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New opportunities in Japan's semiconductor market

JAPAN'S SEMICONDUCTOR REVIVAL

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Date: 20.04.2026

Language: English

Number of pages: 14

Author: Swiss Business Hub Japan

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1. Overview

1.1. INITIAL SITUATION

Japan, once a semiconductor superpower in the 1980s with firms like NEC, Toshiba, Fujitsu, and Hitachi dominating over half of the global chip market, is now **making a comeback by strategically reclaiming upstream elements of the supply chain**. Although its global output fell to around 10% by 2020 after missing the smartphone and foundry boom, Japan has retained leadership **in critical niches such as silicon wafers, chemicals, and manufacturing equipment.** Its strengths lie in **precision manufacturing**, materials science, and a robust ecosystem of small and medium suppliers, coupled with **long-term ties to major foundries** like TSMC and Samsung. These factors, along with a commitment to innovation, have enabled Japan to maintain a 30% global share in semiconductor equipment and about half of the market for materials, positioning the country to reassert its influence in the global semiconductor industry. Today, Japan is securing materials, tools, packaging, and intellectual property, showing a strategy, through which the government blends economic security with technological ambition.

Japan has set an ambitious target of reaching **JPY 40 trillion (approx. CHF 199.6 billion) in annual semiconductor sales by 2040**, driven by rising demand from artificial intelligence and data centers. The government aims to expand investment through **public-private investment partnerships** in order to strengthen Japan's role in the global supply chain. In fact, Japan has allocated **0.71% of its GDP** to this target, proportionately more than the U.S. and other Western nations. A particular focus is on **"physical AI" chips** that power robotics and automated machinery, where Japan hopes to secure roughly **30% of the global market**.

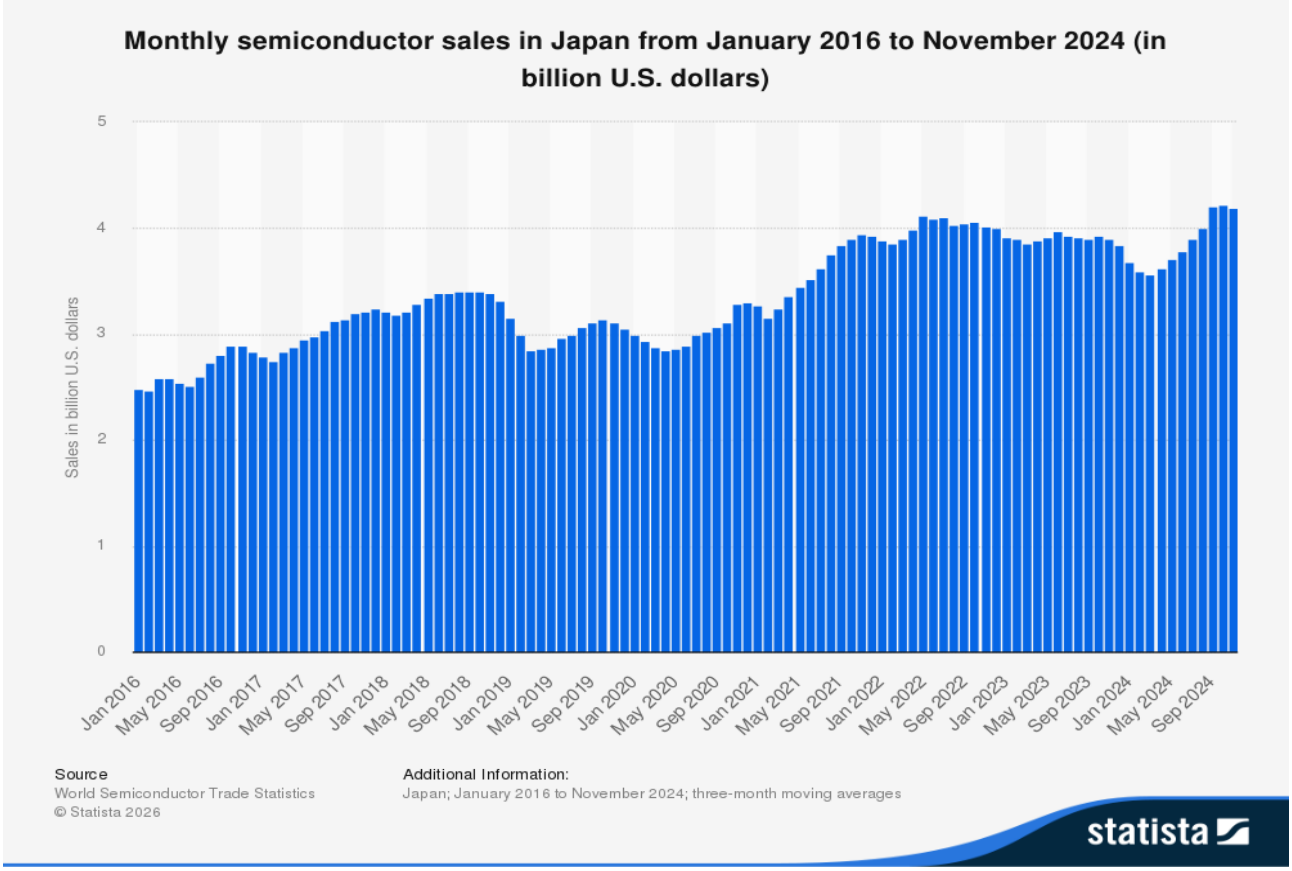
To support this expansion, Japan plans to establish **advanced semiconductor research and design centers** for next-generation chips in areas such as autonomous driving and industrial automation. With the aim to attract further investment, Japan is developing industrial sites and upgrading infrastructure, such as power and water supplies. Recent investments include **TSMC's Kumamoto fab** and **Rapidus' advanced chip development in Hokkaido**, while Tokyo has committed **over JPY 10 trillion (approx. CHF 49.9 billion) in public funding** over seven years to accelerate AI and semiconductor growth.

1.2. MARKET SIZE

Japan currently represents about one-tenth of global semiconductor revenues. In 2024, the domestic market was valued at **USD 46.74 billion (approx. CHF 37.1 billion)**, with forecasts projecting growth to nearly **USD 50.16 billion (approx. CHF 39.8 billion) by 2026**.

The following graph by Statista shows that since 2014 sales in Japan's semiconductor industry have fluctuated over time, with noticeable **growth peaks around 2018 and 2022**, followed by periods of decline. Toward late 2024, sales show increasing signs of **recovery**, stabilizing closer to the higher end of 2024.

Graphic 1: Monthly semiconductor sales in Japan, expressed in billion U.S. dollars, from January 2016 to November 2024.



Source: Statista 2026

A report by the Semiconductor Equipment Association of Japan (SEAJ), which provides a market forecast for Japanese-made semiconductor and flat panel display (FPD) manufacturing equipment for fiscal years 2025 to 2027, further highlights the market growth of the Japanese semiconductor industry, driven by AI, data centers, and advanced technologies. The FPD market, which is closely linked to the semiconductor market, is expected to recover, with significant growth in OLED investments and larger TV screen sizes by fiscal 2027.

Sales forecasts for Japan-made semiconductor manufacturing equipment

- **FY2025:**
  - Overall sales expected to rise **3% year-on-year to JPY 4.9 trillion (CHF 24.5 billion)**.
  - Growth driven by **2nm investment by Taiwanese foundries** and **strong DRAM demand (especially HBM)**.
  - Despite slower growth than FY2024's **29% surge**, sales remain at a **high level**.
- **FY2026:**
  - Forecasted **12% increase to JPY 5.50 trillion (CHF 27.5 billion)**.
  - Expansion fueled by **continued DRAM investment** and **cutting-edge logic for AI servers**.
- **FY2027:**
  - Expected **2% rise to JPY 5.61 trillion (CHF 28.05 billion.)**, sustained by **robust AI-related demand**.
  - All forecasts for FY2025–FY2027 have been **revised upward** from previous estimates.
- **Compound Annual Growth Rate (CAGR)** of **7.0%** from FY2025 to FY2027.

Sales forecasts for semiconductor equipment in the Japanese domestic market

- **FY2025:**
  - **Automotive and power semiconductor investments decline short-term.**
  - Growth remains mild at **+5% to ¥1.31 trillion (CHF 6.55 billion.)**, supported by **NAND flash and DRAM investments**.
- **FY2026:**
  - Continued **strong memory investment**, leading to another **5% increase to ¥1.38 trillion (CHF 6.9 billion.)**.
- **FY2027:**
  - **10% growth to ¥1.52 trillion** (**CHF 7.6 billion**) expected, driven by **second-phase foundry investments** and **mass production of 2nm logic**.
- **Compound Annual Growth Rate (CAGR)** of **7.7%** from FY2025 to FY2027.

Although Japan's CAGR is modest compared to global competitors, its strategic focus on resilience, niche leadership, and advanced R&D positions the country to shift from a supporting role to a more influential force in the global semiconductor ecosystem.

1.3. MARKET SHARE BY DEVICE

Based on data from Mordor Intelligence (2025), the market is segmented as follows:

Market Share by Device Type:

- **Integrated Circuits (ICs): 85.62%** of total market share
  - This is the largest segment, encompassing **Logic**, **Memory**, **Analog**, and **Micro-components**.
  - **Logic chips** (used for AI and data centers) and **Memory chips** (like 3D NAND and HBM) are currently the primary growth drivers within this category.
- **Sensors and MEMS[1]: ~5.6%** of total market share
  - This segment is critical for Japan's strong **automotive** and **industrial IoT** sectors.
  - It is projected to maintain a steady growth rate (CAGR) of 5.59% through 2031.
- **Discrete Semiconductors: ~3-5%** of total market share
  - While smaller in total revenue, Japan holds a significant global position in power discretes like **SiC[2]** and **GaN[3]** used in electric vehicles.
  - This segment has recently faced slight pressure due to fluctuations in automotive demand but remains strategically vital for green energy goals.
- **Optoelectronics:**
  - Includes LEDs and optical devices, which are essential for Japan's consumer electronics and communication infrastructure.

End-User Market Share:

- **Communication:** Held the largest revenue share at **29.10%** in 2025, driven by 5G infrastructure and optical transport gear.
- **Artificial Intelligence (AI):** Though currently smaller in total share, it is the **fastest-growing** application with a projected 5.95% CAGR, fueled by massive data center buildouts.
- **Automotive electronics** are a particularly strong growth area, projected to reach **JPY 4.8 trillion (CHF 24 billion)** , fueled by the adoption of ADAS, EVs, and autonomous driving technologies.

[1] Micro-Electro-Mechanical Systems
[2] Silicon Carbide
[3] Gallium Nitride

1.4. FLAGSHIP PROJECTS

Japan's semiconductor revitalization strategy centers on two flagship projects that take contrasting approaches. The **JASM Kumamoto project**, built by **Taiwan Semiconductor Manufacturing Company (TSMC)** with support from Japan's government and major Japanese companies, focuses on producing mature-node chips widely used in automobiles, consumer electronics, and industrial equipment. The participating companies formed a joint venture (**Japan Advanced Semiconductor Manufacturing, Inc. (JASM)**), which is majority-owned by TSMC, with minority stakes held by Sony Semiconductor Solutions, DENSO Corporation, and Toyota Motor Corporation. JASM is operating its first plant as of early 2024 and planning a second for 2027 to boost local supply chains.

By bringing fabrication back to Japan, this initiative strengthens domestic supply chains and integrates closely with Japan's existing strengths in materials, equipment, and automotive industries. It is seen as a low-risk, pragmatic move that enhances resilience against supply disruptions while meeting immediate demand for legacy chips such as 22/28nm logic.

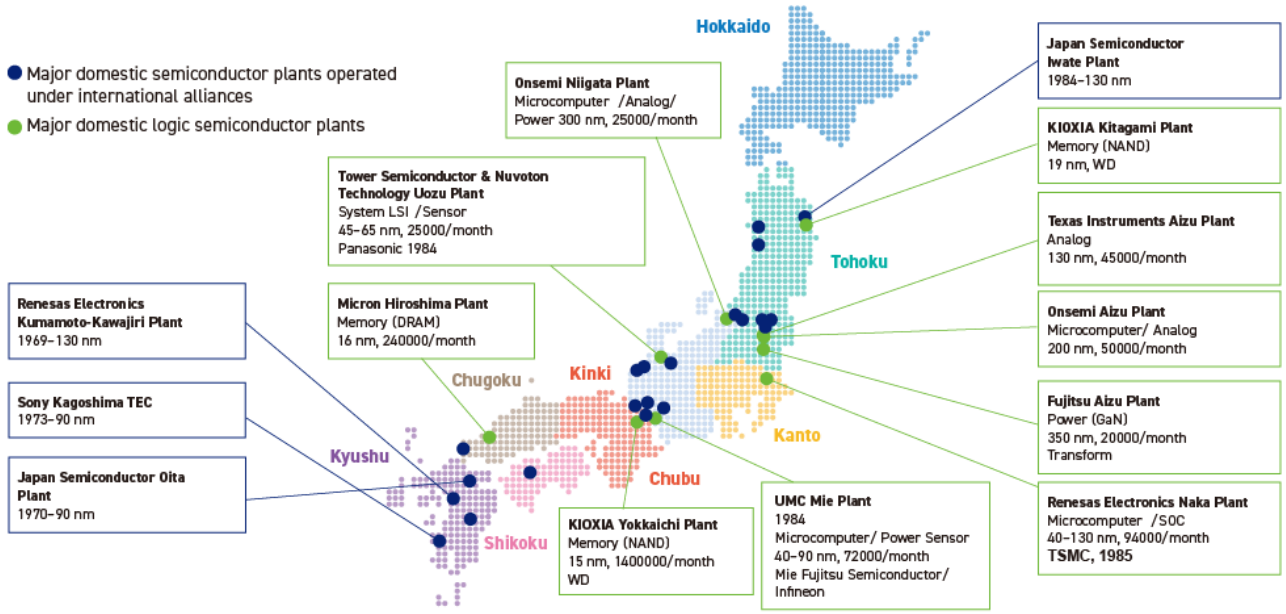
In contrast, **Rapidus** represents Japan's high-risk, high-reward bet on reentering the global race for cutting-edge semiconductors. Established in 2022 with government backing and funding from eight major Japanese companies, Rapidus aims to develop **next-generation 2nm logic chips** in collaboration with IBM and Imec. Although still in early stages and facing challenges such as securing advanced equipment, the project signals Japan's determination to close the technological gap with technology leaders like the U.S. and Taiwan. Its importance lies in positioning Japan at the forefront of semiconductor innovation, ensuring long-term competitiveness and avoiding the stagnation that followed Japan's semiconductor decline after the 1980s.

Together, Kumamoto's JASM and Rapidus showcase Japan's two-track strategy: one track securing economic stability through mature-node production, and the other pushing technological boundaries to reclaim global leadership.

Other important projects:

- **Mitsubishi Electric (Fukuoka):** Investing in a new factory to manufacture and test power semiconductors, set to begin operations in October 2026.
- **Micron Technology (Hiroshima):** Expanding facilities with significant Japanese government backing.
- **Kioxia/Toshiba (Iwate/Mie):** Expanding NAND flash memory production in Kitakami and Yokkaichi.

Graphic 2: Other major semiconductor production bases in Japan



Source: Mitsubishi Materials Corporation

2. Value chain & Leading Japanese companies

2.1. VALUE CHAIN

The value chain of the Japanese semiconductor market is characterized by strong global dominance in **upstream** technology (materials and equipment) and a massive government-led push to reclaim **midstream** manufacturing (fabrication).

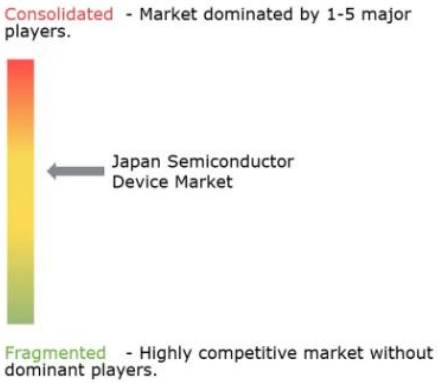
- **Upstream (materials & equipment):** Japan holds a dominant, often >50-90% global market share in critical areas like silicon wafers (Shin-Etsu, SUMCO), photoresists (JSR), and manufacturing equipment (Tokyo Electron, Advantest).
- **Midstream (design & fab):** Key players include Sony (image sensors) and Renesas (automotive), with new investments in advanced logic via joint ventures and initiatives like Rapidus.
- **Downstream (packaging & end-use):** Japanese companies are crucial for advanced packaging materials (Ibiden, Shinko) and drive demand through major automotive and industrial electronics firms

2.2. LEADING COMPANIES

The Japanese semiconductor device market shows moderate concentration, with leading materials, equipment, and device manufacturers collectively accounting for just over 60% of segment revenues. This dominance provides strategic leverage while **still leaving room for innovation among mid-tier specialists.**

Corporate strategies favor collaborative alliances over full-scale mergers and acquisitions, to minimize integration risks and preserve flexibility across the value chain.

Graphic 3: Market Concentration



Source: Mordor Intelligence

Table 1: Japanese semiconductor market leaders 1
Leading device and foundry companies, in alphabetical order.

Company	Key products
Fuji Electric	Power semiconductors, particularly IGBT modules for EVs and industrial motor drives.
Japan Semiconductor Corporation *(subsidiary of Kioxia)*	Analog, logic, and mixed-signal semiconductors.
Kioxia Holdings Corporation	NAND flash memory, solid-state drives (SSDs), and managed flash memory.
Mitsubishi Electric Corporation	Power modules (IGBTs), high-frequency devices, and optical devices.
ROHM	Power semiconductors (SiC/Silicon Carbide), analog ICs, and sensor devices.
Rapidus Corporation	Japanese start-up (backed by major Japanese firms) aiming to manufacture advanced 2nm logic chips.

Company	Key products
Renesas Electronics Corporation	Microcontrollers (MCUs), analog, power, and System-on-Chip (SoC) devices for automotive and industrial markets.
Socionext Inc.	Fabless company focusing on System-on-Chip (SoC) design for imaging, networking, and computing applications.
Sony Semiconductor Solutions Corporation	High-performance CMOS image sensors for smartphones and cameras, LiDAR, ToF sensors.
Toshiba Electronic Devices & Storage Corporation	Discrete power semiconductors, optoelectronics, and storage solutions.

Source: SBH Japan research

Table 2: Japanese semiconductor market leaders 2
Leading semiconductor equipment and materials providers, in alphabetical order.

Company	Key products
Advantest Corporation	Automatic test equipment (ATE) for verifying high-end logic and memory devices.
Disco Corporation	Supplier of precision dicing saws and grinding machines for wafer cutting.
Lasertec Corporation	Semiconductor inspection and metrology equipment, including EUV mask inspection.
JSR Corporation	World's leading manufacturer of photoresists (in 2024 JSR was acquired by the Japan Investment Corporation (JIC), a state-backed fund)
SCREEN Holdings	Single-wafer and batch cleaning equipment, and coater/developers.
SUMCO Corporation	300mm and 200mm polished silicon wafers and epitaxial wafers.
Shin-Etsu Chemical	High-purity silicon wafers and photoresists.
Tokyo Electron (TEL)	Coater/developers (market leader), etch systems, and CVD systems.
Canon Inc.	Semiconductor lithography equipment (i-line, KrF, and Nanoimprint Lithography) and OLED panel manufacturing equipment.

Source: SBH Japan research

3. Market Trends and Opportunities for Swiss Companies

3.1. MARKET DRIVERS

Japan's semiconductor growth is being shaped by a mix of technology adoption, government policy (subsidies, reshoring), and R&D leadership.

1. **Rise in EV power-train demand:** The shift toward electric vehicles is driving strong growth in power semiconductor requirements across Japan's automotive corridors.

2. **Expansion of 5G/6G networks:** The rapid expansion of next-generation mobile infrastructure is driving demand for advanced logic and mixed-signal semiconductors, particularly in Japan's major urban centers. With widespread adoption expected in the near term, this rollout is a key catalyst for growth in connectivity-driven applications.

3. **Government funding for advanced-node fabs:** Strategic public funding is supporting the establishment of cutting-edge fabrication plants in regions such as Kumamoto and Hokkaido. These subsidies represent a long-term growth driver (≥ 4 years).

4. **Increasing IoT adoption in smart homes:** Rising adoption of connected devices is boosting demand for sensors and mixed-signal ICs, particularly in metropolitan regions.

5. **R&D push for Vertical GaN/SiC R&D:** Japan's national research hubs are advancing wide-bandgap semiconductor technologies, enhancing efficiency in power electronics. This innovation push is a long-term growth enabler (≥ 4 years).

6. **Incentives for domestic production to secure supply chains:** Policy measures encouraging domestic production are strengthening supply chain resilience and reducing reliance on overseas fabs. These incentives will shape the industry over the long term (≥ 4 years).

3.2. MARKET RESTRAINTS

The restraints of the Japanese semiconductor market highlight Japan's structural vulnerabilities: talent bottlenecks, supply chain fragility, natural disaster exposure, and aging infrastructure, and underscore the need for workforce development, supply chain diversification, seismic resilience, and modernization investments.

1. **Lack of talent in advanced lithography:** A persistent lack of skilled engineers in cutting-edge lithography is constraining Japan's ability to scale advanced-node production.

2. **Dependence on specialty gases and chemicals:** Dependence on critical inputs such as etching gases and photoresists exposes Japanese fabs to supply disruptions.

3. **Natural disasters increasing downtime risk for fabs:** Japan is prone to earthquakes, and seismic activity in coastal zones poses a structural risk to fab operations, potentially leading to costly downtime.

4. **Outdated legacy equipment for sub-28 nm nodes becoming obsolete:** Older fabrication facilities (legacy fabs) face declining competitiveness as equipment for sub-28 nm processes becomes obsolete.

3.3. BUSINESS OPPORTUNITIES FOR SWISS COMPANIES

Swiss companies have strong market opportunities in Japan's booming semiconductor sector, particularly in high-end manufacturing equipment, specialized materials, metrology, and automation. Opportunities are driven by Japan's push for 2nm logic chip production via Rapidus and increased investment in power semiconductors, automotive chips, and AI, aligning perfectly with Swiss precision engineering.

Key Opportunities for Swiss Companies:

- **Manufacturing equipment & components:** High-end vacuum valves, coating equipment, and heat treatment solutions are in demand, with Swiss companies like VAT Group already being key suppliers to Japanese fabs.
- **Next-Generation fab support (Rapidus):** The Japanese government's investment in Rapidus (aiming for 2nm chips by 2027) creates massive demand for cutting-edge, imported R&D and production tools.
- **Specialty & compound semiconductors:** Opportunities exist for materials, sensors, MEMS, and precision components, particularly for automotive electronics and AI applications.
- **Automation & metrology:** Japanese fabs seek advanced quality systems, AI-enabled analytics, and automation solutions to increase manufacturing efficiency.

4. Support and contacts

The Swiss Business Hub Japan and S-GE can support you in gaining access to the Japanese semiconductor market. We can provide a detailed market assessment based on your product, identify possible business partners or support your trade show presence in Japan, amongst other services. You can determine the level of support you need individually, whether you require full support with a comprehensive business workshop and market analysis leading up to market entry or only selective support with legal issues. Contact us to discuss how we can best support your success in Japan!

Our renowned experts in Zurich work closely with the Embassy and our specialists at the Swiss Business Hub in Japan, ensuring that you benefit from firsthand information. We look forward to hearing from you!

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5. Appendix

5.1. LEADING TRADE SHOWS

- **SEMICON Japan**

  - Event details: Held annually in December at Tokyo Big Sight
  - Description: Leading event in Japan for the semiconductor manufacturing supply chain, featuring materials, equipment, design, and inspection technologies. It includes summits on advanced packaging (APCS), metrology, and AI-driven manufacturing.

- **NEPCON JAPAN**

  - Event details: Held 4 times a year in the Kanto and Kansai areas
  - Description: Asia's leading exhibition for electronics R&D, manufacturing, and packaging technology, consisting of eight specialized shows including IC & Sensor Packaging, Power Devices, and Electronic Components.

- **Semiconductor Technology Expo** *in Kyushu*

  - Event details: Held annually in autumn in Fukuoka
  - Description: Located in Kyushu, this event targets semiconductor fabrication technology, materials, and equipment to support localized manufacturing.

5.2. INDUSTRY ASSOCIATIONS

- **Semiconductor Equipment Association of Japan (SEAJ):** The primary association for manufacturers of semiconductor manufacturing equipment, FPD equipment, and related components.
- **Japan Electronics and Information Technology Industries Association (JEITA):** Represents the electronics industry, including semiconductor devices and materials, promoting healthy manufacturing and trade.
- **Nippon Electronic Device Industry Association (NEDIA):** Focuses on supporting the electronic device industry, including semiconductor components and systems.
- **Japan OSAT Association (J-OSAT):** Represents companies involved in Outsourced Semiconductor Assembly and Test (OSAT) within Japan.
- **The Japan Institute of Electronics Packaging (JIEP):** Promotes technologies related to electronics packaging and assembly.
- **Japan Electronics Packaging and Circuits Association (JPCA):** Dedicated to the advancement of electronic circuits and packaging technologies.
- **Optoelectronic Industry and Technology Development Association (OITDA):** Focuses on optoelectronic components and materials

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