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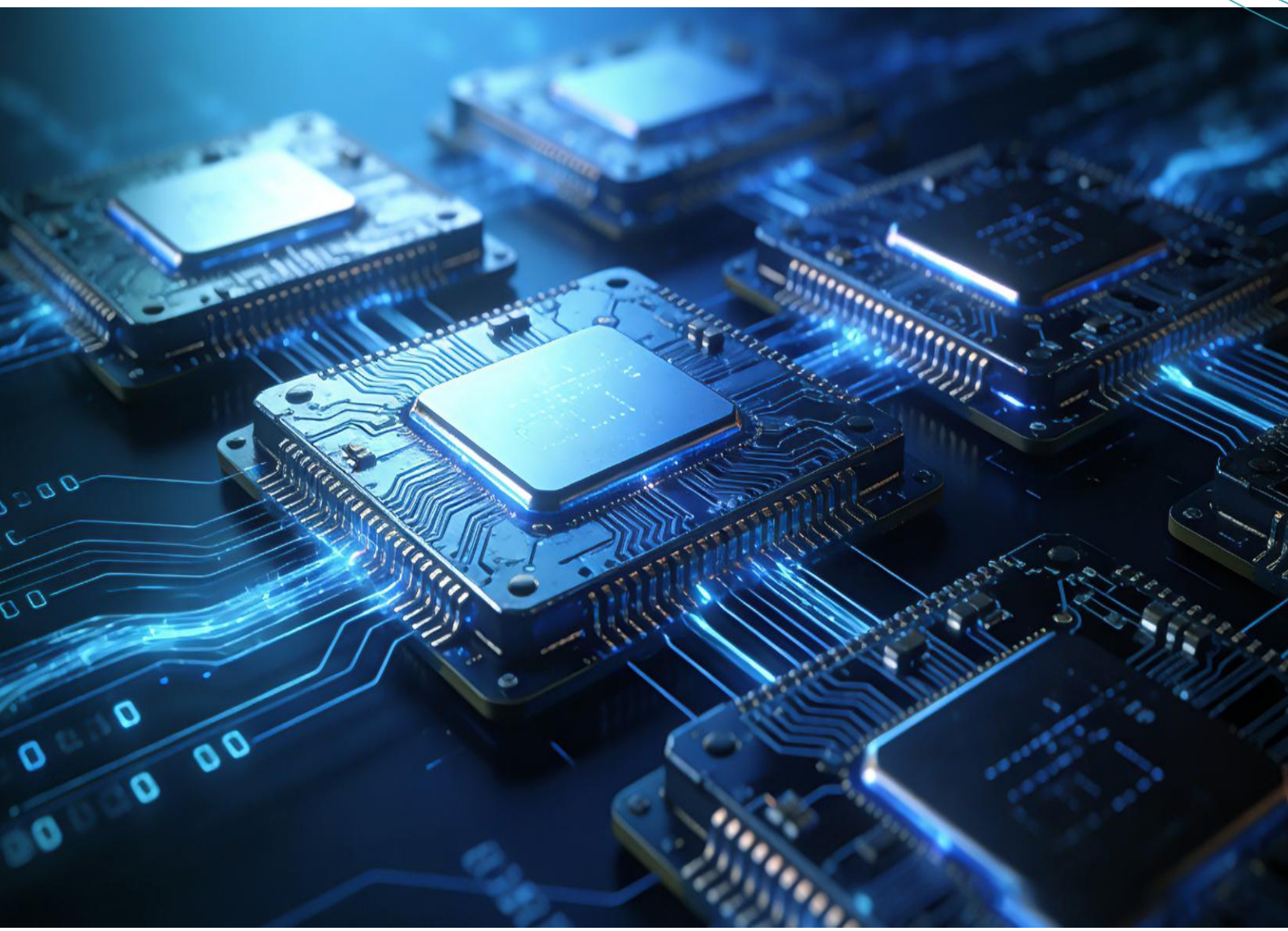


Global Intelligent Computing Chips Industry Report

Executive Summary

Intelligent computing chips serve as the critical infrastructure underpinning the global transition toward Artificial General Intelligence (AGI). Driven by the relentless scaling of Large Language Models (LLMs) and the proliferation of generative AI across vertical industries, the global market is currently experiencing an era of explosive, capital-intensive growth.

Table of Contents

1. Market Overview

1.1 Market Definition

Intelligent computing chips refer to a category of high-performance integrated circuits specifically engineered to facilitate high-speed parallel processing, serving as the foundational infrastructure for Artificial Intelligence (AI), Large Language Models (LLMs), and the eventual realization of Artificial General Intelligence (AGI). Unlike traditional Central Processing Units (CPUs), which are optimized for sequential logic and serial execution, intelligent computing chips are architecturally designed to handle compute-intensive tasks, such as AI training and inference—by executing multiple operations simultaneously.

The intelligent computing chip market is categorized into three primary architectures: GPGPU, ASIC, and FPGA.

GPGPU: Distinguished by their ability to adapt to a wide array of evolving computing tasks, GPGPU represent the most versatile architecture. Their core strength lies in supporting highly parallel tasks and offering high scalability for large-scale clusters. Despite higher power consumption, GPGPU remain the mainstream choice for AI training and inference; their software-driven flexibility

effectively mitigates the risk of hardware obsolescence in a rapidly evolving landscape.

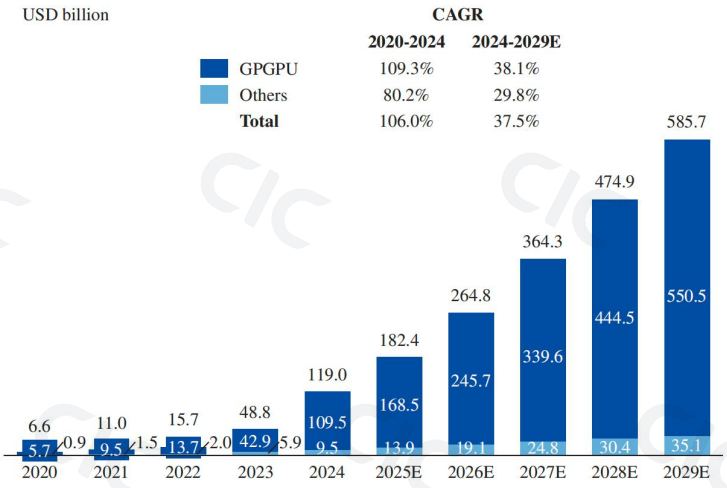
ASIC: Purpose-built for specific algorithms, ASIC deliver superior energy efficiency and performance within a strictly defined functional scope, yet lack the flexibility to accommodate rapidly evolving model architectures.

FPGA: Offering hardware-level reconfigurability, FPGA provide a balance between flexibility and efficiency, yet remain limited by high programming complexity and lower throughput for massive-scale parallel workloads.

1.2 Market Size and Growth

Driven by foundational shift toward large-scale AI integration, the global intelligent computing chip market is experiencing unprecedented capital intensification. According to CIC, market revenue surged from US$6.6 billion in 2020 to US$119.0 billion in 2024 at a CAGR of 106.0%, and is projected to reach US$585.7 billion by 2029 at a CAGR of 37.5%.

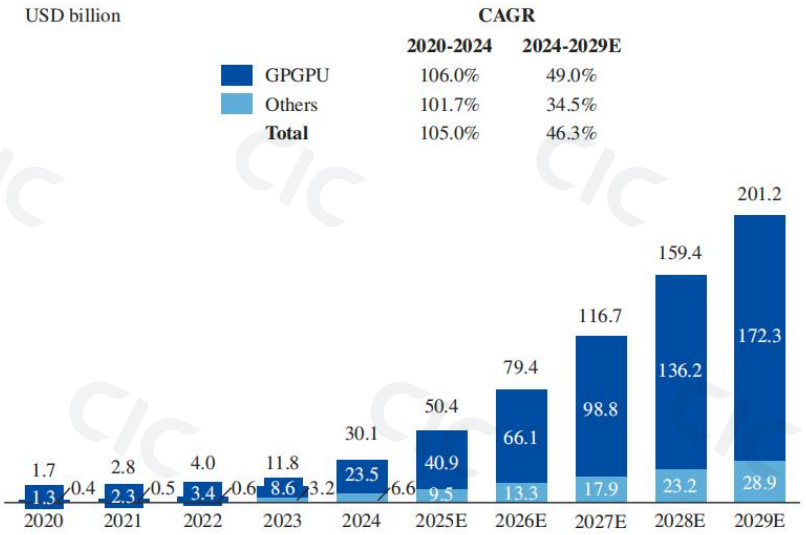
Market size of global intelligent computing chips industry, 2020-2029E



Source: CAICT, interviews with industry experts, annual reports of public companies, CIC Reports

As one of the world's largest AI markets, China is experiencing a massive surge in demand for intelligent computing chips. According to CIC, the market revenue grew from US$1.7 billion in 2020 to US$30.1 billion in 2024 (CAGR: 105.0%), and is projected to reach US$201.2 billion by 2029. This represents a CAGR of 46.3% from 2024 to 2029, notably outpacing the global average.

Market size of China's intelligent computing chips industry, 2020-2029E



Source: CAICT, interviews with industry experts, annual reports of public companies, CIC Reports

2. Key Growth Drivers and Trends

2.1 Key Drivers of China's intelligent computing chips industry

The commercialization of AI in various aspects.

The commercialization and widespread adoption of AI across vertical industries—including telecommunications, finance, manufacturing, and government—have catalyzed a significant increase in enterprise investment aimed at enhancing operational quality and efficiency. As AI becomes further integrated into both industrial applications and consumer-oriented products, the demand for foundational computing power is projected to grow proportionally.

Tremendous incremental computing demand from AI market booming.

The accelerating commercialization of AI has transitioned the market from experimental prototypes to large-scale applications, driving significant demand for both training and inference. While pre-training initially dominated the landscape following the 2022 LLM boom, the 2024 strategic pivot toward post-training and multi-step reasoning has further catalyzed computational requirements.

Simultaneously, the proliferation of real-world AI deployments has heightened expectations for inference accuracy and real-time responsiveness, leading to increasingly demanding workloads across diverse environments.

Technical advancements.

The continuous evolution of intelligent computing chips is underpinned by synergistic advancements across architecture, process nodes, advanced packaging, and software ecosystems. Architectural innovation and process node transitions remain the primary drivers of superior computing power, energy efficiency, and interconnectivity. Simultaneously, advanced packaging technologies, such as Chiplets, effectively circumvent physical scaling limits while enhancing cost-efficiency, yield, and design flexibility. These hardware breakthroughs are further optimized by well-developed software ecosystems, where intuitive configuration tools and modern frameworks ensure maximum execution efficiency and seamless hardware-software integration.

Favorable policy support.

In the past decade, the Chinese government has prioritized the AI

industry as a pillar of strategic national importance, essential for maintaining technological leadership. Recognizing intelligent computing chips as the foundational infrastructure for AI deployment, the government has provided robust support through direct capital investment, policy incentives, and strategic guidelines.

2.2 Key Trends of China's intelligent computing chips industry

Localization of intelligent computing chips.

Under current U.S. export controls, Chinese firms face significant constraints in acquiring high-performance intelligent computing chips and accessing global semiconductor services, including foundry, assembly, testing, IP, and EDA provision. While these restrictions pose immediate challenges to the short-term supply chain, they have simultaneously catalyzed a strategic shift toward domestic self-reliance. This transition is driving the rapid localization of both chip design and manufacturing through technological upgrades and capacity expansion.

Increasing demand for end-to-end solutions.

Beyond hardware delivery, end-to-end intelligent computing chip

companies differentiate themselves by providing a comprehensive suite of products and services, including software development platforms, NRE (Non-Recurring Engineering) development, and implementation. This holistic approach makes them the preferred choice for customers lacking in-house AI development capabilities. As intelligent computing becomes democratized, market demand is shifting toward these ready-to-use solutions, favoring providers who can guarantee fast, practical, and seamless deployment across diverse industrial applications.

Self-developed software ecosystem.

A self-developed software ecosystem serves as a critical competitive moat for intelligent computing chip companies by maximizing hardware performance through specialized re-configuration and fostering a vibrant partner ecosystem. By offering extensive libraries, tools, and frameworks, these platforms attract a growing base of developers and contributors, creating a reinforcing cycle of adoption. While new entrants initially prioritize compatibility with existing market leaders, the long-term trend for Chinese providers is to cultivate independent ecosystems to reduce external reliance and enable long-term substitution.

Heterogeneous computing.

As China pivots from reliance on imported intelligent computing chips toward domestic alternatives, heterogeneous computing—including collaborative GPU training and inference across different vendors—has emerged as a critical architectural solution. By integrating diverse hardware into a cohesive architecture, this approach optimizes performance and energy efficiency while facilitating a seamless migration from foreign dependency to indigenous technology. Ultimately, heterogeneous computing ensures stability and continuity within the computing ecosystem, driving innovation to meet the rigorous demands of modern AI applications.

2.3 Future Outlook

The global intelligent computing chip industry is poised for robust, long-term expansion, driven by a fundamental architectural shift toward the integration of training and inference capabilities. In this evolving landscape, hardware-software co-optimization and the cultivation of proprietary software ecosystems have emerged as the primary determinants of core competitiveness. Despite the rise of specialized architectures, GPGPU maintain their market dominance,

sustained by their unparalleled versatility and mature developer ecosystems.

The industry is characterized by formidable entry barriers, including technical capabilities, ecosystem, customer relationships, talent pool and financial strength. Consequently, while the global market structure remains highly concentrated, the market share of Chinese domestic manufacturers is projected to rise steadily as they capitalize on supply chain localization and localized ecosystem development.

About CIC

CIC is a professional consulting firm offering tailored end-to-end support across the full investment and financing lifecycle. The firm boasts a world-leading track record in guiding landmark first-in-sector IPOs across global markets, alongside unrivaled reach and in-depth coverage capabilities across specialized niche market segments.

CIC helps enterprises refine scalable business models and craft compelling capital narratives to enable seamless access to global capital markets, while serving as a trusted due diligence partner to investment institutions. It delivers granular industry insights and direct access to subject matter experts, empowering clients to identify high-value opportunities and mitigate critical risks effectively.

CIC team maintains deep, real-time market intelligence across a diverse set of sectors—including financial services, artificial intelligence, big data, internet, high technology, healthcare, education, entertainment, consumer goods, transportation and logistics, energy and power, environmental and building technology,

chemicals, industrial manufacturing, and agriculture—delivering unparalleled access to sector-specific, actionable insights.

CIC Reports & Industry Overview

At CIC, we employ a rigorous, multi-method research framework, combining primary and secondary sources to underpin our analysis. Primary research involves in-depth engagements with industry thought leaders and practitioners, particularly in supply chain finance. Secondary research synthesizes publicly available datasets from authoritative bodies, including the National Bureau of Statistics of the People's Republic of China, the State Administration of Financial Regulation (SAFR, formerly the China Banking and Insurance Regulatory Commission), the China Securities Regulatory Commission (CSRC), and public company filings. We apply proprietary data analytics frameworks to process collected information, validating findings through cross-referencing data from multiple research streams to ensure analytical rigor and reliability.

All statistical data presented is verifiable and grounded in information available as of the date of this report.

Extracts are refined summaries of in-depth CIC industry research reports, highlighting supply and demand trends, key growth drivers, R&D trends and future outlook, etc. of various segmented fields, integrating multi-dimensional insights such as expert interviews, market surveys and industry data analysis.

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