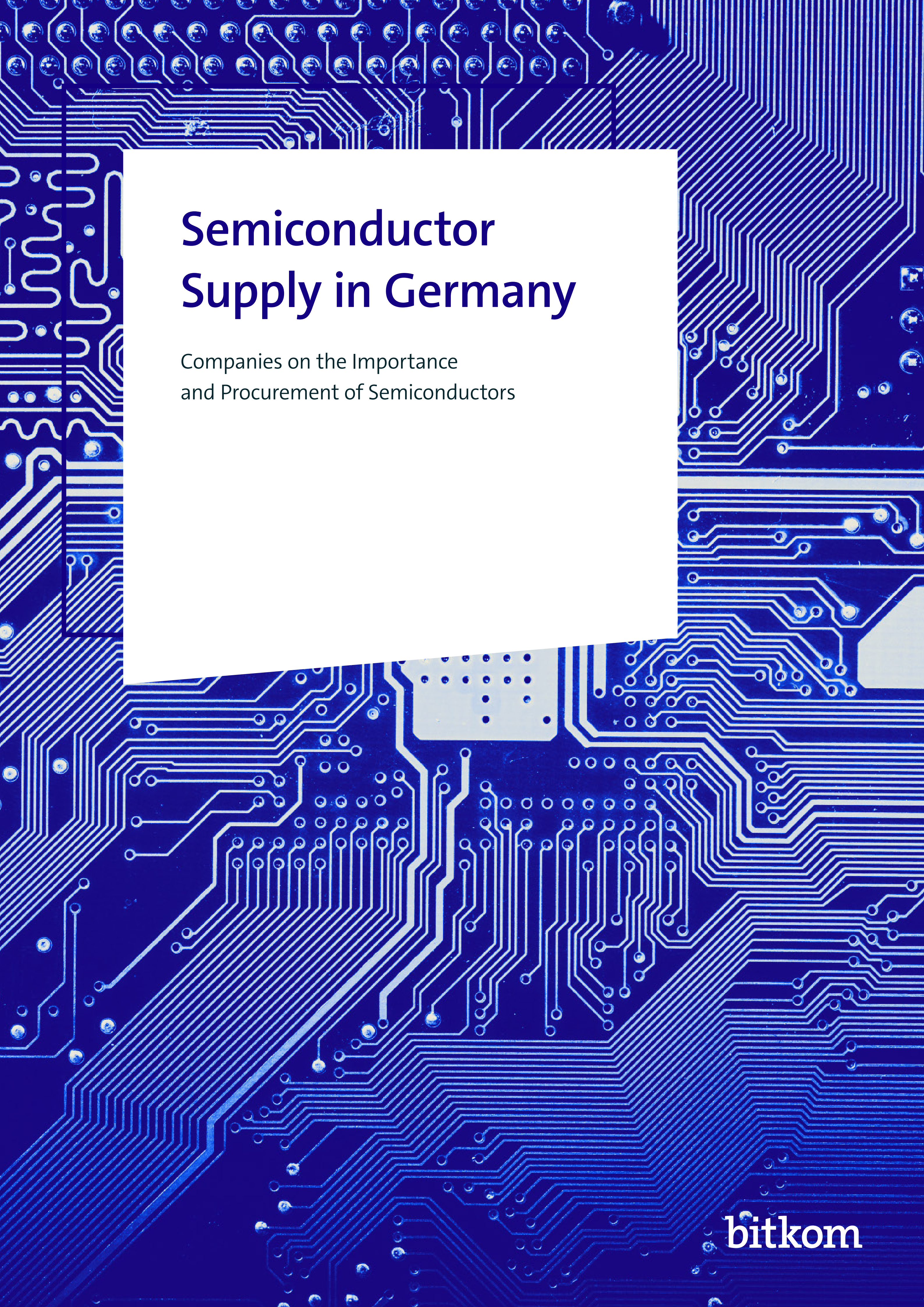

Semiconductor Supply in Germany

Companies on the Importance and Procurement of Semiconductors

bitkom

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Companies on the Importance
and Procurement of Semiconductors

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Executive Summary

Semiconductors are a critical enabling technology for the digital economy and industrial production. Nearly all companies rely directly or indirectly on a stable supply. At the same time, geopolitical tensions, fragile supply chains, and rapidly rising demand—particularly driven by AI applications—have made a resilient semiconductor supply more critical than ever. This study examines the role of semiconductors for companies in Germany, analyses current procurement risks, and outlines the strategic measures companies are taking, as well as the policy framework they expect. The findings are based on a representative survey of 503 companies in Germany, including 457 that use semiconductors.

Key findings of the study:

- **Semiconductors are indispensable to the economy**
  91 percent of companies use semiconductors, and for 80 percent of semiconductor users, they are indispensable.
- **Artificial intelligence is driving demand for specialised chips**
  64 percent of companies are already using specialised semiconductors for AI applications, such as training or running models.
- **Procurement issues remain structurally relevant**
  60 percent of companies reported difficulties in procuring semiconductors in 2025, although these were less severe than in previous years (2023: 89 percent).
- **Supply chains are globally organised, but production remains highly concentrated**
  Companies source semiconductors primarily from suppliers headquartered in the United States (72 percent), China (63 percent) and Germany (54 percent). However, actual manufacturing remains concentrated in a limited number of regions, particularly in East Asia.
- **The supply outlook for 2026 remains strained**
  42 percent expect the supply situation to remain critical, with frequent shortages. Average delivery delays in 2025 were four months.
- **Companies are responding with strategic measures**
  96 percent of companies have implemented measures to secure supply, such as stockpiling (56 percent), long-term supply agreements (52 percent) or multi-vendor strategies (44 percent).
- **There is a clear call for government support**
  Particularly important are subsidies for production (86 percent), as well as tax incentives and investment support across the entire value chain.
- **There is willingness to pay a premium for "Made in Europe”**
  A large majority of companies are willing to pay a premium of up to 5 percent for semiconductors produced in Europe.

Inhalt

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1 Definitions and the Semiconductor Landscape in Germany

1 Definitions and the Semiconductor Landscape in Germany

1.1 What Are Semiconductors, Chips and Microprocessors?

Semiconductors

Semiconductors are fundamentally a material that can both conduct and insulate electricity. In microelectronics, silicon is typically used for semiconductor components. Components are also considered semiconductors if they are composed of various layers of semiconducting, insulating, and conducting materials designed to fulfill a specific electronic function.

Chips

A chip is an electronic component that contains many microelectronic elements on a single piece of semiconductor material. Modern, high-performance chips can contain hundreds of millions of components. Each component is tasked with conducting electricity (active components) or, for example, creating resistance (passive components).

Microprocessor

A microprocessor is a specialized chip that handles computational and control tasks. It consists of billions of semiconductor components and is effectively the end product found in our smartphones, PCs, or cars.

Figure 1: Definition of Terms – Semiconductors, Chips, Microprocessor

In the following, semiconductors are understood to mean semiconductor devices as well as components that contain such devices. This includes chips, such as integrated circuits including microprocessors, memory and analogue circuits, as well as discrete components such as diodes and transistors. It also encompasses circuit boards or modules with specific functions—such as radio, power or laser modules—which consist of multiple interconnected semiconductor elements and are integrated into larger systems or devices.

1.2 How Does the Chip Manufacturing and Value Chain Work?

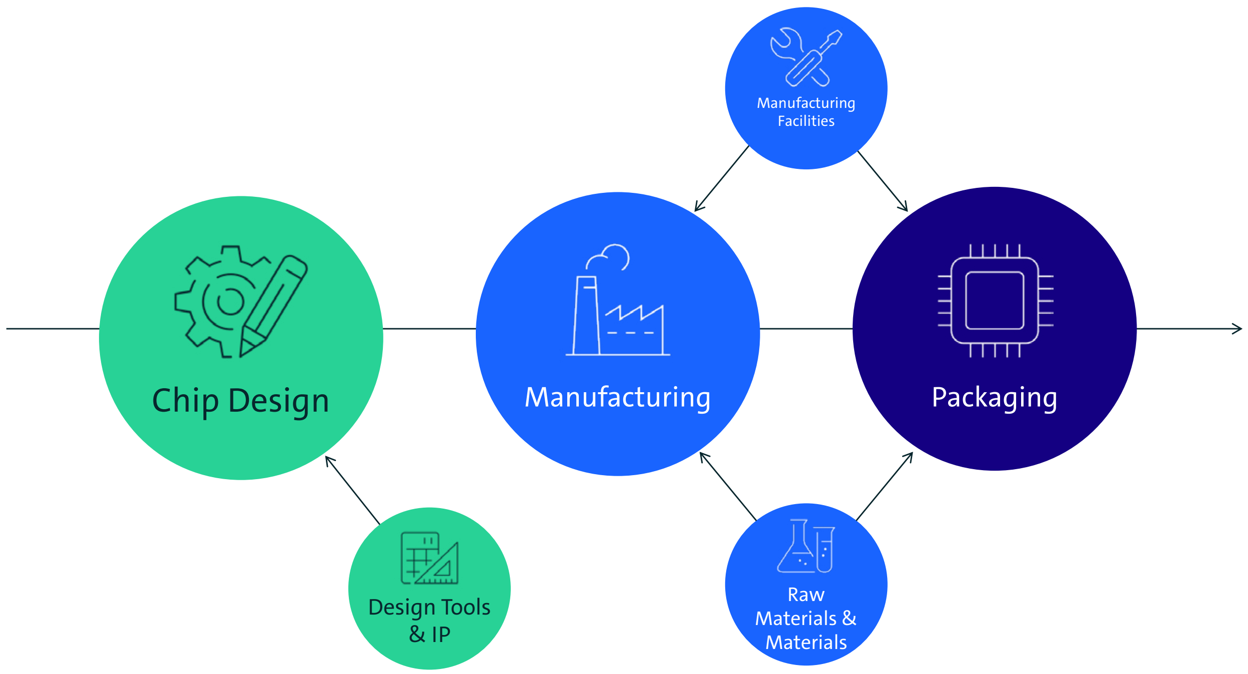


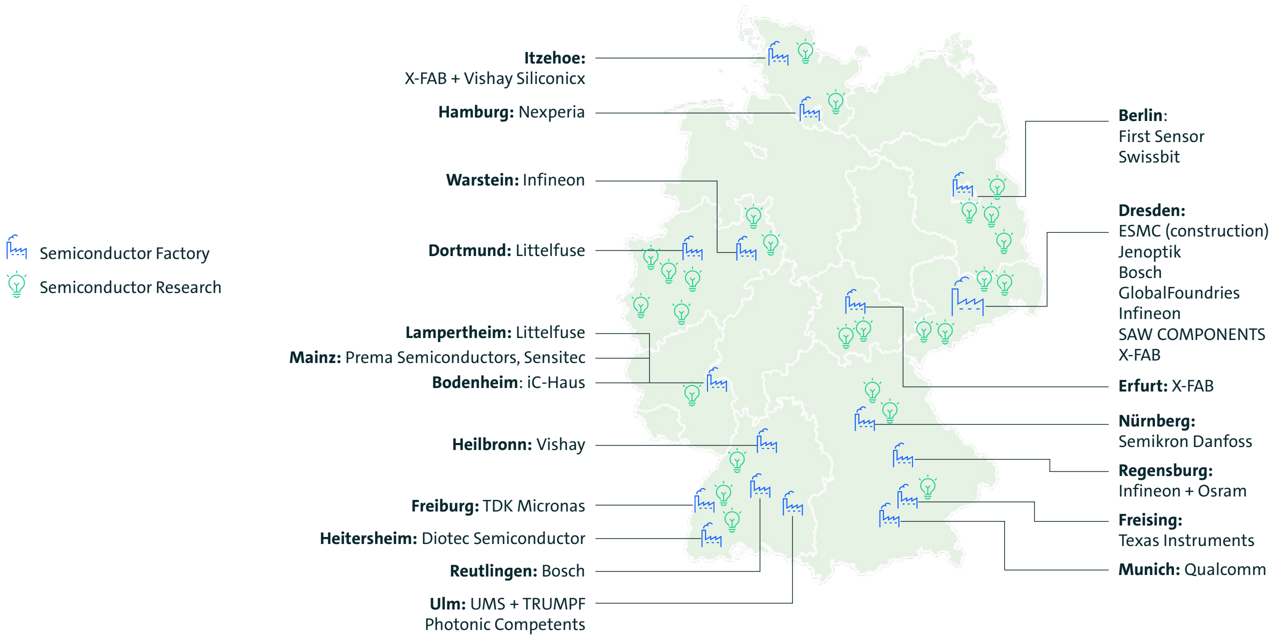
Figure 2: The Production Network for Chips

Chip production is a highly complex and globally interconnected value chain that can be broadly divided into three main stages: design, fabrication and packaging. It begins with chip design. At this stage, the functions the chip is intended to perform are defined and its architecture is developed accordingly. The development process encompasses concept development, specification, the creation of schematics and their verification. Specialised design tools and so-called core IP—software tools and preconfigured functional blocks—are used to enable the modelling, simulation and validation of complex chips. Key players include design companies such as Qualcomm, NVIDIA and AMD, as well as integrated manufacturers (IDMs) such as Intel and Infineon. In addition, companies outside the traditional semiconductor industry, including Apple, Google and BMW, are increasingly developing their own chips to optimise their products.

This is followed by fabrication in specialised semiconductor fabs. The process is based on silicon wafers—thin discs of semiconductor material on which circuits are structured. Manufacturing requires the use of numerous materials, chemicals and specialised gases, for example for coating, lithography and etching processes. This is complemented by highly specialised manufacturing equipment, supplied among others by companies such as ASML. Major players in this area include TSMC, Intel, Bosch and Infineon.

The final stage is known as packaging. At this point, the finished chip is integrated into a package and fitted with electrical connections so that it can be installed in end products. This stage is often carried out by specialised service providers such as ASE, Amkor and JCET. An international division of labour is also characteristic, as chips are often transported to other regions for further processing after fabrication. However, some large manufacturers partially integrate packaging into their own value chains.

1.3 What Is the Structure of the Semiconductor Industry in Germany?



Source: Silicon Saxony | ↗https://silicon-saxony.de/wp-content/uploads/2024/10/Silicon-Saxony-Chip-Produktion-in-Deutschland.pdf

Figure 3: Semiconductor Locations in Germany

When discussing the significance and support of Germany as a semiconductor location, one point is crucial: Germany already has a broad industrial and technological base. There are several industrial clusters with existing manufacturing capacity, complemented by ongoing investments and new facilities. At the same time, there is a strong research landscape that supports technological development and the availability of a skilled workforce. This combination of industry and research is a key locational advantage.

In addition, there is a high degree of diversity among stakeholders—from specialised suppliers to integrated manufacturers and global technology companies. This means that the core elements of a semiconductor ecosystem are already in place in Germany.

2 Importance and Use of Semiconductors in Businesses

2 Importance and Use of Semiconductors in Businesses

2.1 Usage and Strategic Importance

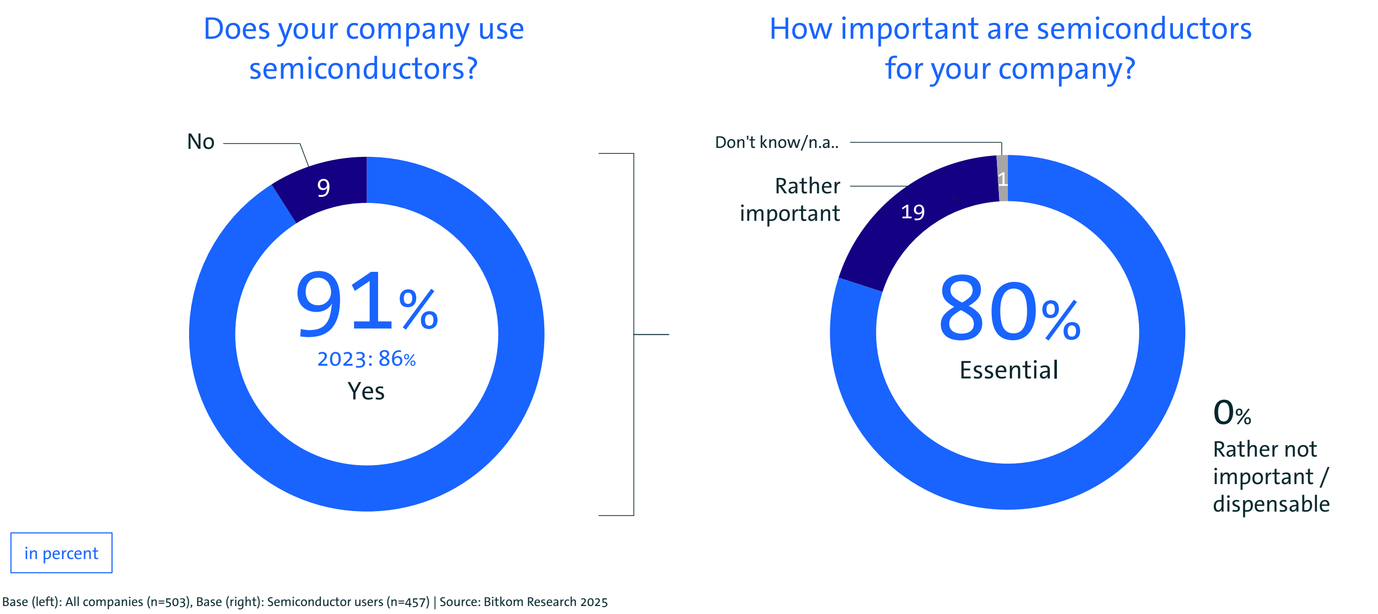


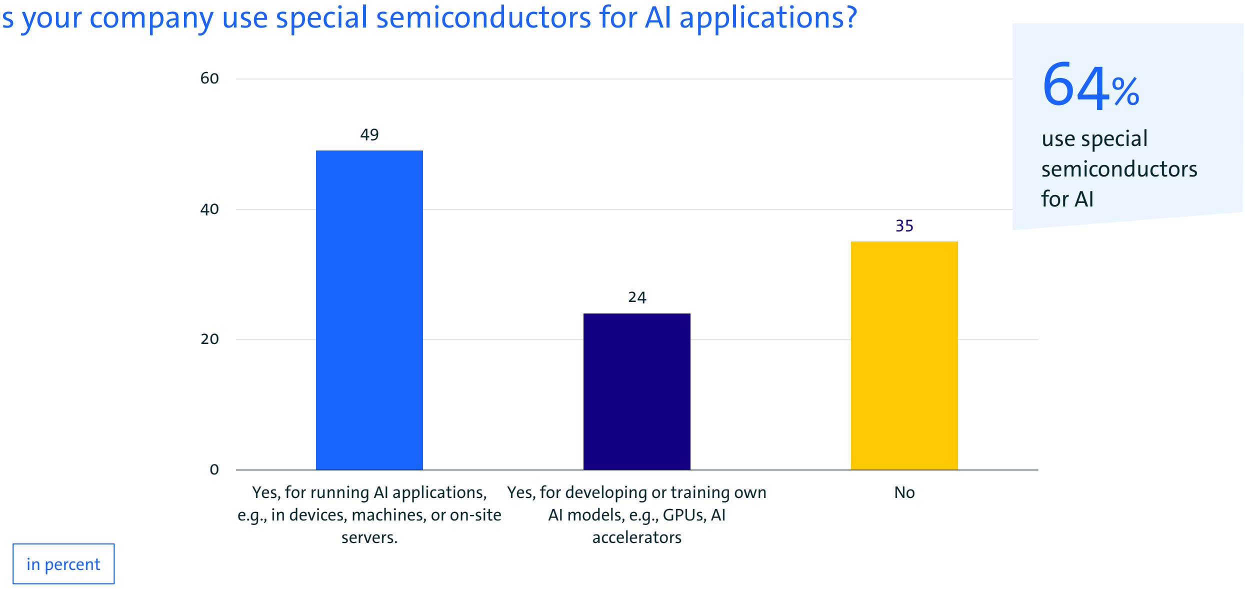
Figure 4: Use and Strategic Importance of Semiconductors in Companies

Without Semiconductors, Production Grinds to a Halt in Many Companies

Semiconductors are not just important for companies; they are indispensable for many: 91 percent of the companies surveyed use semiconductors. This dependency becomes even clearer when focusing on users: 80 percent of these companies consider semiconductors indispensable, while a further 19 percent regard them as fairly important. No company considers semiconductors to be dispensable or of little significance.

2.2 Semiconductors for AI Applications

Does your company use special semiconductors for AI applications?



Base: Users of semiconductors (n=457) | Multiple answers possible | Not shown: Don't know/no answer | Bitkom Research 2025

Figure 5: Semiconductors for AI Applications

Semiconductors for AI Used by Two-Thirds of Companies

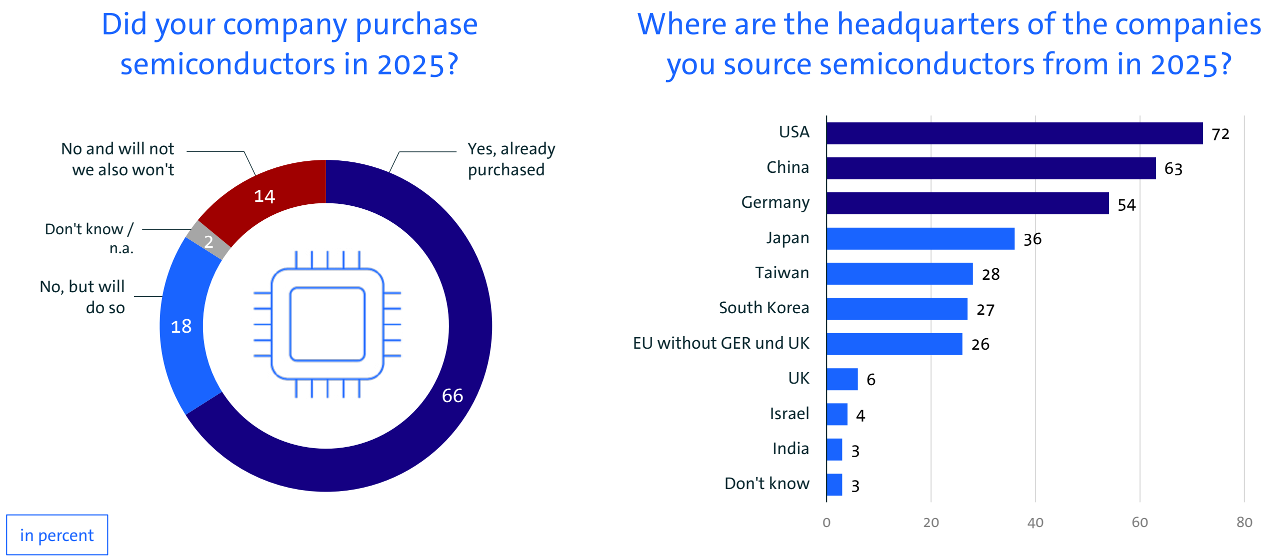
Semiconductors are a key enabler for the use of artificial intelligence in businesses. Already, 64 percent of companies that use semiconductors also use specialised chips for AI applications. The focus is primarily on the application of AI: 49 percent use such semiconductors to run AI applications, for example in devices, machines or servers. At the same time, 24 percent use specialised chips to develop or train their own AI models, with some companies covering both areas.

This shows that the use of AI is closely linked to the availability of powerful, specialised semiconductors. Conventional chips often reach their limits in this context, whereas GPUs or dedicated AI accelerators provide the necessary computational power for training and operating complex models.

3 Demand and Procurement of Semiconductors

3 Demand and Procurement of Semiconductors

3.1 Purchasing Behavior and Supplier Origin



Base (left): Semiconductor users (n=457) | left: Deviations from 100 percent are due to rounding | Base (right): (Potential) buyers of semiconductors (n=384) | right: Multiple answers possible | Source: Bitkom Research 2025

Figure 6: Semiconductor Procurement and Key Source Countries

The United States, China and Germany Are Key Suppliers

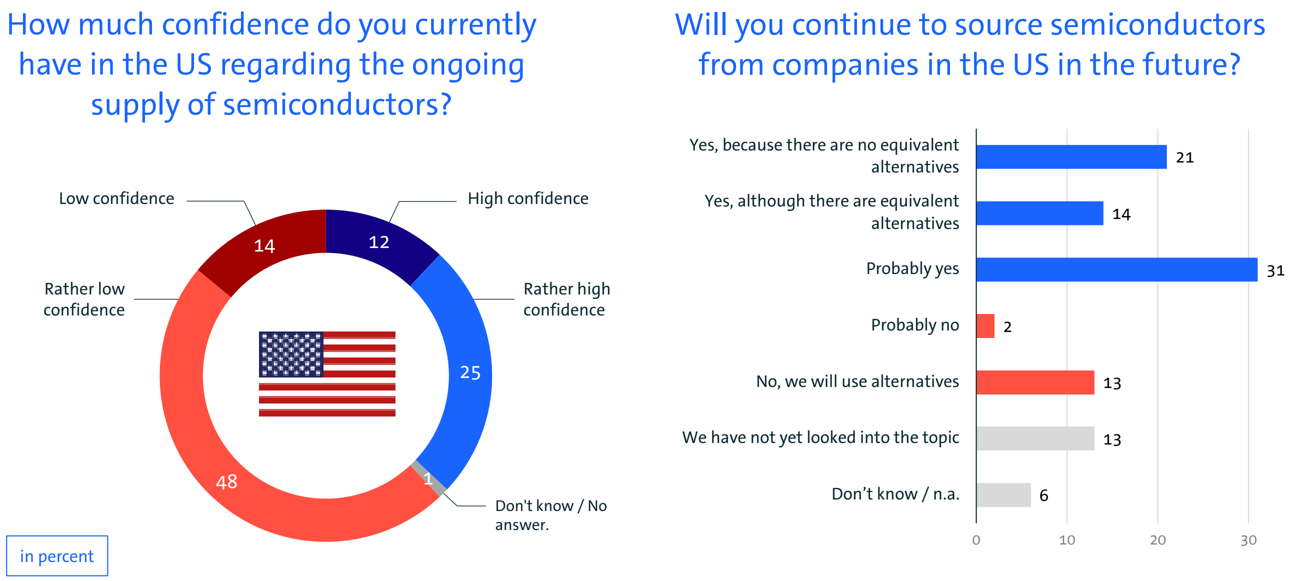
By 2025, semiconductors will be a standard component of procurement for the vast majority of companies: 84 percent have already purchased semiconductors or plan to do so. Of these, 66 percent have already made purchases, while a further 18 percent are planning to do so.

Looking at the origin of suppliers, a clear picture emerges: semiconductors are primarily sourced from companies headquartered in the United States (72 percent) and China (63 percent). Germany ranks as the third most important location at 54 percent, followed by Japan (36 percent).

Other relevant countries of origin include Taiwan (28 percent), South Korea (27 percent) and other EU Member States (26 percent). Suppliers from the United Kingdom, Israel and India play a significantly smaller role.

It is also notable that companies generally have a high degree of transparency regarding their suppliers: only three percent are unable to specify the headquarters of their semiconductor suppliers. Overall, the findings underscore the strong international orientation of semiconductor procurement while highlighting the important role of European—particularly German—suppliers.

3.2 Trust in the United States as a Semiconductor Partner



Base (left): Semiconductor users (n=457) Base (right): Buyers and prospective buyers of semiconductors sourcing from the USA (n=275) | Source: Bitkom Research 2025

Figure 7: Business Confidence in the United States

Mixed Levels of Trust in the United States

Business confidence in the United States as a reliable partner for semiconductor supply is divided and overall rather limited. 37 percent of companies using semiconductors express trust in the United States, with 12 percent showing strong confidence and 25 percent expressing moderate confidence. By contrast, 62 percent have little or somewhat little confidence.

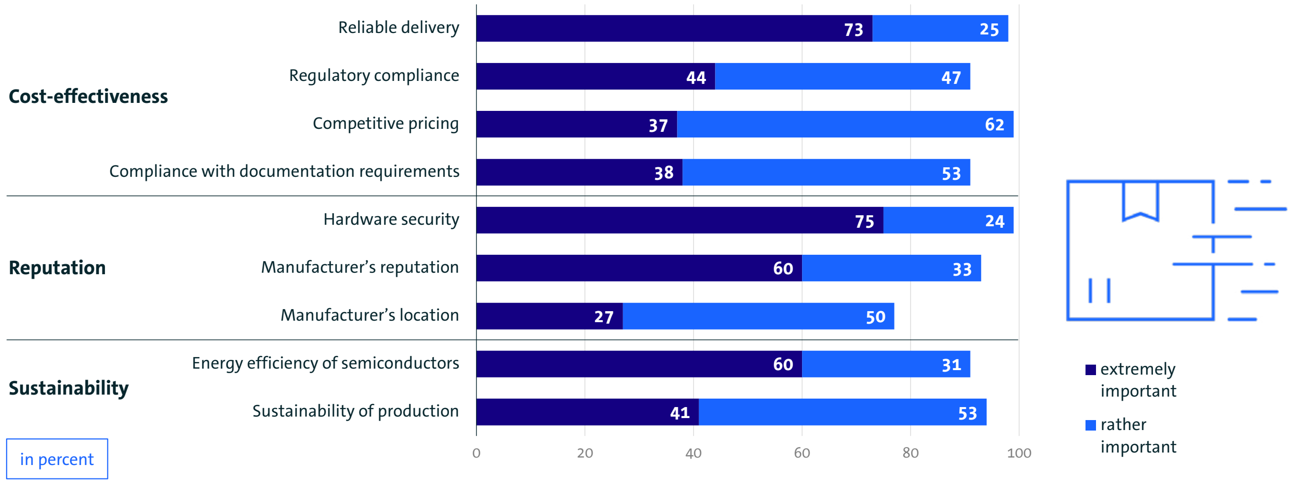
This assessment also influences future procurement strategies. A significant proportion of companies has already considered possible adjustments. 15 percent are planning to stop sourcing semiconductors from the United States in the future—13 percent definitely and a further 2 percent likely.

At the same time, however, there is a limited availability of alternatives: 21 percent of companies would like to shift their sourcing but do not see any equivalent options. Others continue to rely on US suppliers despite the availability of alternatives (14 percent) or plan to do so going forward (31 percent).

Overall, this results in an ambivalent picture: trust is limited, yet dependence on US suppliers persists for many companies.

3.3 Criteria for Selecting Suppliers

How important are the following criteria to you when selecting your supplier or provider?



Base: Users of semiconductors (n=457) | Source: Bitkom Research 2025

Figure 8: Criteria for Selecting Providers

Secure Hardware, Reliable Delivery

When selecting semiconductor suppliers, companies prioritise security and reliability of delivery. 73 percent rate reliable delivery as "extremely important", and a further 25 percent as "somewhat important". The importance of hardware security is similarly high: 75 percent consider it "extremely important" and 24 percent «somewhat important". Economic factors also play a central role. A competitive price is rated as "extremely important" by 37 percent and as "somewhat important" by 62 percent. Regulatory compliance is considered "extremely important" by 44 percent and "somewhat important" by 47 percent.

Compliance with reporting obligations is rated "extremely important" by 38 percent and "somewhat important" by 53 percent.

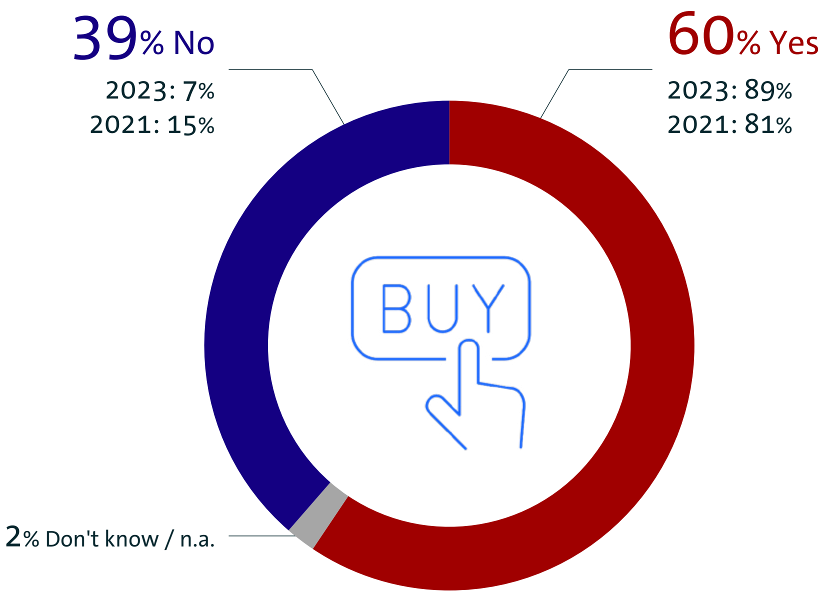
Reputational aspects are also relevant, though of somewhat lesser importance. The manufacturer's reputation is "extremely important" for 60 percent and "somewhat important" for 33 percent. The manufacturer's location is rated as "extremely important" by 27 percent and "somewhat important" by 50 percent. Sustainability criteria are gaining importance. The energy efficiency of semiconductors is "extremely important" for 60 percent and "somewhat important" for 31 percent. The sustainability of production is considered "extremely important" by 41 percent and "somewhat important" by 53 percent.

4 Challenges in Sourcing Semiconductors

4 Challenges in Sourcing Semiconductors

4.1 Supply Issues

Did or does your company have difficulties in procuring the required semiconductors in 2025?



Base: Semiconductor buyers (n=301) | Deviations from 100 percent are due to rounding | Source: Bitkom Research 2025

Figure 9: Issues in Semiconductor Procurement

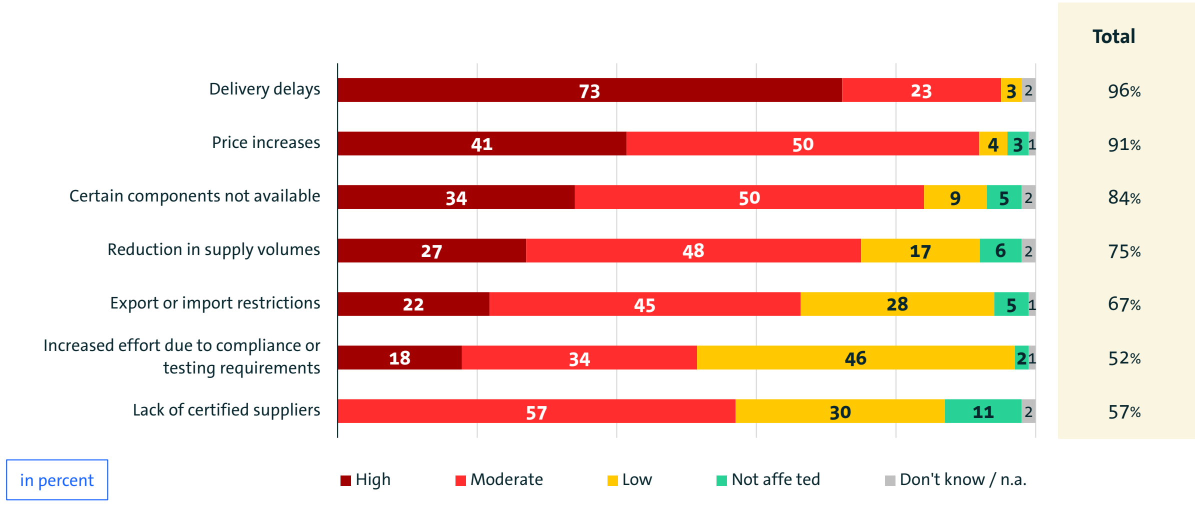
Semiconductor Supply Issues Ease in 2025

In 2025, 60 percent of companies that purchase semiconductors report difficulties in procurement. This marks a significant decline—in 2023, the figure stood at 89 percent, and in 2021 at 81 percent. At the same time, 39 percent report having no problems, compared with just 7 percent in 2023 and 15 percent in 2021.

This trend indicates that the supply situation has improved noticeably and that the severe bottlenecks of recent years have eased. Nevertheless, the situation remains strained, as a majority of companies continue to be affected by procurement issues.

4.2 Extent of Procurement Issues

How significantly was your company affected by the following procurement difficulties in 2025?



Base: Semiconductor buyers experiencing procurement difficulties (n=180) | Deviations from 100 percent are due to rounding | Source: Bitkom Research 2025

Figure 10: Extent of Procurement Issues

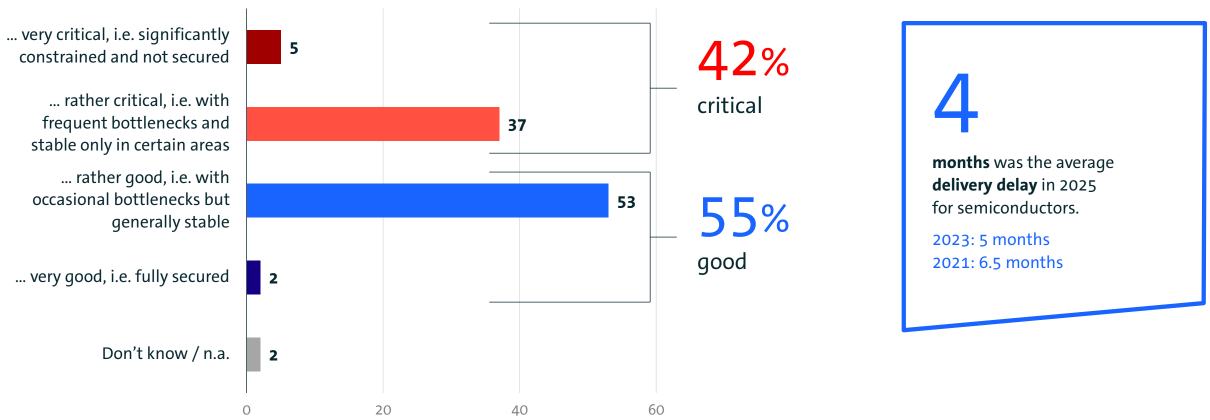
Challenges: Delivery Issues, Rising Prices and Supply Shortages

Companies affected by procurement problems primarily face delivery delays, rising prices and limited availability. Delivery delays are the most significant issue, with 96 percent of affected companies reporting them and 73 percent experiencing them to a severe degree. Price increases are also widespread (91 percent), with 41 percent reporting a significant impact. For 84 percent, restricted availability of certain components is an issue, while 75 percent report reduced delivery volumes.

In addition, 67 percent face export or import restrictions, which are generally of a moderate nature. Further challenges arise from increased compliance and inspection requirements (52 percent) and a lack of certified suppliers (57 percent), although these factors are less frequently reported as significant.

4.3 Assessment of Future Supply Conditions

What should companies expect in 2026? Semiconductor supply will...



in percent

Base (left): Semiconductor users (n=457) | Deviations from 100 percent are due to rounding | Base (right): Buyers with delivery delays (n=177), share "Don't know/n.a." 7% |
Source: Bitkom Research 2025

Figure 11: Semiconductor Supply 2026: Companies' Expectations

Four in Ten Companies Expect a Critical Supply Situation in 2026

Companies affected by delivery delays had to wait an average of four months for semiconductor components in 2025. The situation has improved compared with previous years: in 2023, the average delivery time was still five months, and in 2021 it was 6.5 months.

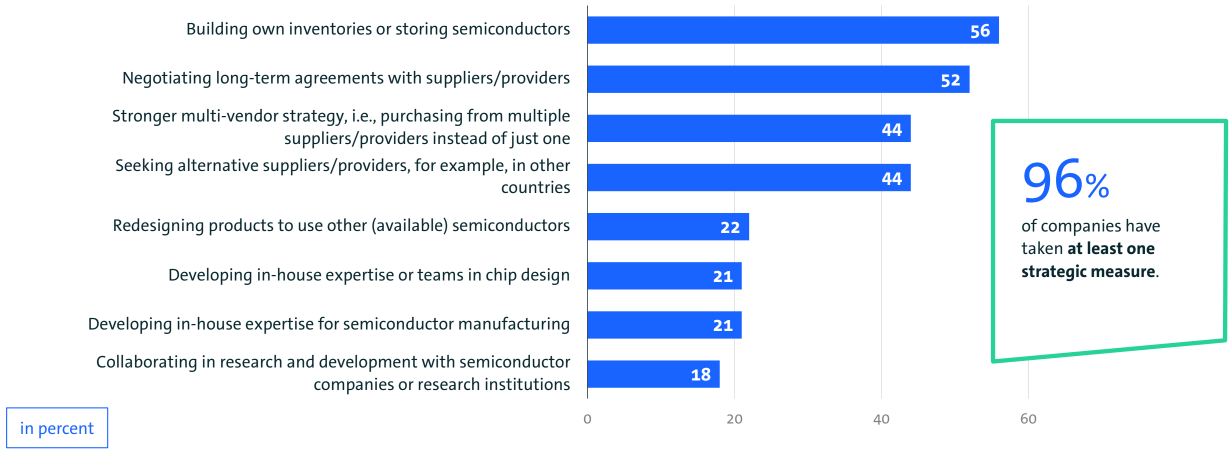
The outlook for 2026 is mixed: 42 percent of companies expect a critical supply situation—with 5 percent anticipating a very critical and 37 percent a rather critical situation.
By contrast, 55 percent foresee a rather good (53 percent) or very good (2 percent) supply outlook.

5 Measures to Ensure Supply

5 Measures to Ensure Supply

5.1 Measures to Secure Semiconductor Supply

What long-term strategic measures has your company already taken to ensure the availability of semiconductors?



Base: Semiconductor users (n=457) | Multiple responses possible | Source: Bitkom Research 2025

Figure 12: Strategic Measures for Securing Semiconductor Supply

Companies Brace for Supply Chain Bottlenecks

Companies are responding comprehensively to the experiences of recent years and have taken extensive measures to secure their semiconductor supply. Overall, 96 percent have implemented at least one strategic measure. The primary focus is on short-term risk mitigation measures: 56 percent are building up inventories or stockpiling semiconductors, and 52 percent are relying on long-term agreements with suppliers. A further 44 percent each are pursuing a multi-vendor strategy or are actively seeking alternative suppliers, including in other countries.

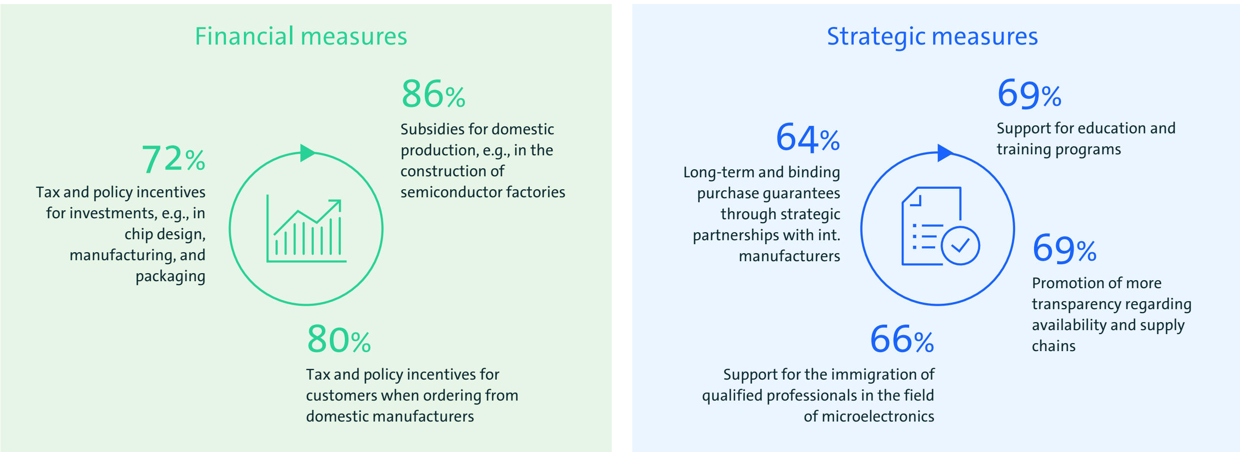
In addition, companies are increasingly investing in structural adjustments. 22 percent have adapted products to use alternative, available semiconductors. 21 percent in each case are developing in-house capabilities in chip design or semiconductor manufacturing. Collaborations are also gaining importance: 18 percent are working directly with semiconductor companies or research institutions on research and development.

6 Policy Recommendations

6 Policy Recommendations

6.1 Government Measures

Which government measures are particularly important to ensure future semiconductor supply?



Basis: All companies (n=503) | Multiple responses possible | Source: Bitkom Research 2025

Figure 13: Desired Government Actions (Financial/Strategic)

How Can Policymakers Help?

Companies see financial incentives as the key lever for securing long-term semiconductor supply. 86 percent support subsidies for domestic production, such as the construction of semiconductor fabrication plants. 80 percent favour tax incentives and policy support measures for customers sourcing from domestic manufacturers, and 72 percent back incentives for investment in chip design, manufacturing and packaging.

69 percent of companies also call for stronger support for education and training programmes in microelectronics, as well as greater transparency regarding availability and supply chains. 66 percent consider targeted immigration of qualified professionals to be an important measure to address the skills shortage.

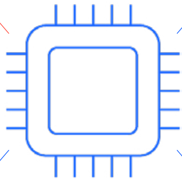
Overall, it is clear that, in addition to financial support, companies primarily expect reliable framework conditions, a skilled workforce and high-performance infrastructure to sustainably strengthen competitiveness and security of supply.

6.2 Dependencies and Sovereignty in Semiconductors

To what extent do the following statements apply?

92%
China's threats towards Taiwan are concerning regarding semiconductor supply.

90%
Germany must end **one-sided dependencies** in semiconductor supply.



86%
A strong semiconductor ecosystem in Germany is **important for our national security**.

85%
A strong semiconductor ecosystem in Germany is **crucial for our digital sovereignty**.

Base: All companies (n=503) | Percentage values for "Applies completely" and "Mostly applies" | Source: Bitkom Research 2025

Figure 14: Assessments of Dependencies and Geopolitical Risks

Greater Independence Called For

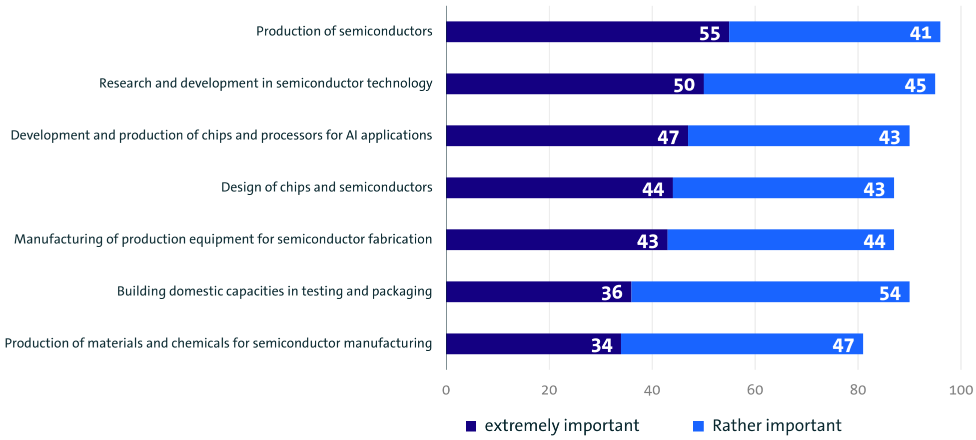
Companies perceive geopolitical tensions as a significant risk to semiconductor supply. 92 percent consider China's threats towards Taiwan in this context to be concerning. This assessment must be seen against the backdrop of a globally integrated value chain: even though only a proportion of companies source directly from Taiwanese suppliers, Taiwan plays a pivotal role in the development and production of advanced semiconductors. Disruptions in this region would therefore have far-reaching effects on global supply.

Against this backdrop, the desire for greater independence is growing. 90 percent of companies support reducing one-sided dependencies in semiconductor supply.

At the same time, the strategic importance of a strong domestic base is emphasised: 86 percent consider a robust semiconductor ecosystem in Germany important for national security, while 85 percent view it as crucial for digital sovereignty. Semiconductors are therefore no longer just an economic issue; they also have a security and geopolitical dimension.

6.3 Support for the Semiconductor Industry in Germany

How important is it for the following areas to be promoted in Germany?



Base: All companies surveyed (n=503) | Multiple answers possible | Source: Bitkom Research 2025

Figure 15: Promotion of Semiconductors in Germany

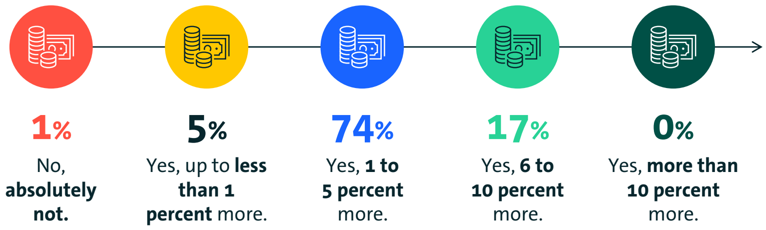
Priority Areas in Production, Research and AI

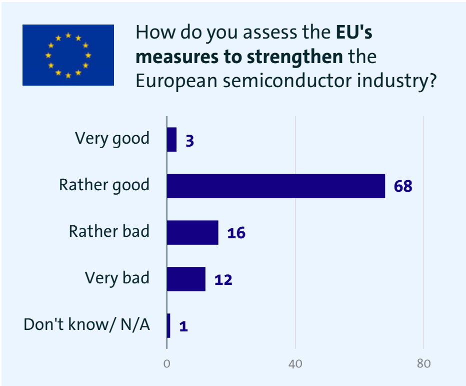
Companies are clearly calling for greater support for key segments of the semiconductor industry in Germany. At the top of the list is semiconductor production: 55 percent consider its promotion "extremely important", while a further 41 percent regard it as "fairly important". The importance of research and development is similarly high, with 50 percent rating it as "extremely important" and 45 percent as "fairly important".

There is also a strong perceived need for action in future technologies: 47 percent rate the promotion of chip and processor development and production for AI applications as "extremely important", and 43 percent as "fairly important". Chip and semiconductor design is considered "extremely important" by 44 percent and "fairly important" by a further 43 percent. In addition, the broader industrial base is regarded as relevant. The production of equipment for semiconductor manufacturing is seen as "extremely important" by 43 percent and "fairly important" by 44 percent. The establishment of domestic capacity in testing and packaging is rated as "extremely important" by 36 percent and "fairly important" by 54 percent. The production of materials and chemicals also receives broad support (34 percent "extremely important", 47 percent "fairly important").

6.4 Willingness to Pay for Semiconductors Produced in Europe

Is your company willing to pay a higher price for semiconductors with the same performance if they are produced in Europe?





Base left: Buyers of semiconductors (n=301) | Base right: All surveyed companies (n=503) | Source: Bitkom Research 2025

Figure 16: Readiness for Semiconductors Produced in Europe

Semiconductors Produced in Europe Are Likely to Be More Expensiv

Companies demonstrate a strong willingness to accept higher prices for semiconductors produced in Europe, provided that performance remains comparable. Overall, 96 percent are willing to pay a premium. This willingness is concentrated within a moderate range: 74 percent would pay between 1 and 5 per cent more, while a further 17 percent would accept an increase of between 6 and 10 percent. Smaller price increases of less than 1 percent are accepted by 5 percent of companies. Only 1 percent categorically rules out paying higher prices, and no respondents are willing to pay more than 10 percent extra.

At the same time, the European Union's policy measures to strengthen the semiconductor industry are viewed largely positively. Some 68 per cent rate them as "fairly good", with a further 3 percent considering them "very good". By contrast, 16 percent express a rather negative view and 12 percent a very negative one.

Overall, it is clear that businesses are willing to bear higher costs in exchange for greater security of supply and stronger European value creation—but within clearly defined limits.

7 Conclusion

7 Conclusion

Semiconductors are indispensable to the German economy and at the same time represent a structural bottleneck. The report clearly shows that, while the supply situation has eased noticeably, it remains fragile in light of global dependencies and geopolitical risks. A majority of companies still report procurement issues, and a significant share expects shortages to persist in the future.

The causes lie in a highly globalised and fragmented value chain, with critical production steps concentrated in a small number of regions. At the same time, demand is rising rapidly, particularly due to the growing use of artificial intelligence. This is further exacerbating structural pressure on availability and supply chains.

Companies are responding with a wide range of measures—from building up inventories and diversifying suppliers to establishing strategic partnerships and developing in-house capabilities. These measures increase resilience, but can only partially address underlying dependencies.

Against this backdrop, the industrial policy dimension is becoming increasingly important. Companies see greater support for domestic production, investment incentives, and the expansion of the skilled workforce and research capacity as key levers for ensuring long-term supply. At the same time, there is a clear willingness to accept higher costs in exchange for greater security of supply and stronger European value creation.

Semiconductor supply is therefore no longer merely a question of efficient procurement, but a strategic issue for competitiveness, digital sovereignty and economic security.

8 Methodology

Survey 2025

Client	Bitkom
Methodology	Computer Assisted Telephone Interview (CATI)
Population	Companies from manufacturing and ICT services in Germany with at least 20 employees
Target Respondents	Management and board as well as heads of purchasing and production
Sample Size	n=503, including n=457 companies using semiconductors
Survey Period	Week 30 to Week 26 2025
Weighting	Representative weighting of the overall dataset based on the current company register of the Federal Statistical Office
Statistical Margin of Error	+/- 4 percent in the total sample

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Semiconductors are a central pillar of the digital economy and industrial production, and they also carry significant geopolitical importance. Their availability is crucial for production, innovation, and key future technologies. At the same time, global dependencies, fragile supply chains, and rapidly increasing demand—particularly driven by artificial intelligence applications—are putting increasing pressure on companies. The report examines how companies in Germany assess current supply conditions, the challenges they face in procurement, and the strategic measures they are taking to safeguard their supply chains. It highlights key risks along global value chains, evaluates the importance of international markets, and identifies areas where companies see a need for policy action. The findings are based on a representative survey of 503 companies in Germany.

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