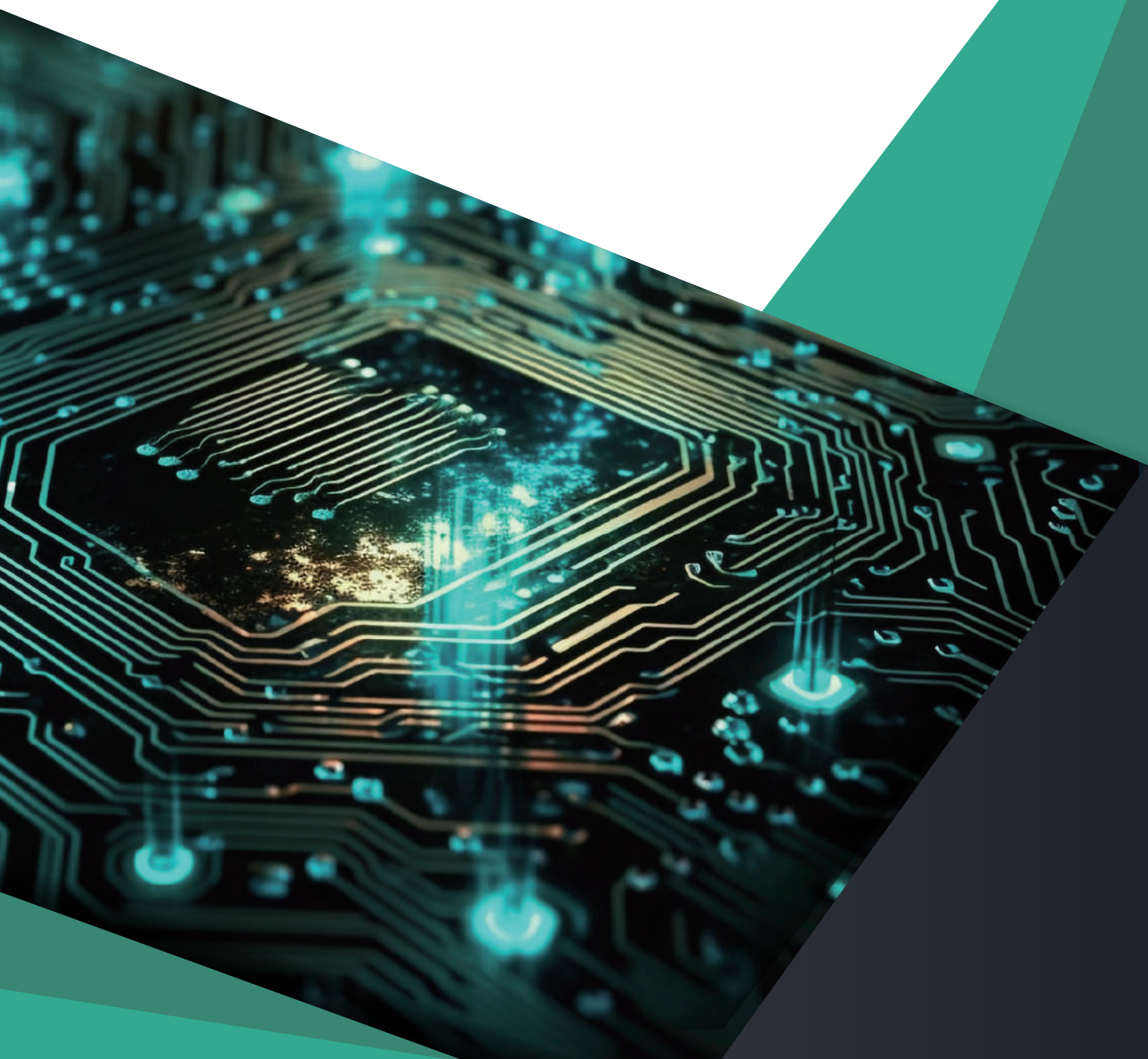
BRIOCEAN

Monthly #MarketMatters Report

March 2024



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Executive Summary

This report provides an overview of the semiconductor industry in March 2024 and attempts to identify essential market trends over the next month. Based on the relevant data available, the report analyses macro factors, supply chains, applications, and product market trends.

Global economic conditions continued to recover in March 2024, and semiconductor industry in China made an impressive growth benefited from an improved manufacturing industry performance.

Major chipmakers are increasing their industry investment in India, signaling that Indian market is expected to grow. Xiaomi has launched its SU7 vehicle product, accelerating the change of competitive landscape of autonomous vehicle.

In terms of chips, AI server GPU shipments are expected to grow sharply due to increasing orders from large cloud service manufacturers. DRAM is expected to slightly increase monthly in Q2 with heavy transaction pressure in spot market.

1. Macro Environment Overview

1.1 Global Economy on Track to Recover

In March 2024, according to the data from J.P. Morgan, the global manufacturing PMI was 50.6, which has entered the expansion range. J.P. Morgan pointed out that global manufacturing may witness a recovery in 2024, which may expect to boost Chinese exports.

In Asia, China's manufacturing PMI rebounded to 50.8, for the first time since September 23 to return to above the boom-bust line, mainly due to new export orders index rose by 5.0 pct to 51.3. According to data from the National Bureau of Statistics, the new export order index in industries such as automotive, and computer communications electronic equipment is higher than the critical point. Foreign trade business in related industries has increased compared with the previous month, which has driven production and demand growth. Chinese high-tech manufacturing PMI was 53.9, and high-end manufacturing industry continued to grow.

India's manufacturing PMI has reached 59.1, mainly due to accelerated growth in both output and new orders. Japan's manufacturing PMI continues to be weak; South Korea, and Vietnam's manufacturing PMI fell below the boom-bust line to 49.9, mainly due to a slight decline in production and new orders. Although South Korea's export demand grew rapidly, its subdued domestic demand offset the growth in overseas demand, leading to weak manufacturing industry performance.

In the Americas, the U.S. ISM manufacturing PMI reached 50.3, which was the first time since October 2022 that it has returned to the expansion range. Mexico's manufacturing PMI reached 52.2, basically the same as last month's 52.3, indicating solid growth in the manufacturing sector.

In Europe, the Euro Area manufacturing PMI continues to decline, which is still in contraction range.

Manufacturing PMIs

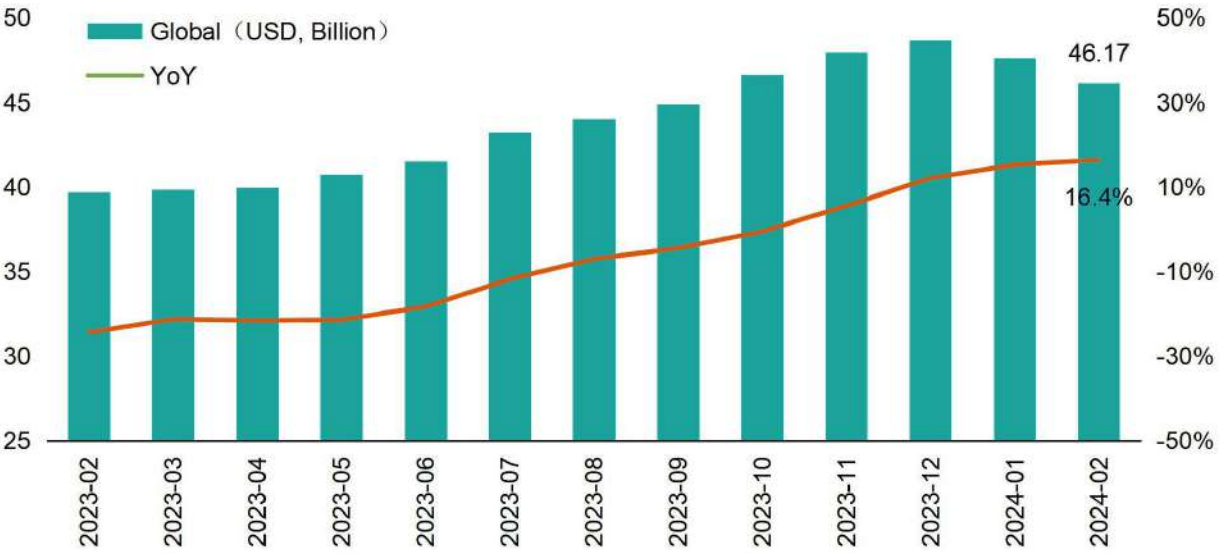
Timeline	Global	China	Japan	South Korea	India	Vietnam	The United States	Mexico	Euro Area
2023-03	49.60	51.90	49.20	47.60	56.40	47.70	46.30	51.00	47.30
2023-04	49.60	49.20	49.50	48.10	57.20	46.70	47.10	51.00	45.80
2023-05	49.60	48.80	50.60	48.40	58.70	45.30	46.90	50.50	44.80
2023-06	48.80	49.00	49.80	47.80	57.80	46.20	46.00	50.90	43.40
2023-07	48.70	49.30	49.60	49.40	57.70	48.70	46.40	53.20	42.70
2023-08	49.00	49.70	49.60	48.90	58.60	50.50	47.60	51.20	43.50
2023-09	49.10	50.20	48.50	49.90	57.50	49.70	49.00	49.80	43.40
2023-10	48.80	49.50	48.70	49.80	55.50	49.60	46.70	52.10	43.10
2023-11	49.30	49.40	48.30	50.00	56.00	47.30	46.70	52.50	44.20
2023-12	49.00	49.00	47.90	49.90	54.90	48.90	47.40	52.00	44.40
2024-01	50.00	49.20	48.00	51.20	56.50	50.30	49.10	50.20	46.60
2024-02	50.30	49.10	47.20	50.70	56.90	50.40	47.80	52.30	46.50
2024-03	50.60	50.80	48.20	49.80	59.10	49.90	50.30	52.20	46.10

Data Source: Choice

1.2 China's Growth Performance is Exceptional with Definite Recovery in the Global Semiconductor Market

In February 2024, global semiconductor sales continued to show a month-on-month downward trend (-3.1%), but the year-on-year growth was better, reaching 16.4%. From January to February 2024, global semiconductor sales reached a cumulative USD 93.8 billion, a cumulative year-on-year increase of 15.8%, indicating a significant recovery trend.

Global Semiconductor Sales (USD, Billion)



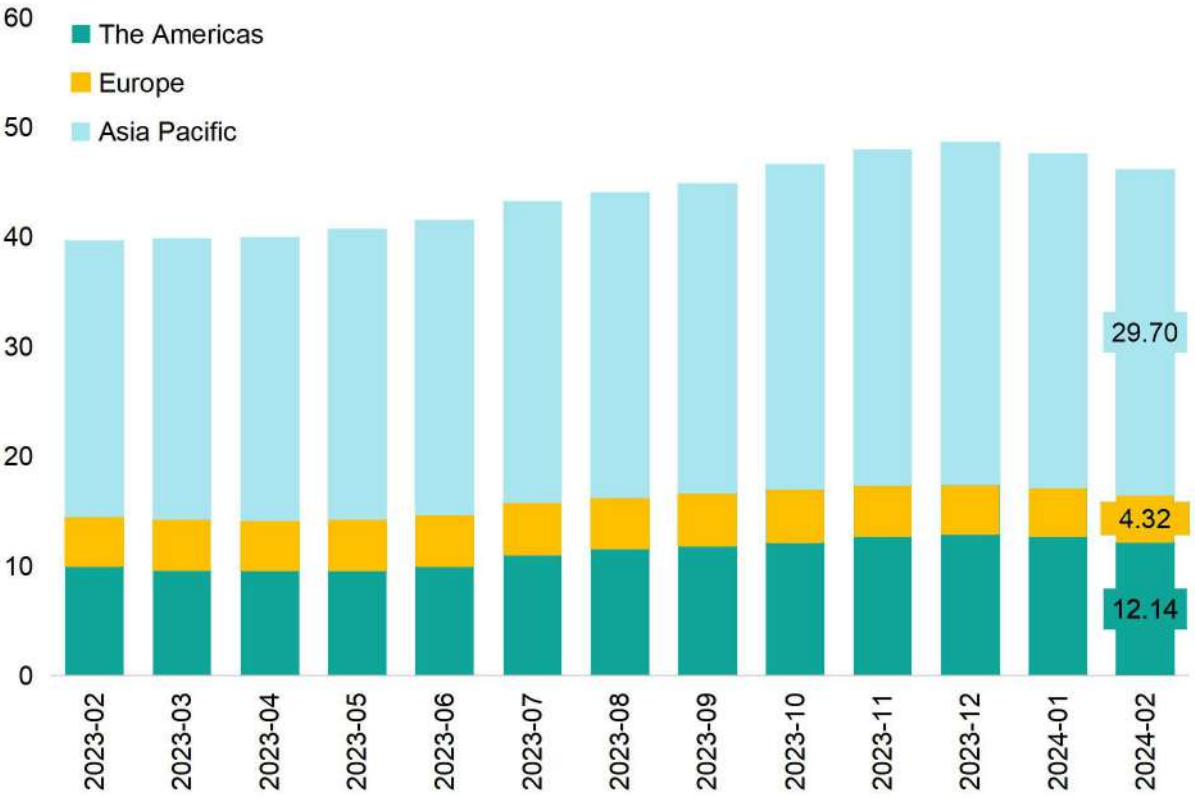
Data Source: Choice

In the Asia-Pacific region, sales in February reached USD 29.7 billion, increasing by 17.6% yearly, with a market share of 64.3%. Cumulative sales from January to February were USD 60.28 billion, yearly increasing by 16.80%. In China, market size in February reached USD 14.13 billion, a yearly increase of 28.8%, accounting for 30.60% of the global market share. Demand in Japan continued its downward trend, declining by 2.7% monthly and by 8.5% yearly.

In the Americas, market demand continues to recover with a rapid yearly growth of 22.0%. This is mainly due to the high prosperity of Mexico's manufacturing industry, and major car companies have successively deployed production capacity in Mexico.

In Europe, market demand is relatively weak, with an expanding yearly decrease of sales (-3.4%), and Europe’s economy is still on the edge of recession.

Semiconductor Sales by Regions (USD, Billion)

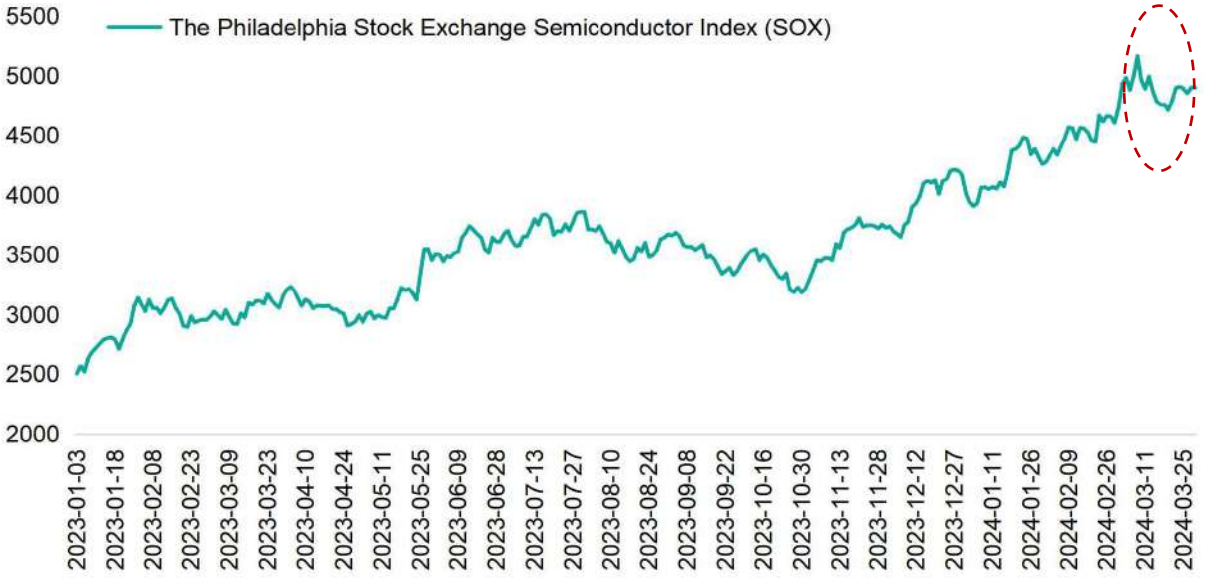


Data Source: Choice

1.3 Semiconductor Stock Market Slightly Declined due to Retracement

The Philadelphia Semiconductor Index (SOX) declined in March, mainly because recent overheating market has cooled down. In the long term, the popularity of artificial intelligence is still expected to drive steady growth in the stock prices of technology stocks.

The Philadelphia Stock Exchange Semiconductor Index



Data Source: Choice

1.4 The United States Revised Its Chip Restriction on China, Expanding it to PC Sector

On March 29, the U.S. Biden administration revised its chip restrictions on China. The restrictions will also apply to laptops containing AI chips, which means that U.S. chip restrictions on China have been expanded to a wider range of consumer electronics.

1.5 India Cuts Import Tariffs on EV, Expected to Accelerate the Development of the Industry

The Indian Government has agreed to cut import duties on electric vehicles from multinational companies building factories in India. According to a statement from India's Ministry of Commerce and Industry, companies can obtain tax incentives as long as they commit to investing at least INR 41.5 billion (approximately USD 500 million) within three years and producing electric vehicles in local factories. It is reported that electric vehicles priced above USD 35,000 will enjoy a 15% import tax reduction for five years. At the same time, the company's import quota for electric vehicles, which has committed to invest more than USD 800 million, will reach 40,000 units at total, and 8,000 units per year.

1.6 The EU Plans to Conduct Customs Registration of EV Imported from China

The European Commission issued a notice stating that it plans to start customs registration of pure electric vehicles imported from China. According to Reuters, this move is part of the EU's "countervailing investigation" into Chinese electric vehicles. If the final investigation determines that Chinese electric vehicles have received so-called "unfair subsidies," the EU may impose retrospective tariffs on these registered imported vehicles.

2. Semiconductor Industry Updates

2.1 Short-term Implications

Overview

▪ Price of NAND Flash is expected to rise due to Samsung planning to renegotiate the contract price.

2.1.1 Tower Semiconductor Plans to Suspend Operations Mainly Due to Declining Orders

Due to the industry downturn, Tower Semiconductor plans to close most of its operations in the U.S. city of Newport Beach for three weeks. Tower Semiconductor said orders at the plant are declining as customers clear inventory accumulated when semiconductor supplies were constrained over the past two years.

2.1.2 Arm Releases High-performing Chip Design for Automotive Application for the First Time, Helping Shorten Intelligent Vehicle Development Cycle

For the first time, Arm is releasing its high-performance "Neoverse" class chip designs for automotive applications, a type of chip typically used in data centres, as well as a new system for automakers and their suppliers. The company has introduced Arm architecture-based technology into the automotive field for the first time. Its first automotive-oriented computing subsystem (CSS) is expected to be delivered in 2025, which can shorten the artificial intelligence vehicle development cycle by up to two years.

2.1.3 Samsung Plans to Negotiate with Major Customers to Increase NAND Flash Prices

Samsung Electronics plans to renegotiate prices with major mobile, PC, and server customers between March and April, with a target price increase of 15% to 20%. Over the past year, the NAND flash memory market has been oversupplied, and Samsung Electronics' NAND flash memory business has suffered losses. In order to reduce losses, it plans to negotiate with large customers to bring prices back to reasonable levels.

2.2 Mid-term Implications

Overview

- Artificial intelligence sector is in strong growth, conducive to the demand for advanced package and HBM.

2.2.1 TSMC’s 3nm Revenue Share is Expected to Exceed 20%

Benefiting from frequent follow-up orders from Apple, Intel, and AMD, TSMC's 3nm order is expected to grow quarter by quarter this year. TSMC's 3nm revenue share in 2024 is expected to exceed 20% (15% in Q4 2023), becoming the second-largest revenue contributor.

2.2.2 ASE Receives Advanced Packaging Orders from Apple, Expected to Start Production in the Second Half of the Year

ASE has received advanced packaging orders from Apple, expected to start production in the second half of the year. Previously, Apple's M-series Apple Silicon chips were produced by TSMC for front-end chip production and advanced packaging. However, this time, Apple has separated advanced packaging and chip foundry orders, making ASE its first major customer for advanced packaging capacity.

2.2.3 SK hynix Expects HBM Chips to Account for a Double-digit Percentage of the Company's DRAM Chip Sales This Year

SK hynix's CEO stated that HBM chips used for AI computing systems are expected to account for a double-digit percentage of the company's DRAM chip sales this year, up from a single-digit percentage last year. SK hynix has begun mass production of the next-generation advanced HBM3E chip. Currently, SK hynix’s market share in HBM3 is over 90%, while Samsung is expected to benefit from the increasing volume of AMD MI300 chips in the future.

2.2.4 Samsung will Launch an AI Chip Using LPDDR, Intensifying Competition in AI Chips

Samsung plans to launch an AI chip, Mach-1, using LPDDR by the end of this year or early next year. The Mach-1 chip is expected to complete the manufacturing process by the end of this year and launch an AI system based on it in early next year. The Mach-1 chip is based on a non-traditional structure, significantly reducing the memory bandwidth requirements for inference applications compared to existing designs. In addition, it does not use HBM but opts for LPDDR.

2.3 Long-term Implications

Overview

- Indian market is expected to grow significantly with increasing investment from major chipmakers.

2.3.1 Major Chipmakers Increase Investment in the Indian Market, Strengthening Semiconductor Industry Chain

(1) Qualcomm builds a design centre in India: Qualcomm has opened a new design centre in Chennai, India, specialising in wireless connectivity solutions to support India's 5G and 6G research. The centre is dedicated to 5G cellular technology and will also promote Qualcomm's roadmap in Wi-Fi technology. In addition, Qualcomm has announced an academic research program to support India's 6G technology.

(2) Renesas Electronics will jointly build a packaging and testing factory in India: Renesas Electronics will cooperate with India's CG Power and Industrial Solutions and Thailand's Stars Microelectronics to establish a joint venture company to build a packaging and testing factory in India, with a total investment of INR 76 billion and a daily production capacity of about 15 million chips. Its business covers a wide range, from traditional packaging to advanced packaging for automotive, consumer, industrial, and 5G markets.

(3) GlobalFoundries will recruit a procurement team in India: GlobalFoundries will complete restructuring this year, laying off some positions in Singapore and Taiwan, such as procurement and finance, and plans to recruit new staff in India for these positions. Although GlobalFoundries has not yet announced the construction of a factory in India, its procurement functions are partially transferred to India, indicating that it may expand its business in India in the future.

2.3.2 TI Transitions to 8-inch Production Processes, Reducing GaN Semiconductor Prices

TI will build 8-inch wafer fabs in Dallas, Japan, and other locations. Among them, the Dallas factory is expected to transition from 6-inch to 8-inch processes before 2025; the Japan Aizu factory is converting its existing silicon-based 8-inch production line to a GaN semiconductor production line. TI's process transformation is expected to reduce the price of GaN semiconductors (reducing production costs by more than 10%), thereby being able to provide lower-priced devices and solutions, gaining a cost competitive advantage.

2.3.3 ON Semiconductor Expanded the Product Portfolio of PMIC and Sensor Interfaces with a New Business Unit

ON Semiconductor has announced the establishment of the Analog and Mixed-Signal Group (AMG), focusing on expanding ON Semiconductor's power management and sensor interface product portfolio, accelerating the company's growth in automotive, industrial, and cloud computing markets.

2.3.4 SK hynix Reorganises its Business in China, Increasing Investment in Wuxi DRAM Factory

SK hynix is reorganising its business in China, planning to shift its business focus to Wuxi. SK hynix has three factories in China, including the Wuxi DRAM factory, Dalian NAND factory, and Chongqing packaging factory. SK hynix has increased its investment in the Wuxi DRAM factory, investing a large amount of funds to expand production capacity and improve technical standards.

2.3.5 Samsung Electronics Establishes the AGI Computing Lab to Develop Chips for LLM

Samsung Electronics has announced the establishment of the Samsung Semiconductor AGI Computing Lab in the USA and South Korea, focusing on developing chips for LLM, with a focus on inference and service applications. The plan is to continuously release new versions of chip designs from the AGI Computing Lab, with this iterative model providing stronger performance at extremely low power consumption and cost and supporting increasingly larger models.

3. Application Updates

3.1 Artificial Intelligence

Overview

- AI model continues to change, leading to hardware’s evolution, which may be conducive to the demand growth of AI chip.

3.1.1 OpenAI and Microsoft Plans to Invest in AI Supercomputers, Leading to Increased Demand for AI Chips

According to The Information, Microsoft and OpenAI plan to invest USD 100 billion to build the "Stargate" AI supercomputer. The chip for Stargate has not yet been determined, and participants revealed that Microsoft plans to continue to use Nvidia AI chips, AMD GPU chips, or Microsoft’s recently launched self-developed AI chips in the project.

3.1.2 Intel Announces AI PC Acceleration Plan, Expected to Increase AI PC Penetration Rate

Intel announced two new initiatives in the "AI PC Acceleration Program", including the launch of the "AI PC Developer Program" and the recruitment of independent hardware suppliers to join its "AI PC Acceleration Program". These two plans aim to accelerate the introduction of AI features to more than 100 million Intel-based PCs by 2025. At the same time, Intel also plans to launch more than 200 AI notebook products equipped with Core Ultra processors from 12 OEM manufacturers to the global market in the next year, and support more than 300 exclusive AI acceleration functions.

3.1.3 Alibaba’s Large Model has been Deeply Adapted to MediaTek Chips, Accelerating the Development of AI Mobile Phones

MediaTek has successfully deployed Tongyi Qianwen's large model on flagship chips such as Dimensity 9300. For the first time, it has realised deep adaptation of large models on the mobile phone chip. Tongyi Qianwen can run multiple rounds of AI conversations offline. Alibaba Cloud stated that it will cooperate in depth with MediaTek to provide terminal large model solutions to global mobile phone manufacturers.

3.1.4 Lenovo and NVIDIA Collaborate to Launch New Hybrid AI Solution

Lenovo Group, and NVIDIA announced their cooperation to launch a new hybrid AI solution to help enterprises and cloud providers obtain accelerated computing capabilities in AI and turn AI from concept to reality. This move will promote Lenovo Group’s vision of AI for All and provide support for the next generation of innovative architectures for large-scale Gen AI to quickly enter the market.

3.1.5 ABB has Embedded AI into all Lines of Business

ABB has embedded AI into all business lines and more than 100 AI projects are in progress. Recently, ABB acquired Swiss start-up, Sevensense, to expand its position in the field of new generation AI autonomous mobile robots. In addition, it also acquired a majority stake in the R&D engineering company, Meshmind, to expand its R&D capabilities in the fields of AI, industrial IoT, and machine vision. At present, ABB's four major businesses of electric, motion control, process automation, and robotics and discrete automation have put AI into use to serve customers in various industries.

3.1.6 Start-ups Release Kimi Large Model, Expecting Demand for Computing Power to Further Increase

Moonshot has announced that Kimi intelligent assistant supports 2 million words of ultra-long lossless context and has started internal product testing. The search function of Kimi intelligent assistant can actively search, analyse, and summarise the most relevant pages on the Internet-based on the user's questions to generate more direct and accurate answers. Kimi Chat supports ultra-long text input of up to 200,000 Chinese characters, which is the longest contextual input length supported by large model services that can be used commercially in the global market. For comparison, Anthropic's Claude-100k model supports about 80,000 words, while OpenAI's GPT-4-32k only supports about 25,000 words.

3.2 New Energy

Overview

- Chinese leading energy storage manufacturers are optimistic about the growing demand abroad, such as the United States and Japan.

3.2.1 LG New Energy Cooperates with Qualcomm to Develop BMS Solutions for EV

LG New Energy announced that it will cooperate with Qualcomm to develop advanced battery management system (BMS) diagnostic solutions for next-generation electric vehicles. Through this cooperation, LG New Energy plans to integrate its BMS diagnostic software with specific functions of Qualcomm Snapdragon Digital Chassis to develop more advanced BMS solutions.

3.2.2 BAIC Blue Park Joins Hands with CATL and Xiaomi EV to Build a Smart Battery Cell Manufacturing Factory

BAIC Blue Park plans to jointly invest with BAIC Industrial Investment and BHAP to establish a platform company, using the platform company as the management and investment entity. It will establish a joint venture with CATL, Jingneng Technology, and Xiaomi Automotive to establish Beijing Times New Energy Technology (CATL’s shareholding ratio is 51%), investing in the construction of an intelligent battery cell manufacturing factory in Beijing will help ensure the stable supply of BAIC Blue Park power batteries.

3.2.3 Energy Storage Manufacturers Have Gained Large Overseas Orders, Accelerating Their Expansion Abroad

(1) Sungrow signed supply agreements with U.S. customers: Sungrow USA, a wholly-owned subsidiary of Sungrow, signed energy storage product supply agreements with Tanzanite Energy Storage LLC, and Platinum Energy Storage LLC respectively.

(2) Guoxuan Hi-Tech expands its business in the Japanese market: Guoxuan Japan, a subsidiary of Guoxuan Hi-Tech, signed a cooperation agreement with Daiwa Energy and CO2OS in Tokyo, Japan, and will jointly carry out energy storage power station development, operation, and maintenance in Japan. It is expected that within the next two years, this cooperation will introduce a total of 1GWh of energy storage battery products based on the relevant needs of energy storage.

(3) Trina Solar signed an energy storage supply agreement with a Belgian manufacturer: Trina Solar signed a strategic cooperation agreement with EcoSourcen, a well-known Belgian energy company, to provide it with 100 10-foot customised energy storage battery cabinets with a total capacity of 46.592 MWh, meeting the needs of all-scenario optical storage applications.

(4) Lead Intelligent signed a strategic cooperation agreement with the American ABF company: Lead Intelligent signed a global strategic cooperation agreement with the American battery manufacturer American Battery Factory (ABF) to provide ABF with lithium battery production services with a total target of 20GWh.

3.3 Automotive

Overview

- Intelligent driving with high level is expected to popularise with more cooperation between auto giants.

3.3.1 VinFast Plans to Expand its Business in the Thai Market, Optimistic About the Growing Demand for EV in Thailand

Vietnamese EV manufacturer, VinFast, announced that it has signed cooperation agreements with 15 dealers in Thailand to seek expansion in the Thailand market. Data from the Federation of Thai Industries shows that Thailand's pure EV sales will be approximately 73,500 units in 2023 (accounting for approximately 9% of Thai car sales). It is expected that pure EV sales will double in 2024.

3.3.2 Hyundai Motor Increases Investment in the Korean Market and Continues to Increase EV Production

Hyundai Motor plans to invest KRW 68 trillion (approximately USD 50.6 billion) in South Korea within three years and hire 80,000 new employees. Hyundai Motor said the group aims to expand South Korea's annual domestic EV production to 1.51 million units by 2030.

3.3.3 Ford Plans to Provide Ultra-fast Charging Infrastructure to European Dealers to Accelerate Electrification Trend

Ford and Allego, the leading pan-European public EV ultra-fast charging network company, announced a strategic partnership that will provide ultra-fast charging infrastructure to hundreds of Ford dealers across Europe. The new collaboration will further provide Ford EV customers with convenient and reliable charging solutions as the company aims to achieve 100% electrification of passenger cars and commercial vehicles in Europe by 2035.

3.3.4 Mobileye and Volkswagen Strengthen Cooperation to Bring New Autonomous Driving Features into Mass Production

Mobileye will strengthen cooperation with Volkswagen in the field of autonomous driving, jointly introduce new autonomous driving functions into mass production, and provide autonomous driving functions to Volkswagen's Audi, Bentley, Lamborghini and Porsche brands in the future, including automatic overtaking on multi-lane highways, automatic parking at red lights and stop signs in permitted areas and conditions.

3.3.5 Xpeng Motors' New Technology Solutions will Reduce XNGP Hardware Costs by 50%, Accelerating the Popularisation of High-end Intelligent Driving

Starting from the new model launched in 2024 H2, the new technology solutions that Xpeng Motors plans to adopt can reduce the cost of XNGP hardware by 50%, significantly improve cost competitiveness, and accelerate the popularisation of high-end intelligence.

3.3.6 NVIDIA will Join Forces with GAC AION Hyper to Mass-produce L4 Intelligent Vehicle Using NVIDIA DRIVE Thor Chips

At the NVIDIA GTC conference, NVIDIA, and GAC AION Hyper, announced that they will join forces to mass-produce L4 vehicles. Hyper's next-generation L4 autonomous vehicle is powered by NVIDIA DRIVE Thor dual chips, achieving an industry-leading 2000TOPS computing power, and will be the first to achieve mass production in 2025.

3.3.7 Japanese Automotive Industry Competition Structure may Change from a Tripartite Contest to a Two-armed Confrontation, as Nissan Plans to Cooperate with Honda

Nissan plans to develop business cooperation with Honda in the field of EV. They will consider versatility of core components for EV, joint procurement of parts, and joint development of software in the future. They will strengthen competitiveness through cost reduction to compete with China and the United States companies. Specifically, the two parties will promote the development of core components of EV such as E-Axle, batteries, and software platforms, as well as complement each other in the supply of new vehicles.

3.3.8 Hyundai Motor will Develop its own Automotive Semiconductors Using a 5nm Process, Expected to be Manufactured by Samsun and TSMC

According to reports, Hyundai Motor will spend at least KRW 100 billion to independently develop automotive semiconductors using a 5nm advanced process to ensure a stable supply of advanced chips in the era of software-defined vehicles (SDV). SDV will use software to control relevant functions of the car, including driving experience, comfort and even safety. The foundry is expected to be Samsung Electronics or TSMC.

3.3.9 Xiaomi Auto Has Launched SU7, Indicating the Pattern of Intelligent Driving Industry may Change

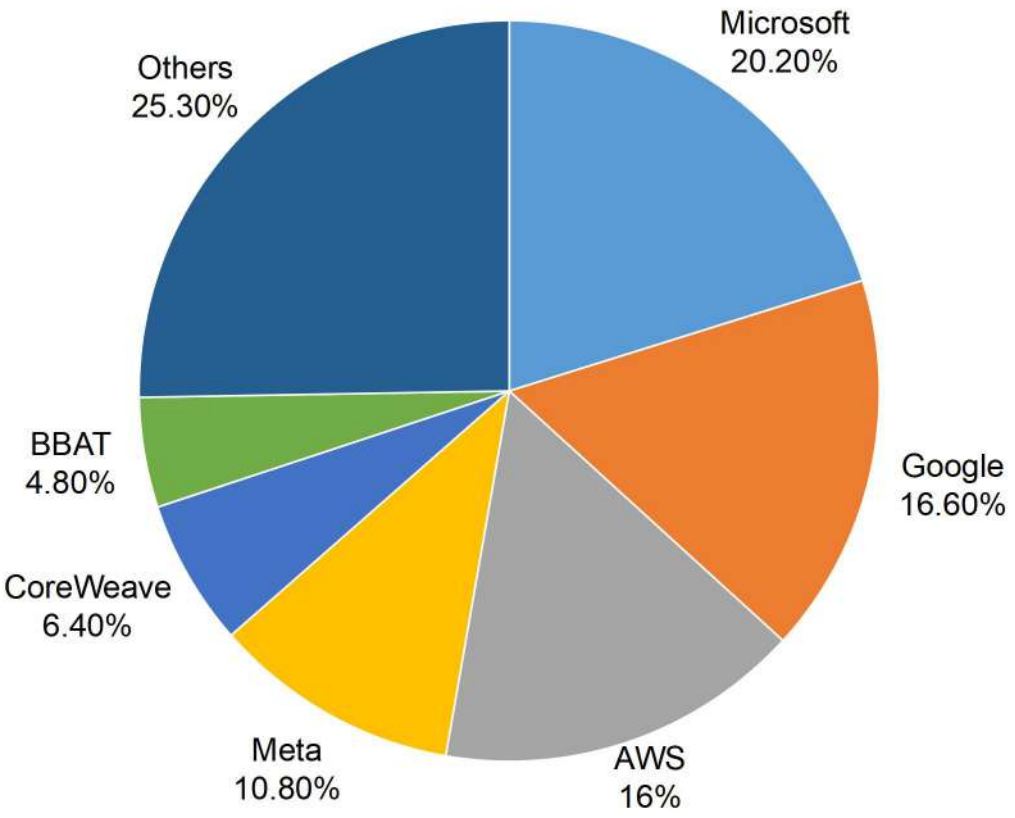
Xiaomi Motors has released SU7, offering three models: standard, Pro and Max. The standard and Max versions will be delivered at the end of April, and the Pro version will be delivered at the end of May. Xiaomi intelligent driving provides two solutions: Xiaomi Pilot Pro to achieve high-speed NOA and valet parking, and Xiaomi Pilot Max to realise the urban NOA function.

4. Product Updates

4.1 Server GPU: Benefiting from Increasing Orders from Large Cloud Service Manufacturers, AI Server GPU Shipments are Expected to Increase Sharply

According to TrendForce forecast, global server shipments will be approximately 13.654 million units in 2024, with an annual growth rate of approximately 2.05%. Among them, benefiting from the increasing demand from cloud service manufacturers, AI server shipments are expected to increase by double digits year-on-year, accounting for approximately 12.1% of the total server shipments.

Forecast of Global Cloud Service Vendors' Demand for High-end AI Servers in 2024



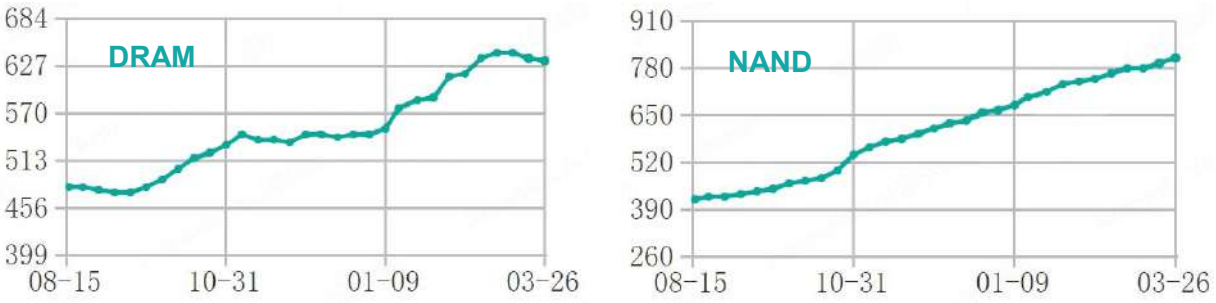
Data Source: TrendForce

In terms of shipment types, in 2024, the shipments of models equipped with high-end AI training chips (such as NVIDIA H series and AMD's MI series products) are expected to double, which will benefit the growth of AI server GPU chip shipments.

4.2 Memory: DRAM is Expected to Slightly Increase Monthly in Q2 with Heavy Transaction Pressure in Spot Market

According to data from CFM, the DRAM price index has slightly declined from the end of last month, while the NAND price index has increased steadily. As there is a certain amount of inventory on the spot demand side and the terminal demand has not improved significantly, the memory spot market has generally faced greater transaction pressure recently.

Price Index of DRAM and NAND



Data Source: CFM

According to TrendForce's report, in terms of DRAM, it is expected that the momentum of inventory replenishment will gradually weaken, and the monthly increase in DRAM contract prices in Q2 of 2024 will be 3%-8% due to the poor demand outlook this year. In terms of NAND Flash, although the purchase volume of NAND Flash in Q2 dropped slightly compared with Q1, due to the reduction of supplier inventory and the effect of production cuts, the overall contract price of NAND Flash in Q2 is expected to rise strongly by about 13%-18%.

DRAM and NAND Flash Contract Price Increase Forecast

Product	24 Q1 (E)	24 Q2 (F)
DRAM		
PC DRAM	Up 15-20%	Up 3-8%
Server DRAM	Up 15-20%	Up 3-8%
Mobile DRAM	Up 18-23%	Up 3-8%
Graphics DRAM	Up 13-18%	Up 3-8%
Consumer DRAM	Up 10-15%	Up 3-8%
Total DRAM	Up 20%	Up 3-8%
NAND Flash		
eMMC UFS	Up 25-30%	Up 10-15%
Enterprise SSD	Up 23-28%	Up 20-25%
Client SSD	Up 23-28%	Up 10-15%
3D NAND Wafers (TLC & QLC)	Up 23-28%	Up 5-10%
Total NAND Flash	Up 23-28%	Up 13-18%

Data Source: TrendForce

4.3 MCU: Overall Inventory is Expected to Return to a Healthy Level in Q2, with a Long Lead Time of Some Automotive Grade Devices

According to DIGITIMES, with the gradual adjustment of agent and client inventory, the microcontroller industry expects inventory to return to a healthy level in Q2 of 2024, while market prices may continue to increase.

Delivery period of 8-bit MCU, 32-bit MCU and other products has shown a clear downward trend with sufficient inventory of general-purpose materials in the spot market. However, delivery period for some automotive materials is still relatively long, with ST and Renesas' automotive materials having a delivery period of more than 40 weeks.

Lead Time and Price Trend of MCU

Manufacturer	Product	Lead Time Trend	Price Trend
Microchip	8-bit MCU	↘	→
	32-bit MCU	↘	→
NXP	8-bit MCU	↘	→
	32-bit MCU	↘	→
	Automotive-grade MCU	↘	→
Renesas	8-bit MCU	↘	→
	32-bit MCU	↘	→
	Automotive-grade MCU	→	→
ST	8-bit MCU	↘	→
	Automotive-grade MCU	→	→
Infineon	8-bit MCU	↘	→
	32-bit MCU	↘	→
	Automotive-grade MCU	→	→

Data Source: Future Electronics

4.4 Analog: Overall Market Continues to be Weak, with Shortened Delivery Time of Some General-purpose Devices

In Q1, the delivery time of general analog chips was shortened. Price of the chip was reduced at the end of the quarter but stabilise in the future. Special-purpose chips have no obvious price reduction trend. As inventory bottoms out at the end of Q1 and demand recovers, Q2 delivery time may be gradually extended.

Price Trend of Major Analog Chipmaker

Manufacturer	Price Trend
Renesas	Stable
Onsemi	Stable
ADI	Price of old model devices increased
ST	Stable
Diodes	Slightly decrease
TI	Slightly decrease

Data Source: Supplyframe

5. Key Market Trends

5.1 Xiaomi SU7 Sales Exceed Expectations, Paying Attention to Xiaomi Vehicle Supply Chain Opportunities

Xiaomi SU7 sales exceeded market expectations: As of the early morning of April 2, the number of Xiaomi SU7 orders had reached 40,000. In order to match the sales growth, Xiaomi Motors recently asked suppliers to increase production capacity to 10,000 units per month. Among them, high-end models are required to focus on increasing production capacity. It is therefore important to pay close attention to manufacturers such as Qualcomm, Yachuang Electronics, and Shangluo Electronics when it comes to electronic components; similarly, in the case of intelligent driving, pay close attention to Desay SV and Jingwei Hirain.

5.2 Huawei P70 will be Launched Soon, Paying Attention to Huawei Mobile Phone Supply Chain Opportunities

The new Huawei P70 series is expected to be released in early April. According to a Tianfeng International Securities report, it is expected that by 2024, the sales volume of the P70 series will achieve significant growth, with the growth rate expected to reach 230%, and sales volume expected to be between 13 million and 15 million units. Pay attention to market opportunities such as CIS sensors, radio frequency chips, and analog chips.

5.3 Attention will be Paid to the Decline in DRAM Price Growth with Weak Demand

Due to weak market demand growth and a certain amount of inventory at the channel end, TrendForce expects DRAM contract prices to increase at a low rate in Q2, and subsequent trend of memory chip price depends on demand growth.

Conclusion

In March 2024, the outlook for global economy has further improved. Overall semiconductor industry has performed better than the same period last year, and Chinese market continued to show an impressive yearly growth.

Recently, Samsung plans to negotiate with major customers to increase NAND Flash prices, beneficial to boosting price of memory chip. Some chipmakers are increasing their industry investment in India, signaling that Indian market is expected to grow.

Intelligent driving with high level is expected to popularise with more cooperation between auto giants. What's more, Xiaomi has launched its SU7 vehicle product, accelerating the change of competitive landscape of autonomous vehicle.

In terms of chips, AI server GPU shipments are expected to grow sharply due to increasing orders from large cloud service manufacturers. DRAM is expected to slightly increase monthly in Q2 with heavy transaction pressure in spot market.

Therefore, it is important to consider the opportunities associated with the Xiaomi vehicle supply chain along with the risks associated with the DRAM demand pressure.

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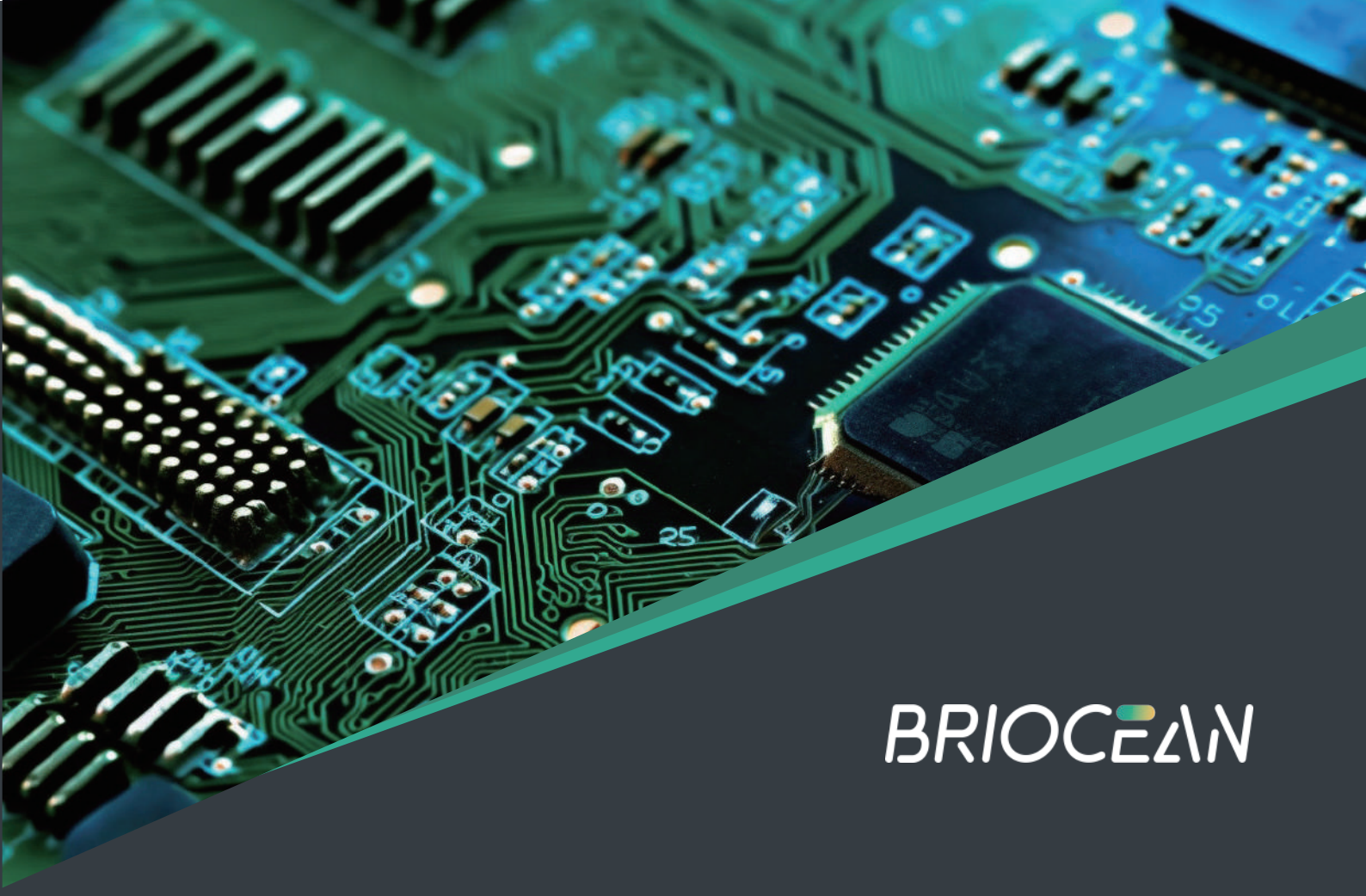

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