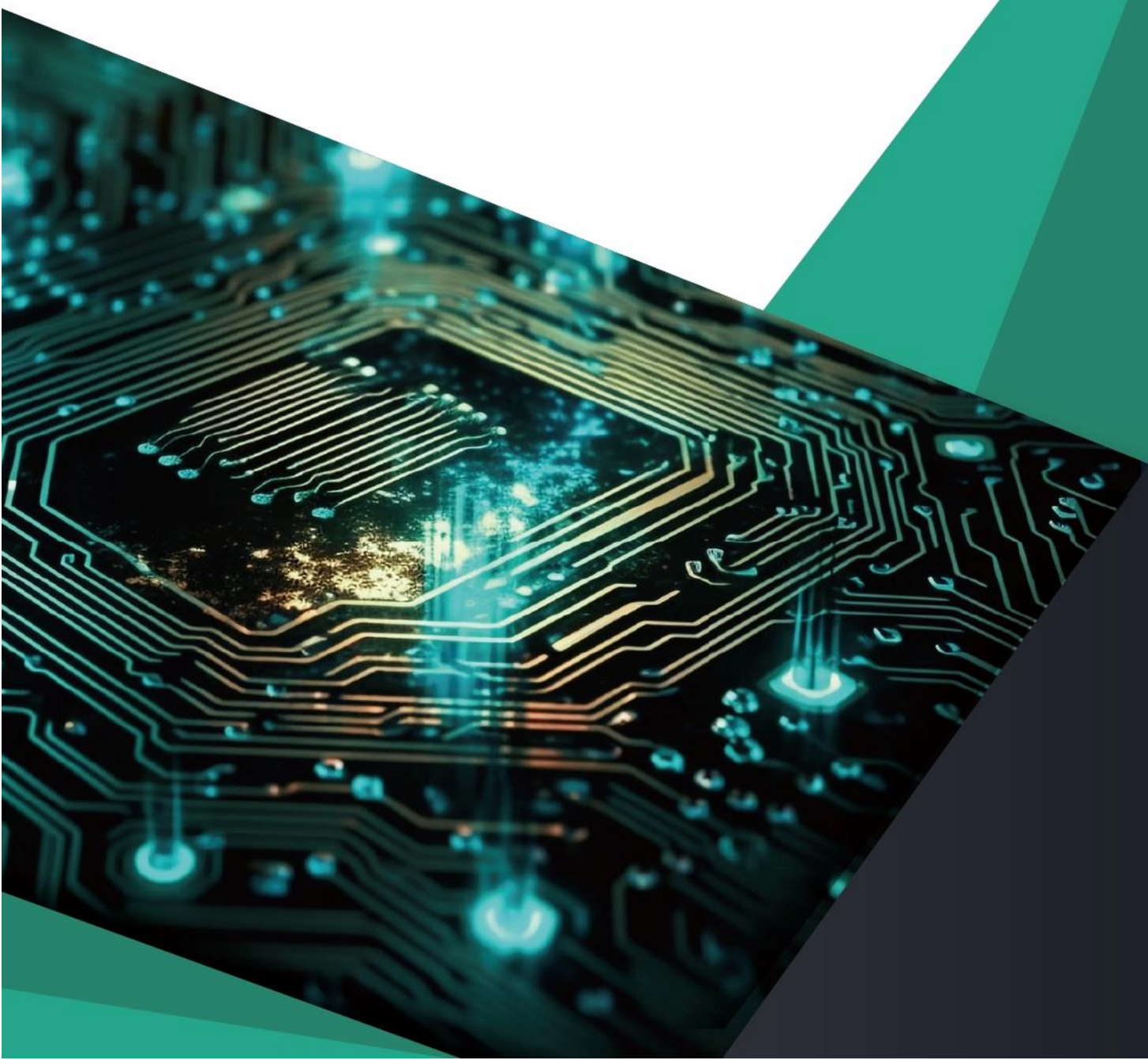
BRIOCEAN

Monthly #MarketMatters Report

January 2024



Contents

Executive Summary

This report provides an overview of the semiconductor industry in January 2024 and attempts to identify potential market opportunities and risks 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 improved in January 2024, and semiconductor industry continued to recover marginally due to the rise in artificial intelligence (AI) demand. As a result of gradually shifting from AI chip export controls to restrictions on the application of large AI models, the U.S. restrictions on the development of China's AI industry have entered a phase of comprehensive blockade of software and hardware.

Due to the earthquake in Japan, Murata has been unable to supply some automotive-grade inductors, which resulted in temporary price increases. There are, however, concerns regarding extended delivery times, stagnant supply, and impacted trade resulting from the Red Sea crisis within the European automotive supply chain. Consequently, Qualcomm will gain a significant market share, reaching 80% as shipments of Gen AI mobile phone accelerate. A focus should be placed on DRAM and automotive-grade inductors with a better outlook when it comes to products.

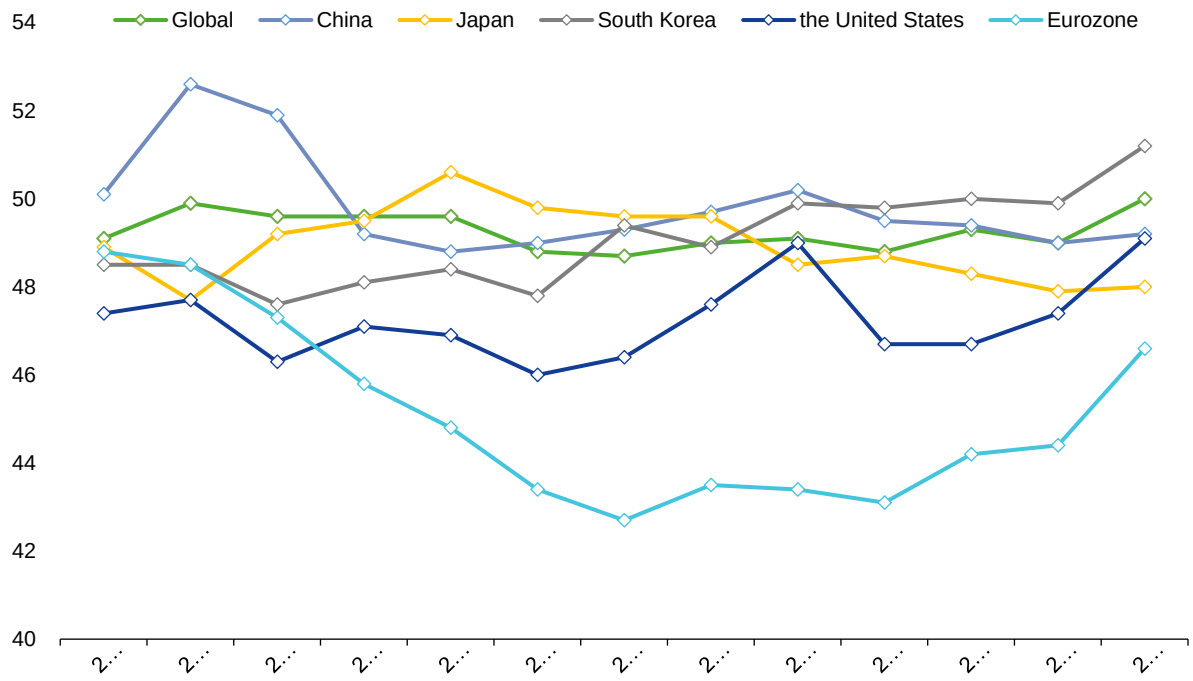
1. Macro Environment Overview

1.1 Global Economy Shows an Improving Outlook

In January 2024, the global manufacturing PMI was 50.0, continuing to rise month-on-month with an improving economy outlook.

China's manufacturing PMI rebounded to 49.2, and the high-tech manufacturing PMI was 51.1, indicating strong demand for high-end manufacturing. The manufacturing PMI in South Korea rebounded sharply to above the boom-bust line with increasing domestic and overseas orders.

Manufacturing PMIs



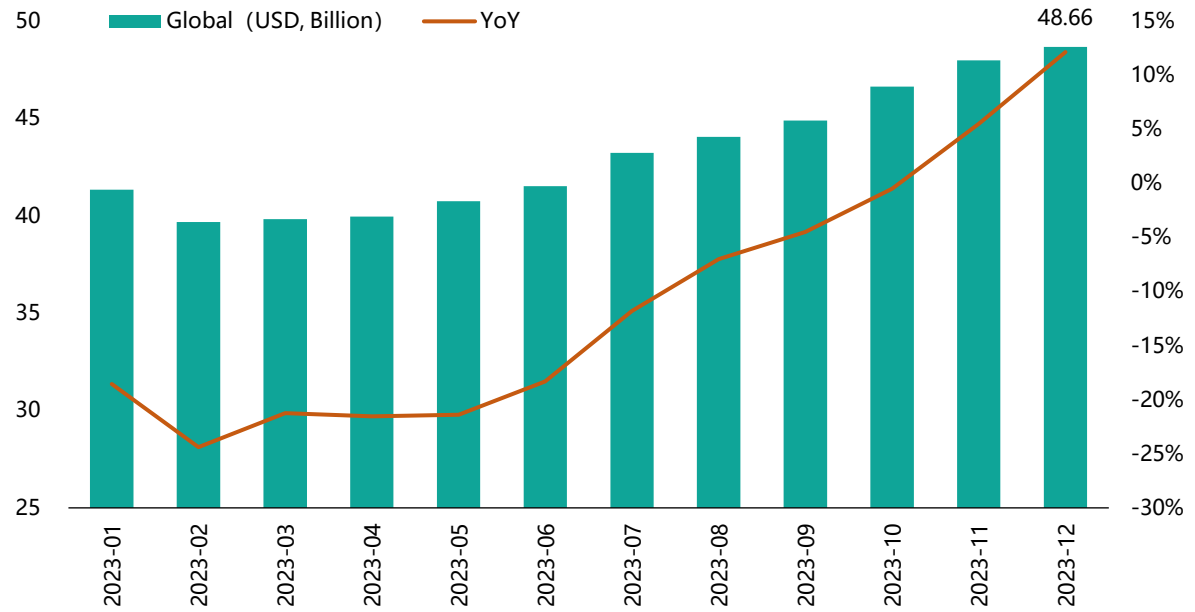
Data Source: Choice

1.2 The Surge in Demand for AI Leads to Marginal Recovery of Semiconductor Sector Worldwide

In December 2023, global semiconductor sales yearly increased by 12.1%, and market demand continued to marginally recover. The Semiconductor Industry Association (SIA) predicts that the surge in demand for AI and the steady growth of automotive chips will benefit global chip sales in 2024.

From a regional perspective, market demand in Asia-Pacific and the Americas continued to recover, while sales in the European market declined monthly in December, which may be due to seasonal adjustments.

Global Semiconductor Sales (USD, Billion)

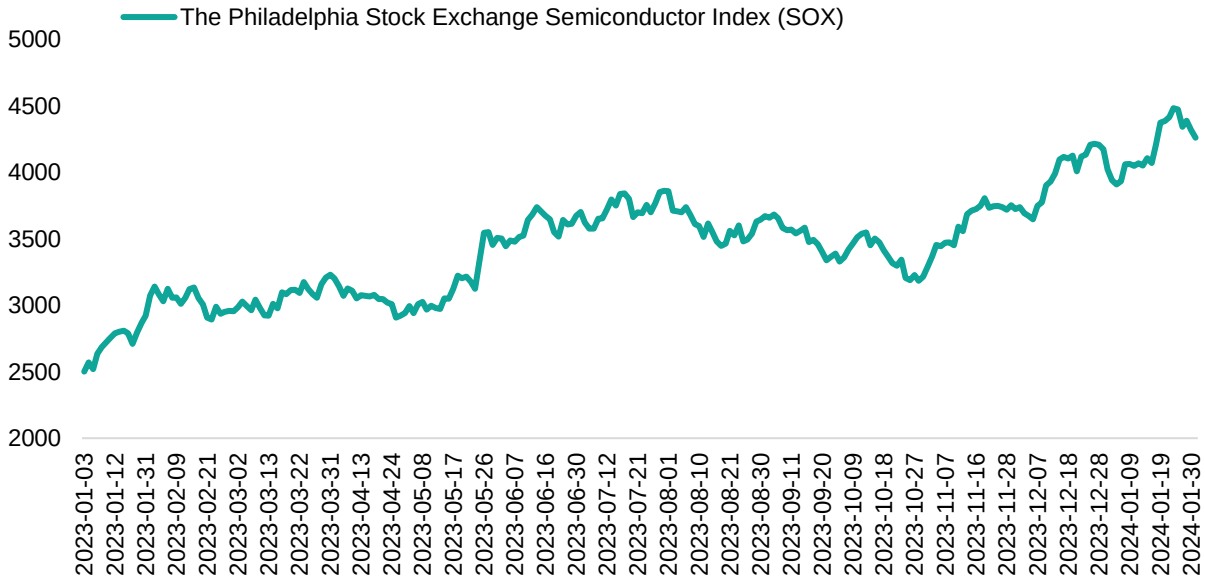


Data Source: Choice

1.3 Semiconductor Stock Market Continued to be Promising

The Philadelphia Semiconductor Index (SOX) continued to show an upward trend in January, mainly due to the increasing popularity of the AI theme, which has attracted great attention from investors.

The Philadelphia Stock Exchange Semiconductor Index



Data Source: Choice

1.4 The U.S. Proposes 'Know-Your-Customer' Cloud Computing Requirements, Further Prevent China from Using U.S. Technology for AI

The Biden administration proposes requiring U.S. cloud companies to determine whether foreign entities are accessing U.S. data centres to train AI models. The proposal would require U.S. cloud computing companies to verify the identity of foreign persons who sign up for or maintain accounts that utilise U.S. cloud computing through a "Know-Your-Customer" or “Customer Identification” programme. It would also set minimum standards for identifying foreign users and would require cloud computing firms to certify compliance annually. It will be a challenge for China’s tech giants to develop cloud computing, detrimental for AI industry advancement.

1.5 U.S. Awards Nearly USD 150 Million to Repair or Replace EV Charging Stations

The U.S. Transportation Department is awarding USD 148.8 million for projects in 20 states to repair or replace nearly 4,500 existing electric vehicle charging ports. Drastically boosting EV charging stations is crucial to the wide deployment of electric vehicles, even as a growing number of automakers are adopting Tesla's EV charging technology.

1.6 The European Commission Decided to Establish an AI Office to Improve the AI Governance System

On January 24, the European Commission announced that it will establish the European Artificial Intelligence Office (AI Office). The role of the AI Office will focus on the development and coordination of AI policy at the European level, as well as the supervision of the implementation, uniform application, and enforcement of the forthcoming AI Act.

2. Semiconductor Industry Updates

2.1 Short-term Implications

Overview

- Chinese small power chipmakers have structurally increased product prices, but there has been no signal of overall price increases.
- Earthquake in Japan caused supply disruptions to some Murata inductor products, resulting in price upward in the short term.
- Microchip’s Gresham factory plans to shut down temporarily with continued weak demand for MCU.

2.1.1 Recovery of Power Chip Market Remains Uncertain with Structural Increases in Product Prices from Chinese Small Chipmakers

JJMicroelectronics increases the price of Trench MoS by 5% - 10% starting from January 15. The price increase was mainly due to pressures from raw material costs, exchange rate fluctuations and labour costs. In addition to JJMicroelectronics, many small and medium-sized Chinese manufacturers have issued price increase notices, generally increasing product prices by 10% - 20% starting from January 2024. However, other Chinese top power device manufacturers have no plans to increase prices yet.

2.1.2 Murata Shut Down Anamizu Factory for 5 Months Due to Earthquake Damage, Leading to Significant Increase in Prices of its Products

Murata recently issued a notice to its customers that the company's Anamizu factory in Japan will not be able to resume production before mid-May due to the earthquake. Anamizu factory mainly produces chip inductors. The earthquake caused supply disruptions for DLW-P and LQH series products, and market prices rose sharply due to panic hoarding.

2.1.3 Microchip Plans to Suspend Production at Gresham Factory, MCU Market Demand Continues to be Under Pressure

Microchip plans to suspend production at the Gresham factory in March 24, and the shutdown is expected to last two weeks. In addition, it is also considering suspending production again in June. The suspension is mainly due to weak sales in the MCU market.

2.2 Mid-term Implications

Overview

- AI is still the growth driver of overall market, and leading chipmakers will accelerate shipments of AI chips in 2024.
- AMD has discontinued production of some logic chips, causing a mismatch between supply and demand with lagging demand adjustment.
- Mobileye’s Q1 24 performance outlook is lower than expected due to excess client inventory and reduced orders.

2.2.1 NVIDIA and AMD will Accelerate Shipments of AI chips to Satisfy Demand

Nvidia and AMD are expected to jointly place orders for approximately 1.5 million advanced AI chips from TSMC in 2024. In addition to H200 and GH200, NVIDIA will also release new products such as B100 and GB200 with next-generation architecture in 2024. AMD's current main AI accelerators include MI300A and MI300X.

2.2.2 AMD Discontinues Production of Some Logic Chips, Causing Supply Shortage in the Near Future

AMD recently announced that it will discontinue production of a number of programmable logic chips, including XC9500XL, CoolRunner XPLA 3, CoolRunner II, Spartan II, commercial & industrial “XC”, and automotive “XA” product lines. In the mid-term, there may be a supply shortage of these chips as demand has not yet been adjusted.

2.2.3 Mobileye's Performance Outlook is Lower than Expected, Mainly Due to Reduced Orders with Excess Client Inventory

Mobileye expects 24Q1 revenue to decline by 50% year-on-year, mainly due to customer’s backlog of ADAS inventory with a decline in orders.

In order to avoid parts shortages, customers did not adjust the purchase order based on actual sales in 2022 and 2023. However, customers began to adjust the procurement method in 2024 and placed quarterly orders as needed. In Q1 of 2024, inventories still need to be digested, leading to a sharp decline in orders.

The company currently estimates that ADAS inventory of client is as high as 6 to 7 million units. It is expected that the inventory will be basically digested by Q2 of 2024, and will begin to return to normal in the second half of the year.

2.3 Long-term Implications

Overview

- The United States subsidises leading chipmakers to expand production capacity, which is beneficial to the increase in the share of mature process chip output.
- Infineon and UMC team up to help increase the proportion of local production in the United States, reducing dependence on external supply chains.

2.3.1 The United States Funds Microchip to Help Expand the Influence of Mature Process Chips

The U.S. Department of Commerce said it plans to provide USD 162 million in government grants to Microchip to strengthen U.S. semiconductor and single-chip microcomputer production capabilities. The fund will allow Microchip to triple its mature node semiconductor and MCU production at two U.S. factories, reducing reliance on foreign manufacturing and enhancing supply chain resilience.

2.3.2 Collaboration between Intel and UMC will Further Raise the Proportion of Local Production in the United States

Intel and UMC announced a formal cooperation that Intel will provide existing factory buildings and equipment production capacity, and UMC will provide 12nm technology IP, taking its responsibility for factory operations and business contacts. The cooperation between Intel and UMC will further increase the proportion of localised semiconductor production in the United States. For UMC, this cooperation will save it investment costs, diversify its production capacity layout, and disperse supply chain risks. For Intel, it can quickly gain access to UMC’s wafer foundry experience and help focus resources to accelerate the development of more advanced Process OEM business.

3. Application Updates

3.1 Artificial Intelligence

Overview

As major technology giants accelerate their business on AI sector, the demand for AI chip continues to grow. Consumer electronics with AI may step into a period of rapid growth, and Qualcomm's market share in Gen AI mobile phone chip market is expected to reach 80%.

3.1.1 Demand for AI chip will Continue to Outstrip Supply with Tech Giants Boosting AI Business

It was announced recently that Meta is going to buy 350,000 H100 chips by 2024 in order to develop artificial intelligence; OpenAI plans to raise billions of dollars to build a network of AI chip factories, thereby reducing reliance on external supply chains.

3.1.2 Samsung Launches AI Mobile Phone, Deeply Benefiting Qualcomm

Samsung launched Galaxy S24 series, which have multiple AI functions such as real-time translation of calls. All Samsung Galaxy S24 series are equipped with Qualcomm Snapdragon 8 Gen3 for Galaxy chips.

Counterpoint Research pointed out that Samsung's market share will reach 50% among the 100 million Gen AI mobile phones shipped in 2024, assuming that Apple iPhone in 2024 will not be equipped with generative AI functions. Qualcomm will account for 80% share of Gen AI mobile phone chip market.

3.2 New Energy

Overview

In view of the fierce competition in China, Chinese leading energy storage manufacturers are accelerating their overseas expansion, and market outlook in Europe, Northwest Africa, and Arabia is relatively promising with the long-term growth of power semiconductor market.

3.2.1 Leading Energy Storage Manufacturers in China are Accelerating Their Overseas Expansion

Manufacturers	Updates
BYD	BYD signed a contract with Spanish company, Grenergy, to supply energy storage systems for the world's largest energy storage project, Atacama Oasis.
Hithium Energy Storage	A procurement cooperation agreement was signed between Hithium Energy Storage and Powin, an American energy storage system integrator. Powin will receive the agreed energy storage capacity from Hithium Energy Storage over the next three years via its self-developed 300Ah special battery product.
Great Power	A strategic cooperation agreement was signed recently between Great Power and Revoneeds Investments. The company will rapidly expand into Northwest African and Arab markets via the establishment of a Moroccan energy storage pilot project.

3.2.2 Infineon and Sinexcel Cooperate to Expand Business, Benefiting the Long-term Development of Power Chips

Recently, Infineon announced a cooperation with Sinexcel. Infineon will provide Sinexcel with 1200V CoolSiC MOSFET to further improve the efficiency of energy storage converters.

3.3 Automotive

Overview

- The Red Sea crisis has deeply impacted automotive supply chain, and attention should be paid to issues, such as extended delivery time of auto parts, stagnant supply, and the impact on China's auto exports in the future.
- Intelligent trend of automotive in China may further accelerate, however, the European market demand is relatively weak, and the Indonesian market is in the ascendant.

3.3.1 Red Sea Crisis Hits Automotive Supply Chain

Impact on local production in Europe: Recently, many European automotive manufacturers factories have suspended production due to parts transportation problems. This is mainly because about 70% of the parts in the European automotive market are transported from Asia through the Red Sea.

Manufacturers	Impact
Tesla	Plans to suspend most car production at its plant near Berlin from January 29 to February 11
Volvo	Factory in Ghent, Belgium, will suspend production for three days
Suzuki	Factory in Hungary to suspend production for one week
Volkswagen	Adjustment of component supply routes resulting in two weeks longer lead time

Impact on China's automotive exports: It is possible that auto exports from China to Europe would be significantly more expensive and longer if port congestion in the Red Sea and Suez Canal continues. The European auto market will also be affected by the compression of profit margins for Chinese manufacturers.

3.3.2 Stellantis Plans to Lay Off Employees, Mainly Due to Weak Demand in the European Auto Market

Approximately 600 employees at Stellantis' Mulhouse plant in eastern France will be laid off, while 2,250 workers will lose their jobs at its Mirafiori plant in Turin, Italy. It said that the layoff was mainly caused by weak demand in the European automotive market.

3.3.3 Huawei and Lantu Reach Cooperation to Help Commercialise Intelligent Vehicles

Huawei and Lantu, a high-end EV brand under Dongfeng Motor Group, officially signed a strategic cooperation agreement. Through cooperative vehicle models, they will innovate and explore in multiple fields to accelerate the large-scale commercialisation of intelligent technology.

3.3.4 Leapmotor Received Investment of HKD 659 million, 40% of Which was Used for Intelligent Development

Leapmotor announced that it has received a strategic investment of HKD 659 million. The funds mainly came from Jinhua City Industrial Fund and Wuyi County Financial Investment.

Share of funds	Usage of funds
40%	▪ Expand and upgrade the intelligent EV products ▪ Expand the R&D team ▪ Improve electrification technology ▪ Strengthen the development of advanced automotive intelligence technologies such as autonomous driving, and intelligent cockpit systems
25%	▪ Marketing ▪ Expand sales and service network ▪ Expand overseas markets
15%	▪ Improve production capacity and automation capabilities ▪ Enhance vertical integration and operational efficiency
20%	▪ Others

3.3.5 BYD Invested USD 1.3 Billion to Build a Factory in Indonesia, Optimistic About the Future Growth Potential of the Indonesian Market

BYD plans to invest USD 1.3 billion to build an automotive factory in Indonesia with an annual production capacity of 150,000 vehicles. It also plans to establish a sales network of up to 50 outlets in Indonesia by the end of 2024. The growth potential of the Indonesian automotive market is expected to be high.

4. Market Trends of Products

4.1 Memory: High-end Product Mix Drives Structural Price Increase

According to Trendforce’s latest forecast, memory chips will show strong growth momentum in Q1 of 2024. DRAM contract prices will increase by 13% - 18%, and NAND flash contract prices are expected to increase by 18% - 23%. Due to manufacturers' increased capacity utilisation and customers' early replenishment, the quarterly growth in DRAM and NAND

flash memory contract prices is expected to be relatively moderate (3% - 8%) in the second quarter.

Increased shipments of high-end products (HBM, DDR5, etc.) will drive a structural increase in overall DRAM prices, while NAND flash memory contract prices increased slightly in the fourth quarter of 2024. It can be seen that the overall increase in DRAM contract prices in 2024 reflects changes in product mix, rather than general increases in all types of DRAM chips; the price increase momentum for NAND flash memory comes from supply-side production control.

Price of Product	2024Q1(E)	2024Q2(F)	2024Q3(F)	2024Q4(F)
Blended DRAM	Up 13% - 18%	Up 3% - 8%	Up 8% - 13%	Up 8% - 13%
Blended NAND Flash	Up 18% - 23%	Up 3% - 8%	Up 8% - 13%	Up 0% - 5%

4.2 Power: Price Growth Outlook Remains Weak with High Stock of Low-voltage Chips

At present, power chips are still in an oversupply stage, and inventories from clients are still being depleted. There is no indication of a comprehensive price increase in the short term. As demand for consumer electronics picks up, some segments may accelerate destocking, including diodes, transistors, medium and low-voltage MOSFETs.

Infineon and Vishay have extended the delivery time of MOSFET products, as seen in the table below.

Product	Manufacturer	Pricing	Lead Time (Weeks)
MOSFETs	Vishay	→	20-52/+
	Infineon	→	18-40/+
	Onsemi	→	14-40/+

4.3 Analog: Lead Time of Consumer Device is Shortened

The price of TI's analog chip applied to automation is still on a downward trend, and the lead time is relatively short. Due to changes in ADI's price strategy, product prices have increased. However, inventory is still being depleted, and the delivery time is short.

Product	Manufacturer	Pricing	Lead Time (Weeks)
Operational Amplifiers (OP AMPs)	TI	→/↘	6-26/+
	ADI	↗	7-20/+
DC/DC Switching Regulators	TI	→/↘	12-26/+

4.4 Passive: Prices of Some Automotive Inductor Products Have Risen Sharply Due to the Impact of the Earthquake in Japan

The recent earthquake in Japan triggered panic hoarding in the market. Murata's dealer inventory of some automotive-grade inductors was emptied, and prices rose sharply, mainly involving the LQH and DLW series. In terms of resistors, due to the decline in raw material costs, the price of Vishay's industrial resistor products may have a downward trend.

Product	Manufacturer	Pricing	Lead Time (Weeks)
Ceramic Capacitors	Murata	→	14-24/+
Chip Resistors	Vishay	↘	20-46/+

5. Market Opportunities and Risks

5.1 Opportunities

5.1.1 Overall Price of DRAM Has Increased Benefiting from Product Structure Upgrades

With the wave of AI, HBM's promising outlook continues to drive up the price of high-end products such as DDR5, while price upward of low-end products is not significant.

5.1.2 Positive Impact of the Japanese Earthquake on Passive Components

The recent earthquake in Japan caused the shutdown of Murata's factory, which blocked the supply of some automotive grade inductors. Panic stockpiling in the market drove prices up sharply.

5.1.3 Consider the Price Upward Trend of Power Chips in the Following Quarters

Chinese leading power chipmakers said that recovery of the market still needs to wait for Q2 of 2024 to be further confirmed.

5.2 Risks

5.2.1 MCU Market Demand Continues to be Weak with Leading Chipmakers Having Short-term Shutdown Plans

Microchip said that customers continue to reduce inventory and have shutdown plans in March and June. Customers will still need 2-3 quarters to adjust stock.

5.2.2 The United States' Restrictions on China's AI Industry

Recently, the United States has further restricted China's AI industry, from export controls on AI chips to restrictions on large-scale AI model training. Chinese AI industry development will be limited in all software and hardware aspects by the United States.

It is expected that there may be a shortage of high-end computing power in China because Chinese tech giants have not yet been able to form a mature AI computing power ecosystem. The extent of the impact on future industry development needs to be further clarified.

5.2.3 Impact of the Red Sea Crisis on the Automotive Supply Chain

The impact of the Red Sea crisis continues to ferment. Many car companies plan to suspend operations in their European factories. The lead time of related parts has been extended, which may have a negative impact on the supply of cars.

The automotive supply chain needs to be monitored for subsequent changes and production and stocking plans should be made.

Conclusion

In January 2024, the global economy performs better, and South Korea's manufacturing PMI has significantly risen to above boom-bust line. Semiconductor industry continued to recover marginally due to the surge in demand for AI.

The United States' restrictions on the development of China's AI industry have entered a phase of comprehensive blockade of software and hardware, because it has gradually shifted from AI chip export controls to restrictions on the application of large AI models.

Japan's earthquake disrupted the supply of Murata's some automotive-grade inductors, resulting in temporary price upward. Mobileye's ADAS chip inventory from client has overstocked, thus, inventory fluctuations in the automotive industry worthy to be noted.

As Gen AI mobile phone shipments accelerate, Qualcomm will be benefited deeply with its market share reaching 80%. However, the Red Sea crisis has impacted the European automotive supply chain, with concerns about extended delivery times, stagnant supply, and affected trade. The priority should be placed on DRAM and automotive-grade inductors with better outlooks when it comes to products.

To sum it up, AI sector continues to be a bright spot in the future, leading to a moderate recovery of consumer electronics. Specifically, memory chips usher in a price upward trend.

Red Crisis' negative impact on the European automotive supply chain still needs to be taken into account and better stocking plans need to be made.

References

[1] JJMicroelectronics increases the price of Trench MoS by 5%-10%, EE Times, 2024
[2] Murata shut down Anamizu factory for 5 months due to earthquake damage, SemiMedia, 2024
[3] Microchip plans to suspend production for 2 weeks at the Gresham factory, SemiMedia, 2024
[4] Nvidia and AMD are expected to ship 1.5 million AI chips in 2024, SemiMedia, 2024
[5] AMD issues discontinuation statement for some products, SemiMedia, 2024
[6] ADAS chips in the automotive industry are overstocked, Huatai Securities, 2024
[7] US provides $162 million to Microchip Technology to enhance local MCU manufacturing capabilities, SemiMedia, 2024
[8] Intel and UMC cooperate to enter FinFET wafer foundry market, TrendForce, 2024
[9] Meta spends tens of billions of dollars to purchase 350,000 NVIDIA H100 units, Digitimes, 2024
[10]OpenAI’s Altman discussed chip-making venture with members of Congress, Washington Post, 2024
[11]Samsung’s Galaxy S24 lineup goes all in on AI, CNN, 2024
[12]BYD has become one of suppliers from the world's largest energy storage project, solarbe, 2024
[13]Hithium Energy Storage has reached an in-depth cooperation with Powin, solarbe, 2024
[14]Great Power and Revoneeds Investments have teamed up to expand business in African and Arab markets, solarbe, 2024
[15]Infineon and Sinexcel cooperate to expand business, solarbe, 2024
[16]Tesla, Volvo Car pause output as Red Sea shipping crisis deepens, Reuters, 2024
[17]Stellantis plans to lay off employees, ESM China, 2024
[18]Leapmotor received investment of HKD 659 million, Leapmotor, 2024
[19]BYD invested USD 1.3 billion to build a factory in Indonesia, Marklines, 2024
[20]US proposes 'know your customer' cloud computing requirements, U.S. Department of Commerce, 2024

Disclaimer

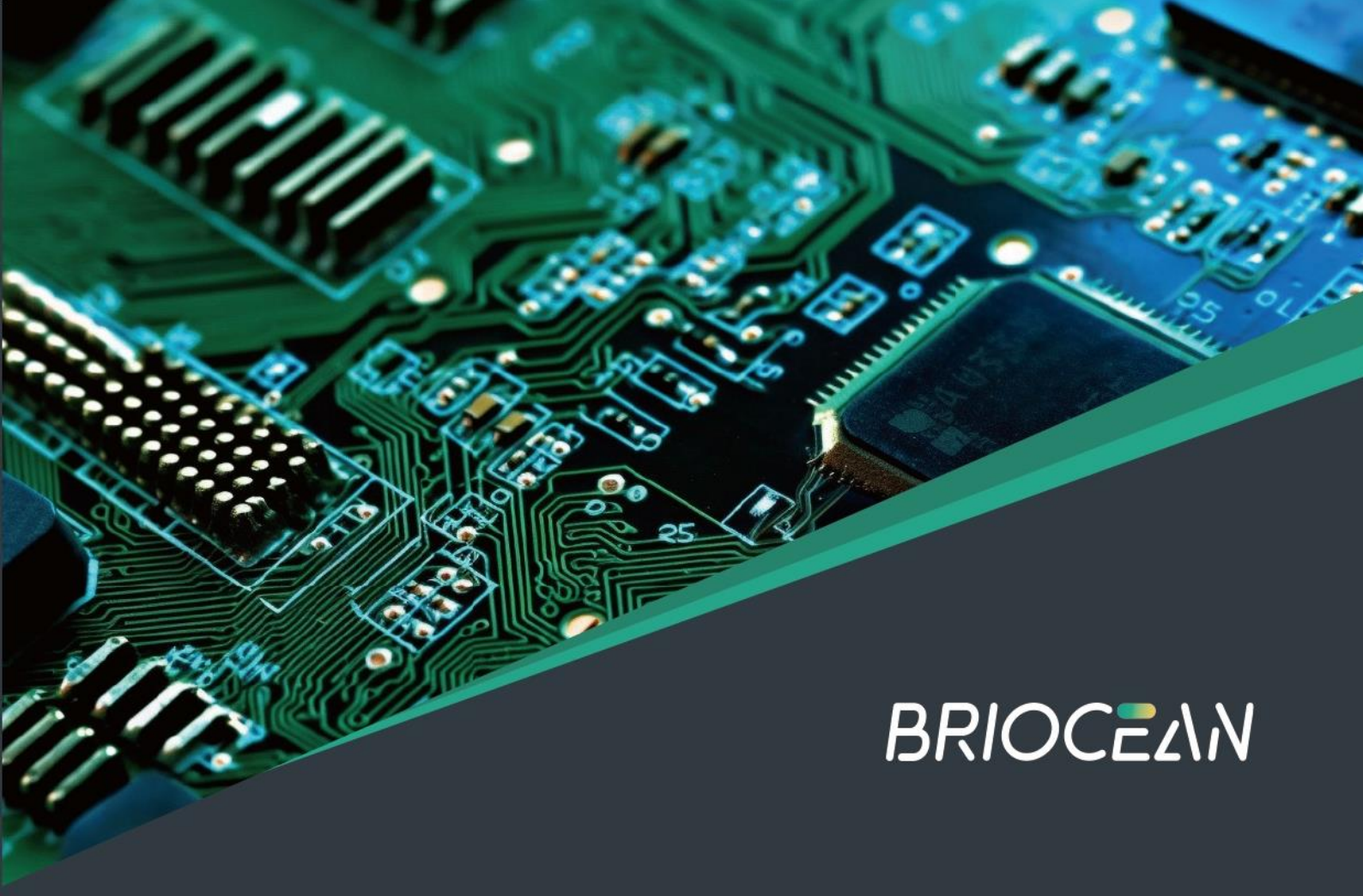
The monthly report issued by Briocean Technology Co., Ltd. (hereinafter referred to as "Briocean") is compiled by Briocean's Marketing and Branding department based on publicly available data, information and research reports.

The content of this report, such as information, opinions and speculations, solely represents the judgments and perspective of Briocean at the time of the report’s issuance. The content is intended for reference purposes only, and does not constitute bids, solicitations, offers or invitations to make offers for the mentioned products. It neither forms the basis of any contractual obligation nor recommendation for the buying or selling of any investment instruments or execution of any transactions. Furthermore, it does not provide investment or procurement advice or guidance. Briocean bears no legal responsibility for any direct or indirect consequences or losses arising from the use of the information and content. Readers are urged to exercise caution, independent judgment, and analysis when reviewing this report.

Briocean does not guarantee the authenticity, accuracy, completeness or timeliness of the data referenced in this report, research report or information obtained from third-party sources. Published information, opinions, and data may become inaccurate or obsolete due to changing circumstances or other factors after the publication date. However, Briocean is not obligated to update inaccurate or outdated information, opinions and data, nor will it notify readers of such changes or updates.

Briocean Technology Co., Ltd.

February 2024



BRIOCEAN

Founded in 2008, Briocean is a leading independent electronic components distributor in Asia where we work directly with electronic manufacturing clients across different industries to provide componenet sourcing and supply chain services.

Working with over 10,000 global electronic component suppliers, Briocean strives to meet the various clients' demands on component shortages and cost savings. With the aim of providing clients with reliable and trackable procurment supply chain services, Briocean established one of the industry's most stringent Supplier Managmenet Systems and two world-class quality control centres based in Shenzhen and Hong Kong. Briocean's commitment to quality and reliability, ensures that every component we source, meets the highest standards.

WWW.BRIOCEAN.COM