

The U.S.-Australia Strategic Innovation Alliance

Advanced Microelectronics in Australia Factsheet

In 2025, Australia's advanced microelectronics sector is experiencing a period of transformation and renewed ambition. The country is seeking to move beyond its traditional role as an importer and consumer of semiconductors, aiming to establish itself as a significant contributor to the global semiconductor supply chain. This shift is being driven by a combination of government policy, targeted investment, research breakthroughs, and growing demand from sectors such as telecommunications, automotive, quantum computing, and clean energy.

Market Size and Growth

The Australian semiconductor market was valued at \$1.79 billion in 2024. The sector is forecast to expand steadily through 2034, supported by government incentive and tax breaks. The market is benefiting from increased demand for high-definition displays, faster processors, and energy-efficient components, as well as the proliferation of consumer electronics and the adoption of electric and autonomous vehicles.¹

Australia's semiconductor sector is further supported by a highly skilled engineering and technology workforce, as well as a business-friendly regulatory environment. The country's strategic location in the Asia-Pacific region also provides access to key supply chains and export markets.²

Government Policy and Strategic Initiatives

Recognizing the strategic value of microelectronics, the Australian government has taken a series of steps to stimulate domestic capability. In 2023, the government launched a National Semiconductor Strategy, which includes funding for R&D, incentives for local manufacturers, and partnerships with global semiconductor leaders. These initiatives are designed to foster innovation, reduce reliance on imports, and position Australia as a hub for semiconductor research and manufacturing.³

¹ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

² S3B, "Innovative Business Models for the Australian Semiconductor Start-up Ecosystem," March 7, 2025.

³ Expert Market Research, "Australia Semiconductor Market Report and Forecast 2025-2034," January 2025.

The government has also announced the establishment of a National Semiconductor Manufacturing Hub, which aims to enhance local chip production by collaborating with leading universities and private companies. The hub is focused on advanced manufacturing techniques, such as 3D printing, AI-driven design, and automation.⁴

In total, the government plans to stimulate \$3.3 billion of semiconductor manufacturing activity through a \$980 million investment package, mirroring the industrial strategies adopted by the United States and China.⁵

Research and Industry Ecosystem

Australia's research institutions play a central role in driving innovation within the microelectronics sector. In July 2024, Silicon Quantum Computing, based in Sydney, announced a breakthrough in silicon-based quantum chips, positioning Australia at the forefront of global quantum computing research.⁶

The University of Sydney Nano Institute made headlines in August 2023 with the development of a compact silicon chip that integrates electronics and photonics. This technology expands radio-frequency bandwidth, improves data control, and is applicable to advanced radar, satellites, wireless networks, and future telecommunications standards such as 6G and 7G.⁶

CSIRO, Australia's national science agency, opened a microelectronics manufacturing center in December 2022. The center is dedicated to accelerating the development and production of semiconductors for consumer electronics and defense applications, providing vital support to the sector's growth.⁷

Startups and established companies are also making important contributions. Carbon Clean, for example, launched an energy-efficient semiconductor manufacturing technology in June 2024, aimed at reducing carbon emissions and optimizing industrial processes.⁸

⁴ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

⁵ Corporate Electrical Contractors, "A Radical Semiconductor Reboot Has Commenced, And Australia Needs More Electricians to Keep Up," 2025.

⁶ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

⁷ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

⁸ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

Industry Applications and End-Use Sectors

The demand for semiconductors in Australia is being driven by several key sectors:

- **Consumer Electronics:** The proliferation of smart devices, high-definition displays, and advanced processors continues to fuel demand for semiconductors.
- **Telecommunications:** The rollout of 5G networks, supported by partnerships such as Telstra and Qualcomm's 5G smart modem initiative, is increasing the need for high-performance chips.
- **Automotive:** The shift toward electric vehicles, autonomous driving systems, and in-car electronics is making the automotive sector a major consumer of semiconductors. In July 2024, Tesla announced the integration of advanced semiconductor chips into its latest EVs in Australia, enhancing battery management and supporting autonomous features.
- **Clean Energy:** The use of silicon carbide (SiC) and other advanced materials in power electronics is supporting Australia's transition to renewable energy and more efficient power management.
- **Quantum Computing:** Australia's leadership in silicon-based quantum chips is opening new opportunities for the semiconductor industry, with applications in cryptography, healthcare, and beyond.⁹

Challenges and Constraints

Despite its progress, the Australian semiconductor sector faces several challenges:

- **Manufacturing Capacity:** Australia lacks large-scale fabrication plants and remains dependent on imports for many semiconductor products. High production costs and limited access to advanced manufacturing technologies, such as EUV lithography, constrain competitiveness.
- **Talent Shortages:** There is a shortage of skilled professionals in chip design and microelectronics, forcing startups to import talent or outsource development.¹⁰
- **Supply Chain Vulnerabilities:** The sector is exposed to global supply chain disruptions, and trade barriers can complicate market access.
- **Reliance on Government Funding:** Much of the sector's growth is underpinned by public investment, with private and foreign capital playing a secondary role.¹¹

⁹ Expert Market Research, "Australia Semiconductor Market Size, Share, Report | 2025-2034," January 2025.

¹⁰ S3B, "Innovative Business Models for the Australian Semiconductor Start-up Ecosystem," March 7, 2025.

¹¹ Corporate Electrical Contractors, "A Radical Semiconductor Reboot Has Commenced, And Australia Needs More Electricians to Keep Up," 2025.