

# The Demand for Autonomous Control of Integrated Circuits Is Extremely Urgent

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HONG KONG, CHINA, May 22, 2023 /EINPresswire.com/ -- The integrated circuit industry is a basic, key, and strategic industry in the development of social economy, and plays a pivotal role in international competition, national security, comprehensive national strength enhancement, and high-quality economic development.

In recent years, with the continuous development of the economy and society, the deepening of international competition and trade, as well as the development and implementation of the new generation of information and communication technologies, consumer electronics, automotive electronics, industrial intelligence control, computer, and other industries are further popularized and penetrated, promoting the continued growth of artificial intelligence, Internet of things, cloud computing, autonomous driving, and other emerging markets. Inject impetus to the continuous vigorous development of the integrated circuit industry.

In 2022, global macroeconomic growth slowed down and the external environment became more complex and grim. At the same time, the technological and industrial revolution has not stopped the pace of progress, which brings new opportunities and challenges to the integrated circuit industry. According to the World Semiconductor Trade Statistics Organization (WSTS), with rising inflation and weak end-market demand, especially those affected by consumer spending, WSTS statistics show that the total annual semiconductor volume is \$574.1 billion in 2022, and it is estimated that by 2023, The global semiconductor market will fall to \$557 billion.

At present, China is still a big importer of IC products. According to the statistics of the General Administration of Customs, in 2022, China will import 538.4 billion IC products, and export 273.36 billion IC products, import value of 415.579 billion US dollars, export value of 153.918 billion US dollars. There is a large trade deficit, indicating that the domestic IC industry demand is strong, there is a degree of external dependence, and the development of IC independent and controllable willingness and demand is extremely urgent.

With the further development of the domestic integrated circuit industry, it is expected to accelerate the process of localization of integrated circuit industry replacement, thus reducing the dependence on foreign countries.

According to [JAK Electronics](#), as the upstream of the IC industry, IC design mainly designs and develops various chip products according to the needs of the terminal market. Therefore, with

the continuous expansion of new applications in new fields such as 5G information technology, artificial intelligence, and new energy vehicles, new scenarios of downstream applications continue to emerge, and the semiconductor industry ecology is further enriched. The integrated circuit design industry also ushered in unprecedented development opportunities, the whole industry into the rapid development of the situation.

At the same time, the level of integrated circuit design determines the function, performance, and cost of the chip, and as a technology-intensive industry, integrated circuit design has higher requirements for the enterprise's research and development technology level, independent innovation ability, industrial chain operation level, etc.

Looking forward to the future, driven by the improvement of the policy environment, technological innovation iteration, and optimization of industrial chain structure, the IC design industry will be further promoted to a higher technical level and a wider industrial dimension.

Integrated circuit manufacturing is a key link in the integrated circuit industry. The level of integrated circuit manufacturing represents the frontier height of a country's high-end manufacturing industry. It is the focus and cornerstone of promoting the integration of national informatization and industrialization, as well as the support and engine for adjusting industrial structure and ensuring national security.

In the integrated circuit industry, analog chips have the characteristics of strong application, so analog chip companies need to closely couple the design scheme with various process technologies, and even develop customized specific processes to make competitive and differentiated products. Based on the above characteristics, Fab-lite mode can not only realize the process development of application design matching, strict control of product quality and reliability, rapid iterative innovation of process technology, and control and adjustment of new product development cycle to meet the changing market demand.

At the same time, it can also reduce the dependence of analog chip enterprises on OEM factories, flexibly respond to market changes, solve capacity problems, take into account production efficiency and product performance, and be more cost-effective.

In addition, the integrated circuit industry is a key force leading the technological revolution and industrial change. The rapid development of the integrated circuit industry has strongly supported the national informatization construction and information security guarantee and promoted the sustained, healthy and stable development of the national economy and society.

In recent years, the global political and economic environment is shifting, and the international trade friction situation is complex and changeable. In the background of increasing industrial uncertainties, the substitution of the domestic IC industry, the independent control of the semiconductor industry, and the improvement of the anti-risk ability of the supply chain have risen to the national strategic height.

To further optimize the IC industry and its development environment, and improve its innovation capability and development quality, the state has successively issued a series of fiscal, tax, and intellectual property protection policies to provide a favorable policy environment for IC enterprises.

Integrated circuit industry is a capital and technology-intensive industry, whose periodicity is mainly reflected in the product life cycle, macroeconomic fluctuation cycle, technology development cycle, upstream and downstream production capacity supply and demand cycle, and downstream application market fluctuation cycle. At the same time, with the increase of government support to the IC industry in recent years, government policy is also one of the important factors of industry periodicity.

The downstream application field of [RF](#) front-end chips is mainly mobile intelligent terminal products, so the impact of holidays on the consumption of mobile intelligent terminal products will be transmitted to the industry, and the seasonal fluctuations of the industry are earlier than the seasonal fluctuations of the downstream mobile intelligent terminal products.

In 2022, due to the impact of the macroeconomic slowdown, complex and volatile international political situation, and other events, the RF front-end chip industry short-term performance pressure, making cyclical changes weakened.

Rf front-end devices are key components of communication systems, and the global RF front-end market is highly concentrated. According to the data of Yole Development, the world's top five RF front-end device providers in 2022 occupy about 80% of the RF front-end market share, including Broadcom's 19%. Qualcomm 17%, Skyworks 15%, Qorvo 15%, Murata 14%.

Rf front-end field design and manufacturing process technology threshold is high, on the one hand, the international leading enterprises started earlier, profound deposits, technology, patents, technology and other aspects of the accumulation of capital, talent, and other competitive advantages, at the same time through a series of industrial integration has a complete product line layout, and has a strong high-end product research and development strength.

With the rapid development of the communication field and the rise of 5G, global semiconductor device manufacturers seek to optimize the industrial chain through continuous integration and acquisition, and take advantage of scale to obtain more market discourse power and lower manufacturing costs. On the other hand, most international manufacturers operate in IDM mode, have the whole industrial chain capability of design, manufacturing, and closed testing, establish a complete ecological chain and strict technical barriers, monopolize the market and lead the development of technology for a long time.

However, the domestic RF front-end industry started relatively late, and there is a big gap

between the technology level and experience reserve and foreign developed countries. The introduction of new frequency band applications and the emergence of complex technologies and applications in 5G communication technology have put forward higher requirements on the complexity and performance of RF front-end devices.

In addition, to meet the demand for thin and light smartphones and lower costs, the integration of RF front-end will gradually increase, and the trend of modular is becoming more and more obvious. Since the start of 2022, the RF front-end market has been clouded by slowing economic growth, international political and economic tensions, frequent geopolitical conflicts, high inflation, and bottlenecks in smartphone innovation.

At the same time, driven by national policy support, domestic substitute dividends, and capital boom, the domestic RF front-end industry has flooded into a large number of new entrants, and the RF market competition is becoming increasingly fierce. Faced with the low technical threshold and serious homogeneity of some RF front-end products, the local vicious competition is also deserving the healthy development of the market.

Companies in the same industry are constantly accelerating and improving the speed and capability of new product research and development, and constantly introducing new products with high reliability, high integration, and high performance, to meet the market demand for high-end applications, which makes the market competition increasingly fierce, but also gradually lay the industry watershed, and promote the industry differentiation.

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