

# Quantum Computing Chips Market Forecasts to 2034 – Global Analysis By Component (Qubits and Control Electronics), Form Factor, Technology, Application, End User and By Geography

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## Abstracts

According to Statistics MRC, the Global Quantum Computing Chips Market is accounted for \$0.45 billion in 2026 and is expected to reach \$28.06 billion by 2034 growing at a CAGR of 67.53% during the forecast period. Quantum computing chips form the fundamental hardware of quantum computers, enabling computations that surpass traditional systems. They utilize qubits, capable of holding multiple states at once, which allows extensive parallel processing. Superconducting circuits and specialized materials help maintain qubit stability and coherence. Modern chip designs focus on minimizing errors, boosting scalability, and increasing processing efficiency. With applications in cryptography, pharmaceutical research, and complex optimization, these chips are essential for advancing computational capabilities and tackling challenges that conventional computers cannot efficiently solve.

According to IBM Research, quantum computing is advancing rapidly with superconducting qubits being a leading chip technology. IBM has demonstrated quantum processors scaling beyond 1,000 qubits, showing the feasibility of chip-level quantum architectures for practical applications in chemistry, optimization, and AI.

### Market Dynamics:

Driver:

Increasing demand for high-performance computing

Rising requirements for advanced computational power are propelling the growth of quantum computing chips. Conventional computing systems cannot efficiently handle large-scale data processing, complex simulations, or optimization tasks. Quantum chips, leveraging qubit-based parallel processing, provide unmatched speed and computational efficiency. Sectors like healthcare, finance, and scientific research increasingly adopt quantum computing to enhance predictive analytics, modeling, and simulation capabilities. The pursuit of rapid and precise computational solutions drives market demand, fueling technological advancement, research investments, and widespread adoption of quantum computing hardware globally.

#### Restraint:

##### High cost of quantum computing chips

The steep expenses associated with producing quantum computing chips hinder market expansion. Manufacturing quantum processors demands advanced materials, precise fabrication, and cryogenic environments, making them costly. High initial and operational costs restrict access to large enterprises, governments, and research organizations, preventing smaller businesses from adoption. Maintenance, error-correction systems, and infrastructure further add to financial burdens. Market growth remains limited until technological advancements reduce production costs and operational requirements, allowing broader accessibility and affordability of quantum computing chips across different sectors.

#### Opportunity:

##### Expansion in pharmaceutical and healthcare research

The healthcare and pharmaceutical sectors present vast opportunities for quantum computing chips. These chips accelerate drug development, simulate protein structures, and support personalized medicine by efficiently handling large, complex biological datasets. As demand for innovative treatments and precision therapies grows, research institutions and pharmaceutical companies increasingly rely on quantum technology. This opens new avenues for quantum chip providers to meet specialized computational requirements, foster partnerships, and expand adoption in healthcare, ultimately driving technological advancement and market growth in the quantum computing chip industry.

#### Threat:

## Intense competition among market players

Competition in the quantum computing chips market is fierce, with established tech giants, startups, and academic institutions vying for dominance. Companies aim to create more efficient, scalable, and reliable qubits, while newcomers target specialized solutions. Intense rivalry can lead to price reductions, fragmented standards, and challenges in industry collaboration. Smaller firms may face difficulties sustaining operations, and intellectual property disputes could delay innovation. While competition fosters technological progress, it also threatens market stability and profitability, introducing volatility and potentially slowing long-term growth in the quantum computing chips industry.

### **Covid-19 Impact:**

The COVID-19 pandemic influenced the quantum computing chips market in multiple ways. Manufacturing delays, supply chain disruptions, and limited lab access temporarily hindered research and production. Simultaneously, the crisis emphasized the importance of advanced computing solutions for healthcare, pharmaceuticals, and supply chain optimization. Organizations accelerated investments in quantum technologies to tackle challenges like viral protein modeling and resource planning. Although short-term operations were affected, the pandemic reinforced the long-term value and adoption potential of quantum computing chips, highlighting their critical role in solving complex global problems and driving strategic technological initiatives.

The cryogenic-compatible chips segment is expected to be the largest during the forecast period

The cryogenic-compatible chips segment is expected to account for the largest market share during the forecast period as they function efficiently at ultra-low temperatures, crucial for qubit stability and coherence. Primarily used in superconducting qubit systems, these chips deliver superior reliability and computational performance. Their ability to operate in cryogenic conditions reduces errors and enhances processing efficiency, driving adoption across research organizations, tech firms, and major quantum computing initiatives. Consequently, these chips capture the largest market share, reflecting widespread preference and investment in cryogenic-compatible quantum hardware for high-performance computing applications.

The photonic quantum chips segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the photonic quantum chips segment is predicted to witness the highest growth rate. Utilizing photons as qubits, they offer room-temperature operation, fast computation, and easy scalability, while minimizing errors. Their integration with optical communication systems and reduced cooling needs make them ideal for commercial and cloud-based quantum applications. Continuous research and increasing investments in photonic technology are accelerating development, establishing this segment as the fastest-expanding area in quantum computing chips, with substantial potential for adoption across various sectors seeking high-performance and energy-efficient quantum solutions.

### **Region with largest share:**

During the forecast period, the North America region is expected to hold the largest market share due to extensive R&D investments, established tech firms, and favorable government support. A thriving network of universities, startups, and major corporations drives innovation in superconducting, photonic, and cryogenic-compatible chips. Widespread adoption in sectors such as healthcare, finance, and defense reinforces its market dominance. Public-private collaborations also expedite the commercialization of quantum technologies. The combination of advanced infrastructure, funding availability, and technical expertise positions North America as the largest and most influential region in the global quantum computing chips market.

### **Region with highest CAGR:**

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, supported by increased funding for quantum research, expanding tech infrastructure, and government policies promoting innovation. Nations including China, Japan, and South Korea are actively developing advanced quantum hardware, nurturing startups, and collaborating with international technology companies. Growing use in industries like telecom, finance, and healthcare drives demand for quantum solutions. The region's focus on education, research initiatives, and strategic alliances accelerates development, positioning Asia-Pacific as the highest-growth rate market with substantial opportunities for quantum chip manufacturers and service providers.

### **Key players in the market**

Some of the key players in Quantum Computing Chips Market include IBM, SpinQ, IonQ, Rigetti Computing, Quantinuum, Intel, Xanadu, Quantum Computing Inc., QuEra

Computing, Inflektion, Microsoft, Google Quantum AI, QuiX Quantum, Qudora Technologies, Infineon Technologies, Quantum Circuits, Inc., Atom Computing and IQM.

### **Key Developments:**

In January 2026, Microsoft Corp has been awarded a \$170,444,462 firm-fixed-price task order for the Cloud One Program by the U.S. Department of War. The contract will provide Microsoft Azure cloud service offerings to support the Air Force's Cloud One Program and its customers. Work on the project will be performed at Microsoft's designated facilities across the contiguous United States.

In December 2025, IBM and Confluent, Inc. announced they have entered into a definitive agreement under which IBM will acquire all of the issued and outstanding common shares of Confluent for \$31 per share, representing an enterprise value of \$11 billion. Confluent provides a leading open-source enterprise data streaming platform that connects processes and governs reusable and reliable data and events in real time, foundational for the deployment of AI.

In October 2025, Infineon Technologies AG has signed power purchase agreements (PPA) with PNE AG and Statkraft to procure wind and solar electricity for its German facilities. Under a 10-year deal with German renewables developer and wind power producer PNE AG, Infineon will buy electricity from the Schlenzer and Kittlitz III wind farms in Brandenburg, Germany, which have a combined capacity of 24 MW, for its sites in Dresden, Regensburg, Warstein and Neubiberg near Munich.

### **Components Covered:**

Qubits

Control Electronics

### **Form Factors Covered:**

Cryogenic-compatible Chips

CMOS-compatible Chips

### Technologies Covered:

- Superconducting Chips
- Semiconductor-based Chips
- Trapped Ion Chips
- Quantum Annealing Chips
- Photonic Quantum Chips

### Applications Covered:

- Computing & Simulation
- Cryptography & Security
- Optimization Problems
- Machine Learning & AI

### End Users Covered:

- BFSI (Banking, Financial Services, Insurance)
- Healthcare & Pharmaceuticals
- Defense & Aerospace
- Research Institutions & Academia
- IT & Telecom

### 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

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