

Advanced Semiconductor Etching Equipment Market Forecasts to 2034 - Global Analysis By Etching Technology (Dry Etching, Wet Etching, Plasma Etching, Reactive Ion Etching (RIE) and Deep Reactive Ion Etching (DRIE)), Equipment Type, Application, End User and By Geography

<https://marketpublishers.com/r/A27B762D7E32EN.html>

Date: October 2026

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: A27B762D7E32EN

Abstracts

According to Statistics MRC, the Global Advanced Semiconductor Etching Equipment Market is accounted for \$6.7 billion in 2026 and is expected to reach \$13.0 billion by 2034 growing at a CAGR of 8.6% during the forecast period. Advanced Semiconductor Etching Equipment comprises precision manufacturing systems designed to remove selected materials from semiconductor wafers during chip production. By accurately etching metals, dielectric layers, and thin films, these systems form intricate patterns required for modern integrated circuits. Their capabilities include high selectivity, excellent wafer uniformity, controlled anisotropic profiles, and precise processing at advanced technology nodes. Plasma etching, reactive ion etching, and atomic layer etching technologies help manufacturers fabricate sophisticated structures for memory, logic, power devices, and advanced packaging while supporting improved dimensional control, manufacturing consistency, and production yields.

According to TSMC, advanced technologies defined as 7-nanometer and more advanced processes accounted for 74% of total wafer revenue in 2025, compared with 69% in 2024. TSMC also entered 2-nanometer high-volume manufacturing in the fourth quarter of 2025, supporting demand for advanced wafer-processing technologies.

Market Dynamics:

Driver:**Growing demand for advanced semiconductor nodes**

The transition toward smaller semiconductor process nodes is creating stronger requirements for advanced etching equipment. Modern chip fabrication increasingly involves complex multilayer designs, reduced feature dimensions, and three-dimensional structures that demand highly controlled material removal. Advanced etching technologies provide manufacturers with improved selectivity, pattern accuracy, and process uniformity during wafer fabrication. Semiconductor producers are therefore expanding sophisticated etching capabilities to accommodate greater transistor densities, intricate architectures, and the manufacturing requirements associated with next-generation integrated circuits.

Restraint:**High equipment costs and complex manufacturing requirements**

The significant investment required for advanced semiconductor etching systems can restrict market adoption. These machines combine sophisticated plasma technologies, vacuum components, process controls, and monitoring systems, resulting in considerable purchase and operating expenses. Installation, calibration, servicing, and integration with existing fabrication facilities can add further costs. Smaller chip manufacturers may find it challenging to finance specialized equipment across multiple fabrication stages. Consequently, elevated capital requirements can delay equipment upgrades, constrain adoption among budget-conscious producers, and increase financial pressures for manufacturers expanding advanced semiconductor manufacturing capabilities.

Opportunity:**Expansion of advanced semiconductor manufacturing capacity**

Increasing semiconductor fabrication capacity worldwide is creating new opportunities for suppliers of advanced etching equipment. Semiconductor manufacturers are developing new fabs and upgrading existing facilities to address demand for processors, memory products, power devices, and specialized chips. Modern fabrication plants require etching systems that can accurately process smaller dimensions and increasingly complicated structures. New facility construction and production-line modernization can consequently generate additional equipment demand. Companies providing precise, high-throughput, and adaptable etching

solutions may benefit from expanding investments in semiconductor manufacturing infrastructure across established and emerging production locations.

Threat:

Supply chain disruptions for critical components

Advanced etching systems rely on specialized parts such as plasma sources, vacuum equipment, sensors, precision electronics, and chemical delivery components. Any disruption in manufacturing or transportation of these inputs can delay equipment production and installation. Trade restrictions, geopolitical tensions, logistics problems, and limited availability of specialized materials may increase supply-chain uncertainty. Longer component lead times can interfere with semiconductor fab construction and expansion schedules. Consequently, etching equipment manufacturers may experience operational difficulties when critical components become difficult to source through complex international technology supply networks.

Covid-19 Impact:

COVID-19 affected the Advanced Semiconductor Etching Equipment Market by disrupting manufacturing operations, logistics, labor availability, and equipment installation activities. Semiconductor producers encountered difficulties maintaining normal fabrication schedules because of facility restrictions and supply-chain disruptions. Travel limitations further affected equipment installation, maintenance, and technical assistance. At the same time, continued demand for chips supporting computers, communication systems, and electronics sustained semiconductor manufacturing requirements. Following the initial disruptions, reopening factories and renewed investments in fabrication capacity helped restore demand for advanced etching technologies.

The dry etching segment is expected to be the largest during the forecast period

The dry etching segment is expected to account for the largest market share during the forecast period because it enables highly accurate and controlled removal of materials during sophisticated semiconductor manufacturing. It is well suited for smaller geometries, multilayer wafer structures, and densely integrated device architectures. The technology offers precise process management, dimensional control, and compatibility with advanced fabrication requirements. Its application across memory, logic, and other semiconductor devices strengthens its importance within modern wafer

processing. Manufacturers rely on dry etching to achieve consistent pattern formation, uniform processing, and dependable results while producing increasingly complex semiconductor structures.

The logic IC manufacturing segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the logic IC manufacturing segment is predicted to witness the highest growth rate, supported by increasing production of advanced processors, AI chips, and high-performance computing devices. Semiconductor manufacturers are advancing toward smaller nodes and gate-all-around transistor architectures, creating greater requirements for accurate etching and sophisticated pattern transfer. These developments are encouraging continued investment in advanced logic fabrication facilities. According to SEMI, logic and microprocessor manufacturing is projected to spearhead equipment expansion through 2029, particularly as sub-2nm capacity and AI-related semiconductor demand continue developing.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its strong semiconductor manufacturing base and significant concentration of fabrication facilities. China, Taiwan, South Korea, and Japan maintain major chip production activities while expanding advanced manufacturing capabilities. Increasing production of memory, logic, AI, and high-performance computing devices is supporting demand for sophisticated wafer-processing technologies, including advanced etching systems. According to SEMI, China, Taiwan, and Korea collectively represented 79% of worldwide semiconductor equipment spending in 2025, highlighting the region's dominant semiconductor equipment position.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR as semiconductor manufacturers expand fabrication facilities and adopt sophisticated production technologies. Countries such as China, Taiwan, South Korea, and Japan continue developing strong semiconductor manufacturing capabilities. According to SEMI, semiconductor equipment spending remained heavily concentrated in Asia during 2025, with Taiwan and Korea showing particularly strong investment increases. Growing production of AI chips, advanced memory, and leading-edge logic devices is further encouraging regional fab expansion, creating continuing opportunities

for advanced etching equipment suppliers.

Key players in the market

Some of the key players in Advanced Semiconductor Etching Equipment Market include Lam Research, Applied Materials, Tokyo Electron (TEL), Hitachi High-Tech, Oxford Instruments, Plasma-Therm, SPTS Technologies (KLA), NAURA Technology Group, AMEC (Advanced Micro-Fabrication Equipment), ULVAC, SAMCO Inc., GigaLane, SEMES, Mattson Technology, Canon Anelva, SENTECH Instruments GmbH, Trion Technology and VM Inc.

Key Developments:

In September 2026, Tokyo Electron has announced the recognition of 46 business partners who provided exceptional support for its environmental activities during previous fiscal year*1. TEL designated them as Green Partners to express its respect and appreciation. The Green Partner program recognizes TEL's business partners who have provided outstanding cooperation and contributions to its environmental activities during the fiscal year.

In March 2026, Lam Research Corp. and IBM announced collaboration aimed at developing new processes and materials to support sub-1nm logic scaling. Building on a long record of successful partnerships, the new agreement will focus on the joint development of novel materials, fabrication processes, and High NA EUV lithography processes to advance IBM's logic scaling roadmap.

Etching Technologies Covered:

Dry Etching

Wet Etching

Plasma Etching

Reactive Ion Etching (RIE)

Deep Reactive Ion Etching (DRIE)

Equipment Types Covered:

Single-Wafer Etching Systems

Batch Wafer Etching Systems

High-Aspect Ratio Etching Systems

Applications Covered:

Logic IC Manufacturing

Memory IC Manufacturing

Power Devices

MEMS & Sensors

Optoelectronics

End Users Covered:

Foundries

Integrated Device Manufacturers (IDMs)

Research & Development Institutions

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL ADVANCED SEMICONDUCTOR ETCHING EQUIPMENT MARKET, BY ETCHING TECHNOLOGY

- 5.1 Dry Etching
- 5.2 Wet Etching
- 5.3 Plasma Etching
- 5.4 Reactive Ion Etching (RIE)
- 5.5 Deep Reactive Ion Etching (DRIE)

6 GLOBAL ADVANCED SEMICONDUCTOR ETCHING EQUIPMENT MARKET, BY EQUIPMENT TYPE

- 6.1 Single-Wafer Etching Systems
- 6.2 Batch Wafer Etching Systems
- 6.3 High-Aspect Ratio Etching Systems

7 GLOBAL ADVANCED SEMICONDUCTOR ETCHING EQUIPMENT MARKET, BY APPLICATION

- 7.1 Logic IC Manufacturing
- 7.2 Memory IC Manufacturing
- 7.3 Power Devices
- 7.4 MEMS & Sensors
- 7.5 Optoelectronics

8 GLOBAL ADVANCED SEMICONDUCTOR ETCHING EQUIPMENT MARKET, BY END USER

- 8.1 Foundries
- 8.2 Integrated Device Manufacturers (IDMs)
- 8.3 Research & Development Institutions

9 GLOBAL ADVANCED SEMICONDUCTOR ETCHING EQUIPMENT MARKET, BY GEOGRAPHY

- 9.1 North America
 - 9.1.1 United States
 - 9.1.2 Canada
 - 9.1.3 Mexico
- 9.2 Europe
 - 9.2.1 United Kingdom
 - 9.2.2 Germany
 - 9.2.3 France
 - 9.2.4 Italy
 - 9.2.5 Spain
 - 9.2.6 Netherlands
 - 9.2.7 Belgium
 - 9.2.8 Sweden
 - 9.2.9 Switzerland
 - 9.2.10 Poland
 - 9.2.11 Rest of Europe
- 9.3 Asia Pacific
 - 9.3.1 China
 - 9.3.2 Japan
 - 9.3.3 India
 - 9.3.4 South Korea
 - 9.3.5 Australia
 - 9.3.6 Indonesia
 - 9.3.7 Thailand
 - 9.3.8 Malaysia
 - 9.3.9 Singapore
 - 9.3.10 Vietnam
 - 9.3.11 Rest of Asia Pacific
- 9.4 South America
 - 9.4.1 Brazil
 - 9.4.2 Argentina
 - 9.4.3 Colombia
 - 9.4.4 Chile
 - 9.4.5 Peru
 - 9.4.6 Rest of South America
- 9.5 Rest of the World (RoW)
 - 9.5.1 Middle East
 - 9.5.1.1 Saudi Arabia
 - 9.5.1.2 United Arab Emirates

- 9.5.1.3 Qatar
- 9.5.1.4 Israel
- 9.5.1.5 Rest of Middle East
- 9.5.2 Africa
 - 9.5.2.1 South Africa
 - 9.5.2.2 Egypt
 - 9.5.2.3 Morocco
 - 9.5.2.4 Rest of Africa

10 STRATEGIC MARKET INTELLIGENCE

- 10.1 Industry Value Network and Supply Chain Assessment
- 10.2 White-Space and Opportunity Mapping
- 10.3 Product Evolution and Market Life Cycle Analysis
- 10.4 Channel, Distributor, and Go-to-Market Assessment

11 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 11.1 Mergers and Acquisitions
- 11.2 Partnerships, Alliances, and Joint Ventures
- 11.3 New Product Launches and Certifications
- 11.4 Capacity Expansion and Investments
- 11.5 Other Strategic Initiatives

12 COMPANY PROFILES

- 12.1 Lam Research
- 12.2 Applied Materials
- 12.3 Tokyo Electron (TEL)
- 12.4 Hitachi High-Tech
- 12.5 Oxford Instruments
- 12.6 Plasma-Therm
- 12.7 SPTS Technologies (KLA)
- 12.8 NAURA Technology Group
- 12.9 AMEC (Advanced Micro-Fabrication Equipment)
- 12.10 ULVAC
- 12.11 SAMCO Inc.
- 12.12 GigaLane
- 12.13 SEMES

12.14 Mattson Technology

12.15 Canon Anelva

12.16 SENTECH Instruments GmbH

12.17 Trion Technology

12.18 VM Inc.

List of Tables

Table 1 Global Advanced Semiconductor Etching Equipment Market Outlook, By Region (2023-2034) (\$MN)

Table 2 Global Advanced Semiconductor Etching Equipment Market Outlook, By Etching Technology (2023-2034) (\$MN)

Table 3 Global Advanced Semiconductor Etching Equipment Market Outlook, By Dry Etching (2023-2034) (\$MN)

Table 4 Global Advanced Semiconductor Etching Equipment Market Outlook, By Wet Etching (2023-2034) (\$MN)

Table 5 Global Advanced Semiconductor Etching Equipment Market Outlook, By Plasma Etching (2023-2034) (\$MN)

Table 6 Global Advanced Semiconductor Etching Equipment Market Outlook, By Reactive Ion Etching (RIE) (2023-2034) (\$MN)

Table 7 Global Advanced Semiconductor Etching Equipment Market Outlook, By Deep Reactive Ion Etching (DRIE) (2023-2034) (\$MN)

Table 8 Global Advanced Semiconductor Etching Equipment Market Outlook, By Equipment Type (2023-2034) (\$MN)

Table 9 Global Advanced Semiconductor Etching Equipment Market Outlook, By Single-Wafer Etching Systems (2023-2034) (\$MN)

Table 10 Global Advanced Semiconductor Etching Equipment Market Outlook, By Batch Wafer Etching Systems (2023-2034) (\$MN)

Table 11 Global Advanced Semiconductor Etching Equipment Market Outlook, By High-Aspect Ratio Etching Systems (2023-2034) (\$MN)

Table 12 Global Advanced Semiconductor Etching Equipment Market Outlook, By Application (2023-2034) (\$MN)

Table 13 Global Advanced Semiconductor Etching Equipment Market Outlook, By Logic IC Manufacturing (2023-2034) (\$MN)

Table 14 Global Advanced Semiconductor Etching Equipment Market Outlook, By Memory IC Manufacturing (2023-2034) (\$MN)

Table 15 Global Advanced Semiconductor Etching Equipment Market Outlook, By Power Devices (2023-2034) (\$MN)

Table 16 Global Advanced Semiconductor Etching Equipment Market Outlook, By MEMS & Sensors (2023-2034) (\$MN)

Table 17 Global Advanced Semiconductor Etching Equipment Market Outlook, By

Optoelectronics (2023-2034) (\$MN)

Table 18 Global Advanced Semiconductor Etching Equipment Market Outlook, By End User (2023-2034) (\$MN)

Table 19 Global Advanced Semiconductor Etching Equipment Market Outlook, By Foundries (2023-2034) (\$MN)

Table 20 Global Advanced Semiconductor Etching Equipment Market Outlook, By Integrated Device Manufacturers (IDMs) (2023-2034) (\$MN)

Table 21 Global Advanced Semiconductor Etching Equipment Market Outlook, By Research & Development Institutions (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

I would like to order

Product name: Advanced Semiconductor Etching Equipment Market Forecasts to 2034 - Global Analysis By Etching Technology (Dry Etching, Wet Etching, Plasma Etching, Reactive Ion Etching (RIE) and Deep Reactive Ion Etching (DRIE)), Equipment Type, Application, End User and By Geography

Product link: <https://marketpublishers.com/r/A27B762D7E32EN.html>

Price: US\$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/A27B762D7E32EN.html>