# The Ministry of Industry and Information Technology officially announced the “National Integrated Circuit Industry Development Promotion Outline”

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With the approval of the State Council, the “National Integrated Circuit Industry Development Promotion Outline” is hereby announced as follows:

**National Integrated Circuit Industry Development Promotion Outline**

The integrated circuit industry is the core of the information technology industry, and is a strategic, basic and leading industry that supports economic and social development and ensures national security. The current and future period is an important strategic opportunity period and a critical period for the development of China’s integrated circuit industry. In order to accelerate the development of China’s integrated circuit industry, this outline is specially formulated.

## I. Current status and situation

In recent years, driven by the market and supported by policies, China’s integrated circuit industry has developed rapidly, its overall strength has been significantly improved, the gap between integrated circuit design and manufacturing capabilities and the international advanced level has been continuously narrowed, packaging and testing technology has gradually approached the international advanced level, some key equipment and materials have been adopted by domestic and foreign production lines, a number of backbone enterprises with certain international competitiveness have emerged, and the industrial agglomeration effect has become increasingly obvious. However, the integrated circuit industry still has prominent problems such as difficulty in financing for chip manufacturing companies, weak continuous innovation capabilities, disconnection between industrial development and market demand, lack of coordination between various links in the industrial chain, and policy environment that adapts to the characteristics of the industry being not perfect. The level of industrial development is still far behind that of advanced countries (regions). Integrated circuit products rely heavily on imports, making it difficult to provide strong support for building the core competitiveness of the national industry and ensuring information security.

At present, the global integrated circuit industry is entering a period of major adjustment and change. On the one hand, the global market structure is accelerating adjustment, the scale of investment is rapidly rising, and the market share is accelerating to concentrate on advantageous enterprises. On the other hand, mobile smart terminals and chips are growing explosively, new formats such as cloud computing, the Internet of Things, and big data are developing rapidly, and new trends are emerging in the evolution of integrated circuit technology; China has the world’s largest integrated circuit market, and market demand will continue to grow rapidly. Under the new situation, the development of China’s integrated circuit industry faces both huge challenges and rare opportunities. We should give full play to market advantages, create a good development environment, stimulate the vitality and creativity of enterprises, drive the coordinated and sustainable development of the industrial chain, accelerate the pace of catching up and surpassing, and strive to achieve leapfrog development of the integrated circuit industry.

## II. General requirements

(I) Guiding ideology

Guided by Deng Xiaoping theory, the important thought of “Three Representatives” and the scientific outlook on development, we will thoroughly study and understand the spirit of the 18th National Congress of the Communist Party of China and the Second and Third Plenary Sessions of the 18th Central Committee of the Communist Party of China, implement the decisions and arrangements of the Party Central Committee and the State Council, make the market play a decisive role in resource allocation, better play the role of the government, highlight the dominant position of enterprises, and be demand-oriented, with complete machines and systems as the driving force, design as the leader, manufacturing as the foundation, equipment and materials as the support, and technological innovation, model innovation and institutional mechanism innovation as the driving force to break the bottleneck of industrial development, promote key breakthroughs and overall improvement of the integrated circuit industry, achieve spanning development, and provide strong support for the transformation of economic development mode, national security, and comprehensive national strength.

(II) Basic principles.

Driven by demand. Relying on market advantages and facing the large-scale and wide-ranging key complete machine and information consumption needs, improve the market adaptability and effective supply level of enterprises, and build an industrial chain of “chips-software-complete machines-systems-information services”.

Driven by innovation. Strengthen the dominant position of enterprises in technological innovation, increase research and development efforts, combine the implementation of major national science and technology projects, break through a number of key integrated circuit technologies, and jointly promote mechanism innovation and business model innovation.

Combination of hardware and software. Strengthen the collaborative innovation of integrated circuit design and software development, drive software development with the improvement of hardware performance, promote hardware technology progress with the optimization and upgrading of software, and promote the overall improvement of the development level of the information technology industry.

Key breakthroughs. Strengthen the combination of market demand and technology development, and achieve rapid development in key areas involving national security and market potential and good industrial foundation.

Open development. Make full use of global resources, promote open innovation and development in all links of the industrial chain, strengthen international exchanges and cooperation, and enhance the status and influence in the global industrial competition pattern.

(III) Development goals.

By 2015, the innovation of the system and mechanism of integrated circuit industry development will achieve significant results, and a financing platform and policy environment that is compatible with the laws of industrial development will be established. The sales revenue of the integrated circuit industry will exceed 350 billion yuan. The integrated circuit design technology in some key areas such as mobile smart terminals and network communications is close to the world’s first-class level. 32/28 nanometer (nm) manufacturing process has achieved large-scale mass production, and the sales revenue of mid-to-high-end packaging and testing accounts for more than 30% of the total revenue of the packaging and testing industry. 65-45nm key equipment and key materials such as 12-inch silicon wafers have been used in production lines.

By 2020, the gap between the integrated circuit industry and the international advanced level will gradually narrow, the average annual growth rate of sales revenue in the entire industry will exceed 20%, and the sustainable development capacity of enterprises will be greatly enhanced. Integrated circuit design technology in key areas such as mobile smart terminals, network communications, cloud computing, the Internet of Things, and big data has reached the international leading level, and the industrial ecosystem has been initially formed. 16/14nm manufacturing process has achieved large-scale mass production, packaging and testing technology has reached the international leading level, key equipment and materials have entered the international procurement system, and an integrated circuit industry system with advanced technology, safety and reliability has been basically established.

By 2030, the main links of the integrated circuit industry chain will reach the international advanced level, a number of enterprises will enter the international first echelon, and achieve leapfrog development.

## III. Main tasks and development priorities

(I) Focus on the development of the integrated circuit design industry. Focusing on the industrial chain of key areas, strengthen the collaborative innovation of integrated circuit design, software development, system integration, content and services, and drive the development of the manufacturing industry with the rapid growth of the design industry. In the near future, focus on the fields of mobile smart terminals and network communications, develop large-scale and wide-ranging mobile smart terminal chips, digital TV chips, network communication chips, smart wearable device chips and operating systems, and enhance the overall competitiveness of the information technology industry. Give full play to the role of market mechanisms, guide and promote the merger and reorganization of integrated circuit design companies. Accelerate the research and development of core technologies in emerging fields such as cloud computing, the Internet of Things, and big data, develop key chips such as information processing, sensors, and new storage based on new formats and new applications, and basic software such as cloud operating systems, and seize the commanding heights of future industrial development. Gradually break through key integrated circuits and embedded software such as smart cards, smart grids, smart transportation, satellite navigation, industrial control, financial electronics, automotive electronics, and medical electronics in different fields and categories, and improve the support capacity for the deep integration of informatization and industrialization.

(II) Accelerate the development of the integrated circuit manufacturing industry. Seize the favorable opportunity of technological change, break through the bottleneck of investment and financing, and continue to promote the construction of advanced production lines. Accelerate the expansion of 45/40nm chip production capacity, step up the construction of 32/28nm chip production lines, and quickly form scale production capacity. Accelerate the development of three-dimensional processes and promote the construction of 22/20nm and 16/14nm chip production lines. Vigorously develop special process production lines such as analog and mixed analog and digital circuits, micro-electromechanical systems (MEMS), high-voltage circuits, and radio frequency circuits. Enhance the comprehensive capabilities of chip manufacturing, drive the improvement of design level with the improvement of process capabilities, and drive the development of key equipment and materials with the construction of production lines.

(III) Improve the development level of advanced packaging and testing industry. Vigorously promote the merger and reorganization of domestic packaging and testing companies to increase industrial concentration. Adapt to the evolution and upgrading needs of integrated circuit design and manufacturing process nodes, and carry out the development and industrialization of advanced packaging and testing technologies such as chip-scale packaging (CSP), wafer-level packaging (WLP), through silicon vias (TSV), and three-dimensional packaging.

(IV) Breakthrough key equipment and materials for integrated circuits. Strengthen the integration of integrated circuit equipment, materials and processes, develop key equipment such as lithography machines, etching machines, ion implanters, develop key materials such as photoresists and large-size silicon wafers, strengthen the cooperation between integrated circuit manufacturing enterprises and equipment and material enterprises, accelerate the industrialization process, and enhance the supporting capacity of the industry.

**IV. Guarantee measures**

(I) Strengthen organizational leadership. Establish a national integrated circuit industry development leading group to be responsible for the overall coordination of the integrated circuit industry development promotion work, strengthen top-level design, integrate and mobilize various resources, and solve major problems. Establish an advisory committee to conduct investigations and research on major issues and policy measures for industrial development, conduct demonstration and evaluation, and provide consulting advice.

(II) Establish a national industrial investment fund. The national industrial investment fund (hereinafter referred to as the fund) mainly attracts large enterprises, financial institutions and social funds, focusing on supporting the development of industries such as integrated circuits and promoting industrial transformation and upgrading. The fund implements market-oriented operations, focusing on supporting the integrated circuit manufacturing field, taking into account design, packaging and testing, equipment, and materials, promoting enterprises to improve production capacity and implement mergers and reorganizations, standardize corporate governance, and form a benign self-development capability. Support the establishment of local integrated circuit industry investment funds. Encourage all kinds of social venture capital and equity investment funds to enter the integrated circuit field.

(III) Increase financial support. Actively play the complementary advantages of policy-based and commercial finance, support the Export-Import Bank of China to increase its service to integrated circuit enterprises within its business scope, encourage and guide the National Development Bank and commercial banks to continue to increase credit support for the integrated circuit industry, and innovate credit products and businesses that meet the needs of the integrated circuit industry. Support integrated circuit enterprises to go public at home and abroad for financing, issue various debt financing instruments, and accelerate development based on the national small and medium enterprise equity transfer system. Encourage the development of loan guarantee insurance and credit insurance business, and explore and develop insurance products and services suitable for the development of the integrated circuit industry.

(IV) Implement tax support policies. Further efforts shall be made to implement the Notice of the State Council on Issuing Several Policies to Encourage the Development of Software Industry and Integrated Circuit Industry (Guo Fa [2000] No. 18) and the Notice of the State Council on Issuing Several Policies to Further Encourage the Development of Software Industry and Integrated Circuit Industry (Guo Fa [2011] No. 4), speed up the formulation and improvement of relevant implementation rules and supporting measures, maintain policy stability, and implement preferential corporate income tax policies for integrated circuit packaging, testing, special materials and equipment. Implement and improve corporate income tax, value-added tax, business tax and other tax policies that support the merger and reorganization of integrated circuit enterprises. Continue to implement the import duty-free policy for qualified integrated circuit major technical equipment and key parts and raw materials of products, as well as the import duty-free policy for key equipment, parts and raw materials that cannot be produced domestically for relevant major scientific and technological projects, and adjust the list or catalog of duty-free imported goods in a timely manner.

(V) Strengthen the promotion and application of safe and reliable software and hardware. Organize and implement the promotion plan for the application of safe and reliable key software and hardware, and promote the use of advanced, safe and reliable integrated circuits, basic software and complete systems based on the principles of key breakthroughs, industry-specific deployment and step-by-step implementation. For the government procurement part of various people-benefiting projects and major information technology projects supported by fiscal funds to expand domestic demand, products based on safe and reliable software and hardware should be purchased. Encourage basic telecommunications and Internet companies to purchase complete machines and systems based on safe and reliable software and hardware. Make full use of policies and measures to expand information consumption to promote the development and application of various terminals based on safe and reliable software and hardware. Accelerate the construction of a standard system for emerging application fi such as mobile Internet, cloud computing, Internet of Things, and big data to support the development and application of safe and reliable software and hardware.

(VI) Strengthen the construction of corporate innovation capabilities. Promote the formation of a collaborative innovation system for upstream and downstream of the industrial chain and support the development of industrial alliances. Encourage enterprises to establish integrated circuit technology research institutions, jointly with scientific research institutes and universities to carry out pre-competitive common key technology research and development, introduce high-level overseas talents, and enhance the sustainable development capabilities of the industry. Strengthen the use and protection of integrated circuit intellectual property rights, establish a national major project intellectual property risk management system, guide the establishment of intellectual property strategic alliances, and actively explore direct financing methods and asset management systems related to intellectual property rights. Accelerate the formation of standards in major innovation fields of integrated circuits and give full play to the role of technical standards.

(VII) Increase the intensity of talent training and introduction. Establish and improve the integrated circuit talent training system, support the development of microelectronics disciplines, and accelerate the construction and development of demonstration microelectronics colleges and microelectronics vocational training institutions through joint talent training by universities and integrated circuit companies. Relying on the professional and technical personnel knowledge update project, carry out extensive continuing education activities, and adopt various forms to vigorously train high-level, urgently needed and key professional and technical personnel in the field of integrated circuits. Carry out targeted overseas training projects to promote the construction of national software and integrated circuit talent international training bases. Strengthen the funding guarantee for the introduction of software and integrated circuit talents through existing channels. Further increase support for the introduction of outstanding talents in the field of integrated circuits in the “Thousand Talents Plan”, and study and introduce preferential policies for the introduction of outstanding entrepreneurs and high-quality technical and management teams. Support integrated circuit companies to strengthen cooperation with overseas research and development institutions. Improve the distribution incentive mechanism to encourage innovation and creation, and implement the income distribution policies such as equity, option incentives and rewards for the transformation of scientific and technological personnel’s scientific research results.

(VIII) Continue to expand opening up to the outside world. Further optimize the environment, vigorously attract foreign funds, technology and talents, and encourage international integrated circuit companies to build research and development, production and operation centers in China. Encourage domestic integrated circuit companies to expand international cooperation, integrate international resources, and expand international markets. Give full play to the role of the cross-strait economic cooperation mechanism and encourage cross-strait integrated circuit companies to strengthen technical and industrial cooperation.