices, in terms of related revenue in 2024, Our Company ranked the second among global smart device SoC providers, with a market share of 17.7%. In particular, in terms of related revenue in 2024, Our Company also ranked the first among all global smart set-top box SoC providers, with a market share of 31.5%, and ranked the second among all global smart TV SoC providers, with a market share of 16.8%.

Leading companies in global smart home device SoC market, in terms of related revenue (2024)

Ranking	Provider	Related Revenue (USD billion)	Market Share
1	Company B	1.5	39.5%
2	Our Company	0.7	17.7%
3	Company E	0.5	12.1%
4	Company F	0.3	8.2%
5	Company A	0.2	4.5%

Source: Desktop research; Expert interview; Frost & Sullivan

Note: Company E is a public company listed on the Taiwan Stock Exchange and it is founded in 1987 and headquartered in Taiwan, China. It is a fabless semiconductor company specializes in creating integrated circuits for a variety of applications, including networking, computer accessories, and connected devices.

Company F is a public company listed on the Taiwan Stock Exchange and it is founded in 1997 and headquartered in Taiwan, China. It is a global technology company that specializes in designing and delivering innovative semiconductor solutions for intelligent imaging and smart display applications.

Entry Barriers and Key Success Factors of Global Smart Device SoC Market

Leading technological R&D and innovation capabilities. SoCs often integrate a large number of IP modules, and the complexity of IP chaining and combination is extremely high. In addition, SoC providers need to possess overall integration capabilities for complex systems. Some ICs also require advanced process technology to meet performance and energy efficiency demands. Leading providers, through years of R&D investment, have accumulated profound technical expertise and developed high-performance, low-power, and miniaturized SoC products. Furthermore, leading providers own rich patent portfolios and proprietary technologies, covering IC design, architecture optimization, and AI algorithm integration, forming high technical barriers. At the same time, SoC providers with self-developed NPU modules have a first-mover and leading advantage in the explosive growth wave of AI edge application.

Flexible and reusable self-developed IP portfolio. Leading smart device SoC providers own diversified IP assets, including processor cores, AI accelerators, connectivity modules, and power management units. They are able to quickly respond to diverse and continuously updated smart device product demands through flexible combinations. The IP reuse strategy not only extends the commercial lifecycle of IP and reduces R&D costs, but also enhances product adaptability through technology reuse. At the same time, flexible use of IP portfolios allows providers to optimize design processes and shorten time-to-market, thereby seizing opportunities in rapidly changing markets and gaining stronger commercial growth capabilities.

Customer resources, brand, and product recognition. Through long-term cooperation and providing leading, reliable SoC products, leading smart device SoC providers have established stable partnerships with numerous top downstream customers. In contrast, new entrants often lack top downstream customer resources and successful cases, and introducing SoC products into top customers requires a lengthy product verification and certification cycle. In addition, during new product proof-of-concept, R&D, and commercialization processes, leading providers can cooperate with existing top customers, support customers' forward-looking development, and jointly explore new product function definitions and new demands for smart device SoC products, enabling leading providers to gain new business opportunities earlier.

Global marketing, sales, and service network. Due to the fragmented nature of the global market, where each country has its own unique set of telecom operators, it is even more critical for leading smart device SoC market participants to have a well-established global presence. Global leading smart device SoC market participants have established global marketing, sales, and service networks. By having these networks, companies can quickly capture and respond to customer needs in different regions worldwide. Building such global networks requires long-term resource investment, market insight, and strong relationships with global partners, posing high time and cost barriers for new entrants.

Lowered cost resulted from scale advantage. The SoC market is highly dependent on economies of scale. Leading providers achieve continuous cost dilution through large-scale shipments, thereby forming significant bargaining power in wafer procurement, IP licensing, and EDA tool usage. At the same time, scale also brings ecosystem effects, such as improved customer stickiness and prioritized support from industry chain resources. Entrants lacking scale advantages not only find it difficult to obtain cost advantages, but also face higher per-unit R&D and tape-out costs, forming significant entry barriers.

Strong capital advantage to support continuous innovation. The IC industry experiences cyclical fluctuations, which makes a strong financial position and profitability even more critical for SoC providers. SoC R&D is characterized by high investment and long cycles, with advanced process tape-out costs soaring. Continuous and sufficient capital investment supported by strong profitability is not only a prerequisite for maintaining product iteration pace, but also key for providers to sustain leadership. Meanwhile, strong financial strength allows providers to maintain stable investment during industry cycles, maintaining the stability of the R&D team, avoiding R&D interruptions, and further widening the gap with other providers.

Top-tier talent advantage. SoC design relies on top-tier engineering talent, covering architecture design, IP development, physical implementation, and hardware-software co-optimization. Leading providers, by virtue of industry position and financial strength, are able to attract and continuously retain high-level talent teams, forming continuously iterative knowledge and experience accumulation. In contrast, new entrants face obvious disadvantages in talent attraction, making it difficult to quickly build and maintain R&D teams with a complete capability structure.

OVERVIEW OF GLOBAL COMMUNICATION AND CONNECTIVITY IC MARKET

Introduction of Communication and Connectivity ICs

Communication and connectivity ICs are integrated circuit products enabling information transmission and exchange between electronic devices. They integrate RF, baseband, encoding/decoding, and various communication protocol processing functions, aiming to optimize signal transmission efficiency and reliability, handling data, enabling signal transmission, supporting network connections, and providing support for various communication protocols. Communication and connectivity ICs are widely used in communication and networking equipment and end devices, and are the core components of smart devices and modern digital infrastructure. Based on the communication protocol and transmission media, communication and connectivity ICs can be divided into ICs for cellular mobile communication (such as 4G/5G), Wi-Fi ICs for wireless local area networking, optical communication ICs used in high-speed data transmission over fiber optic networks, and others such as Bluetooth and Satellite communication. In terms of revenue, the global communication and connectivity IC market size grew from USD143.8 billion in 2020 to USD171.5 billion in 2024, with a CAGR of 4.5% from 2020 to 2024, and is expected to further grow to USD183.3 billion by 2029, with a CAGR of 6.9% from 2024 to 2029.

In optical communication and connectivity, FTTR devices are driving a major shift toward optical communication for households, enabling ultra-fast, stable, and interference-free connectivity. With fiber extended to every room, households can enjoy seamless 8K streaming, low-latency gaming, and reliable smart home integration, marking optical networking as a key trend for the future. The global shipments of chipsets for FTTR devices are expected to increase from 27.0 million in 2024 to 51.0 million in 2029.

In cellular communication and connectivity, cellular-based IoT devices are expanding steadily, fueled by advancements in 4G, 5G, and NB-IoT. Their scalability, wide-area coverage, and low-power capabilities drive adoption across multiple industries, making cellular networks a key growth engine for the global IoT ecosystem. For example, cellular communication and connectivity is vital for smart cabin, enabling real-time navigation, cloud services, OTA updates, and seamless infotainment, while supporting safety-critical V2X communications. The global shipments of cellular IoT chipsets are expected to increase from 0.6 billion in 2024 to 1.1 billion in 2029.

Market Drivers and Development Trends of Global Communication and Connectivity IC Market

AIoT expansion in consumer, commercial and industrial applications. With AIoT adoption accelerating in smart homes, commerce and education, automotive, personal mobile devices, and industrial applications, the demand is rising for low-power, cost-efficient ICs supporting wide-area and short-range communication. The need for reliable, always-on connectivity in massive device networks reinforces the role of multi-protocol ICs tailored for AIoT ecosystems.

Rising data intensity of smart applications. The growth of bandwidth-hungry applications, such as high-resolution video streaming, real-time gaming, and AI-driven services, necessitates ICs capable of faster data transmission and higher efficiency. This is pushing adoption of advanced Wi-Fi ICs, optical communication solutions, and 5G-enabled chips in smart devices.

Growing demands boosted by fiber connectivity in households. In the household segment, the rapid adoption of high-bandwidth applications has made optical communication a critical enabler of reliable, low-latency connectivity. Fiber-to-the-home (FTTH) deployments are accelerating globally, and home optical gateways increasingly integrate advanced communication ICs to support multi-device, multi-protocol environments. This penetration of optical communication into residential networks not only addresses rising bandwidth and latency requirements but also drives incremental demand for high-performance, energy-efficient, and security-enhanced communication and connectivity ICs.

Introduction and Market Size of Wi-Fi ICs

Over the past two decades, Wi-Fi has gradually become the most widely used wireless connection technology between devices and communication networks. From desktop devices, mobile devices, home appliances to automobiles, Wi-Fi applications are ubiquitous, providing WLAN access services for billions of devices. Wi-Fi ICs refer to ICs that implement IEEE 802.11 standard communication functions within certain frequency bands, responsible for modulation/demodulation, data link layer protocols, RF transceiving, and power amplification, enabling devices to have WLAN access capabilities.

Based on the terminals that Wi-Fi ICs are applied in, Wi-Fi ICs can be divided into Wi-Fi STA ICs and Wi-Fi AP ICs. Wi-Fi STA ICs mainly focus on supporting Station (STA) mode, which emphasizes on enabling a station, namely an end-user device, such as a smartphone or AIoT devices, to scan nearby Wi-Fi networks and connect to an existing Wi-Fi access point. After a successful connection, the device can access the internet or other devices in the LAN via the access point. Wi-Fi STA ICs for devices are widely used in smart home devices, consumer electronics, industrial IoT, medical devices, and commercial devices. On the other hand, Wi-Fi AP ICs mainly focus on AP (Access Point) mode, which emphasizes on creating the wireless network, acting as a central hub that connects wireless devices to a wired network. This requires stronger processing capabilities and more complex software support. Wi-Fi AP ICs are widely used in wireless routers and gateways.

The Wi-Fi ICs market has high technical barriers, especially in high-end products, where only a few providers with advanced processes, RF front-end design, system-level integration, and protocol optimization capabilities can achieve mass production. High-end Wi-Fi ICs need to simultaneously meet strict requirements for high-speed transmission, multi-antenna concurrency, low power management, and cross-standard compatibility. This not only poses extremely high challenges to IC architecture design and RF performance but also requires providers to have long-term algorithm optimization and software support capabilities.

In terms of revenue, the global Wi-Fi ICs market grew from USD15.3 billion in 2020 to USD18.9 billion in 2024, with a CAGR of 5.5% from 2020 to 2024, and is expected to further grow to USD28.1 billion by 2029, with a CAGR of 8.3% from 2024 to 2029. Meanwhile, in terms of revenue, the global market size of Wi-Fi STA ICs grew from USD12.2 billion in 2020 to USD15.5 billion in 2024, with a CAGR of 6.2% from 2020 to 2024, and is expected to further grow to USD23.6 billion by 2029, with a CAGR of 8.8% from 2024 to 2029.

SOURCES OF INFORMATION

In connection with the [**REDACTED**], we have engaged Frost & Sullivan to conduct a detailed analysis and prepare an industry report on the markets in which we operate. Services provided by Frost & Sullivan, which is an independent global consulting firm founded in 1961, include market assessments, competitive benchmarking, and strategic and market planning for a variety of industries. We have agreed to a total of RMB450,000 in fees and expenses for the preparation and use of the Frost & Sullivan Report. The payment of such an amount was not contingent upon our successful Listing or on the results of the Frost & Sullivan Report. Apart from the Frost & Sullivan Report, we have not commissioned any other industry report in connection with the [**REDACTED**].

Frost & Sullivan prepared its report based on its in-house database, independent third-party reports and publicly available data from reputable industry organizations. Where necessary, Frost & Sullivan contacts companies operating in the industry to gather and synthesise information in relation to the market, prices and other relevant information. The market projections in the Frost & Sullivan Report are mainly based on the assumption that the social, economic, and political environments in the PRC and globally will remain stable throughout the forecast period. Frost & Sullivan believes that the basic assumptions used in preparing the Frost & Sullivan Report, including those used to make future projections, are factual, correct and not misleading. Frost & Sullivan has independently analyzed the information, but the accuracy of the conclusions of its review largely relies on the accuracy of the information collected. Frost & Sullivan's research may be affected by the accuracy of these assumptions and the choice of these primary and secondary sources.

Our Directors have confirmed that Frost & Sullivan has exercised reasonable care in selecting and identifying the sources of information used in this section (which are extracted from the Frost & Sullivan Report), compiling, extracting and reproducing the information, and ensuring no material omission of the information. Our Directors confirm that, after making reasonable enquiries, there is no material adverse change in the market information since the date of the Frost & Sullivan Report which may qualify, contradict or have an impact on the information in this section.