

Global Semiconductor Industry Outlook

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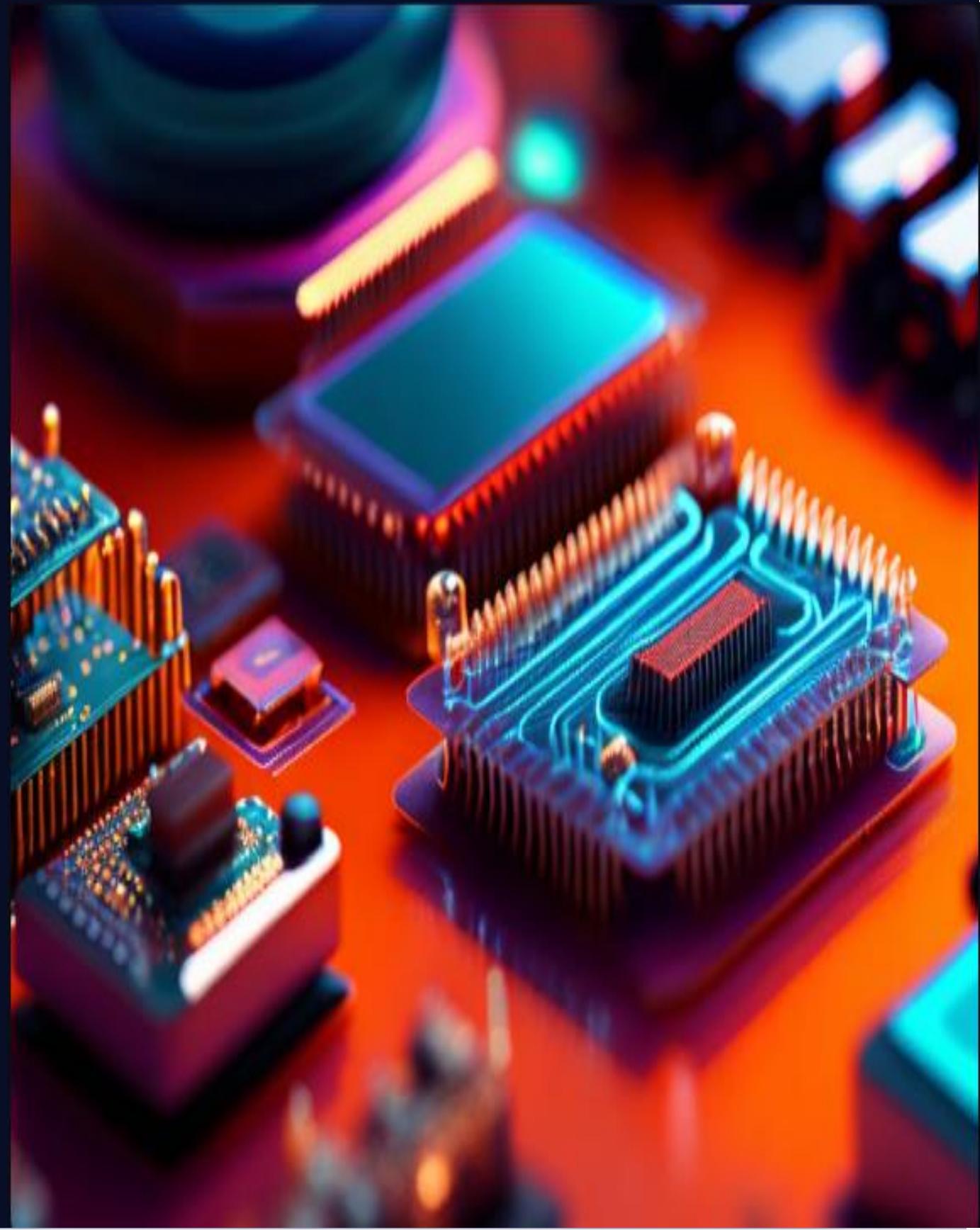
May 2024



CLUSTIV

Global Semiconductor Industry Outlook 2024

An in-depth exploration of the current state and future trends shaping the global semiconductor industry, covering key market dynamics, emerging technologies, and strategic opportunities for growth.



Key Findings

Financial expectations

85% anticipate the industry's revenue will grow in 2024



69% project their company's R&D spending to increase in 2024

55% expect their company's global workforce will expand in 2024

Operational expectations



anticipate increasing the geographical diversity of their supply chains over the next year

51% have already postponed, or plan to postpone, capital expenditures in response to the current economic environment

30% believe there is excess inventory

Growth applications and products



#1 Automotive repeated as the most important revenue driver for the coming year

#2 Artificial intelligence (AI) now ranks as the second most important revenue driver



Microprocessors (including graphics processing units (GPUs) used for AI) represent the top product opportunity for industry growth

Industry issues and strategic priorities



The lack of skilled talent is the biggest issue facing the industry over the next three years



The top functions in which semiconductor companies expect to implement Gen AI are R&D/engineering, marketing and sales, and manufacturing and operations

Top 3

The top three strategic priorities for semiconductor companies are talent development/retention, supply chain flexibility, and implementing Gen AI

Financial expectations

Key takeaways

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Growth applications and products

Key takeaways

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(including GPUs used for AI) represent the top product opportunity for industry growth

Key Findings

Semiconductor Demand Surge

Global semiconductor sales reached a record high record high in 2022, driven by the growing adoption of emerging technologies like 5G, AI, AI, and electric vehicles.

Supply Chain Disruptions

The industry faced persistent supply chain challenges, including chip shortages and logistical logistical bottlenecks, impacting production and production and delivery timelines.

Accelerating Innovation

Companies are rapidly investing in advanced manufacturing processes, such as 3D chip stacking and extreme ultraviolet (EUV) lithography, to drive technology breakthroughs.

Sustainability Focus

Semiconductor firms are prioritizing sustainability sustainability initiatives, including renewable renewable energy adoption and water conservation, to reduce their environmental environmental footprint.

Market Trends



Chip Demand Surge

Global semiconductor sales reached record highs in 2022, driven by the growing adoption of 5G, AI, electric vehicles, and other emerging technologies.



Supply Chain Disruptions

The industry faced persistent supply chain challenges, including chip shortages and logistics bottlenecks, impacting production and delivery timelines.



Accelerating Innovation

Companies are rapidly investing in advanced manufacturing processes like 3D chip stacking and EUV lithography to drive breakthrough semiconductor technologies.

Industry Challenges



Supply Chain Disruptions

Persistent chip shortages and logistical bottlenecks have impacted production and delivery timelines, hampering the industry's ability to meet surging demand.



Escalating Costs

Rising prices for raw materials, energy, and labor are squeezing profit margins and making it increasingly challenging for companies to maintain competitiveness.



Talent Shortage

A dearth of skilled engineers and technicians specializing in advanced semiconductor manufacturing processes is hindering innovation and growth.



Regulatory Complexities

Navigating a patchwork of regional regulations and trade policies is adding operational complexity and uncertainty for global semiconductor firms.

Growth Opportunities



Surging Demand

The growing adoption of cutting-edge technologies like 5G, AI, and electric vehicles is fueling unprecedented global semiconductor sales, presenting a wealth of growth opportunities for the industry.



Technological Breakthroughs

Semiconductor companies are rapidly investing in next-generation manufacturing techniques, such as 3D chip stacking and extreme ultraviolet lithography, to drive transformative technology innovations.



Sustainability Initiatives

Semiconductor firms are prioritizing sustainability, implementing renewable energy and water conservation measures to reduce their environmental footprint and capitalize on growing consumer demand for eco-friendly products.

Regional Outlook

The global semiconductor industry is undergoing significant shifts, with distinct regional dynamics shaping the landscape. North America continues to lead in advanced chip design and manufacturing, bolstered by substantial government investments and a robust talent pool.

Europe is strengthening its semiconductor capabilities, with initiatives to increase domestic production and reduce reliance on foreign supplies. Asia-Pacific, particularly China and Taiwan, remains a powerhouse in semiconductor manufacturing, capitalizing on mature supply chains and economies of scale.

Emerging markets like India and Southeast Asia are rapidly expanding their semiconductor ecosystems, attracting global investments and positioning themselves as attractive manufacturing hubs for the future.



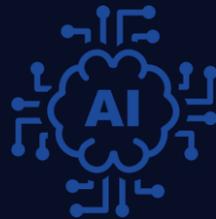
Technology Advancements

Semiconductor Fabrication Fabrication



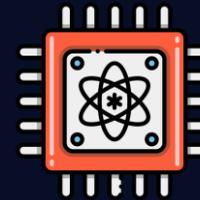
The industry is rapidly adopting adopting cutting-edge fabrication fabrication techniques like 3D chip chip stacking and extreme ultraviolet (EUV) lithography. These These innovations enable the production of smaller, more powerful, and more energy-efficient semiconductors to power power the latest technologies.

Artificial Intelligence



Semiconductor companies are are harnessing the power of AI to AI to optimize their manufacturing processes, improve product design, and enhance supply chain management. AI-driven insights insights are driving unprecedented levels of efficiency efficiency and innovation across across the industry.

Quantum Computing



Breakthroughs in quantum computing are paving the way for revolutionary semiconductor devices that can perform complex calculations exponentially faster than classical computers. Semiconductor firms are racing to develop quantum-ready chips to stay ahead of the competition.

Sustainable Solutions



Semiconductor manufacturers are are pioneering eco-friendly technologies, such as advanced advanced power management, renewable energy integration, and and water recycling systems, to reduce their environmental impact impact and meet growing consumer demand for sustainable sustainable products.

Sustainability Initiatives

Renewable Energy Adoption

Semiconductor firms are transitioning to renewable energy sources like solar and wind power to reduce their carbon footprint and meet sustainability goals.

Water Conservation

Advanced water recycling and management systems are being implemented in semiconductor fabrication facilities to minimize water usage and environmental impact.

Waste Reduction

Semiconductor companies are exploring innovative ways to recycle and repurpose manufacturing waste, promoting a more circular economy approach.

Sustainable Product Design

Semiconductor firms are incorporating eco-friendly design principles to develop energy-efficient and recyclable chip components and devices.

Supply Chain Resilience



Strengthening Logistics

Semiconductor companies are investing in advanced logistics technologies, such as AI-powered supply chain management and real-time tracking, to enhance the resilience and responsiveness of their global distribution networks.



Collaborative Partnerships

Semiconductor firms are fostering stronger, more transparent relationships with suppliers, logistics providers, and industry peers to enhance visibility, facilitate information sharing, and collectively address supply chain challenges.



Operational Resilience

Semiconductor manufacturers are implementing robust business continuity measures, including redundant production lines, backup power systems, and disaster recovery plans, to ensure uninterrupted operations and minimize the impact of unexpected disruptions.

Conclusion and Recommendations



Seizing Growth Opportunities

Semiconductor companies must strategically capitalize on surging demand for emerging technologies, invest in cutting-edge innovations, and prioritize sustainability to drive long-term growth.



Strengthening Partnerships

Fostering collaborative relationships across the supply chain, from suppliers to logistics providers, is crucial to enhancing visibility, agility, and resilience in the face of disruptions.



Nurturing Talent

Addressing the talent shortage through targeted recruitment, training, and upskilling initiatives will be essential for semiconductor firms to maintain their competitive edge and drive technological breakthroughs.

Contact us

www.clustiv.com

