

# **Ethernet PHY Chip Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Data Rate (10-100Mbps, 100-1000Mbps, Greater than 100 Gaps), By Application (Telecom, Consumer Electronics, Automotive, Enterprise Networking, Industrial Automation), By Region & Competition, 2021-2031F**

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## **Abstracts**

The Global Ethernet PHY Chip Market is projected to expand from USD 11.33 Billion in 2025 to USD 19.02 Billion by 2031, achieving a Compound Annual Growth Rate (CAGR) of 9.02%. This market consists of physical layer transceivers that act as the essential bridge between the digital Media Access Control layer and the analog transmission medium. Key growth factors include the surging requirements for high-bandwidth connectivity within hyperscale data centers to accommodate artificial intelligence workloads, alongside the rising incorporation of sophisticated in-vehicle networking systems. Highlighting the market's focus on quality, the Ethernet Alliance reported in a 2024 survey that 80 percent of respondents expressed a willingness to pay a premium of at least five percent for certified Power over Ethernet devices, emphasizing the commercial importance of reliability and interoperability.

Conversely, a major obstacle limiting market growth is the increasing technical complexity associated with power efficiency and thermal management as transmission speeds accelerate toward 800G and 1.6T. As chip designs demand higher density to maintain signal integrity at these elevated frequencies, the consequent rise in manufacturing expenses and power usage creates significant hurdles for cost-efficient implementation. These factors present substantial barriers to widespread adoption across various industrial and enterprise applications, slowing the deployment of

advanced solutions where energy budgets and cost structures are critical considerations.

### **Market Driver**

The rapid expansion of hyperscale data centers and AI-driven cloud computing acts as the primary market propellant, demanding sophisticated PHY architectures to manage the immense bandwidths required by generative AI tasks. As hyperscalers build specialized back-end networks for GPU clusters, the dependence on high-performance Ethernet silicon has grown critical for reducing latency and optimizing throughput. This massive infrastructure investment is reflected in the financial results of major suppliers shifting focus to high-speed architectures; for instance, Broadcom Inc. reported in its December 2024 financial results that AI networking revenue surged by 158 percent year-over-year, comprising 76 percent of its networking segment, which confirms the intense demand for chips supporting the shift to 800G and beyond.

Concurrently, the swift move toward Industrial Ethernet within smart manufacturing is boosting the market by generating volume in harsh-environment settings. Manufacturers are actively upgrading from legacy serial fieldbus systems to standard Ethernet to support the Industrial Internet of Things (IIoT) and merged IT/OT networks, prioritizing determinism and reliability. This trend is quantified by HMS Networks' May 2025 analysis, which noted that Industrial Ethernet now commands 76 percent of new factory automation nodes. Furthermore, Arista Networks, Inc. reported an annual revenue of \$7 billion for fiscal year 2024 in February 2025, demonstrating the strong global spending on Ethernet connectivity across both enterprise and industrial domains.

### **Market Challenge**

The increasing technical complexity of managing power efficiency and thermal dissipation represents a major hurdle for the Global Ethernet PHY Chip Market. As industry benchmarks push toward transmission speeds of 800G and 1.6T, physical layer transceivers demand increasingly dense circuit configurations to ensure signal integrity. These high-density designs produce substantial heat, requiring sophisticated and costly packaging or cooling solutions. Consequently, the escalating manufacturing expenses and energy demands reduce the economic viability of these advanced chips for broad deployment, particularly within cost-constrained industrial and enterprise sectors where energy budgets are tightly controlled.

This thermal challenge is intrinsically linked to the massive throughput capacity required

by contemporary networks. In 2024, the IEEE Standards Association released an updated bandwidth assessment projecting that traffic volumes by 2025 would swell to 55.4 times the levels seen in 2017. This exponential rise in data traffic compels developers to stretch silicon performance boundaries, leading to devices with disproportionate energy consumption. As a result, data center operators encounter significant difficulties in reconciling the demand for higher bandwidth with the practical constraints of power usage, which directly impedes the commercial adoption rate of next-generation Ethernet PHYs.

## Market Trends

The shift toward Ethernet-based zonal architectures in automotive electronics is reshaping in-vehicle networking by centralizing domain functions into high-bandwidth computing zones. This structural transformation notably decreases the weight and complexity of wiring harnesses while providing the scalable data backbones essential for Software-Defined Vehicles (SDVs), spurring major semiconductor firms to enhance their offerings through strategic acquisitions. Exemplifying this consolidation trend, Infineon Technologies AG finalized the acquisition of Marvell Technology's automotive Ethernet division for \$2.5 billion in August 2025, a move aimed at broadening its system capabilities for secure and scalable zonal control architectures.

Simultaneously, the uptake of Multi-Gigabit (2.5G/5G/10G) NBASE-T standards is invigorating the enterprise and carrier infrastructure markets as organizations modernize campus networks to accommodate Wi-Fi 7 access points and metro connectivity. This resurgence differs from hyperscale drivers by focusing on upgrading conventional corporate and service provider environments with faster copper and optical PHYs to remove bandwidth constraints. Evidencing this strong market recovery, Marvell Technology, Inc. reported in its 'Second Quarter of Fiscal Year 2026 Financial Results' in August 2025 that revenue from its enterprise networking and carrier infrastructure segments collectively rose by 43 percent year-over-year, confirming renewed investment in non-data center connectivity.

## Key Market Players

Marvell Technology, Inc.

Broadcom Inc.

Intel Corporation

Microchip Technology Inc.

Texas Instruments Incorporated

Realtek Semiconductor Corp.

Maxim Integrated Products, Inc.

Renesas Electronics Corporation

Analog Devices, Inc.

NXP Semiconductors N.V.

## **Report Scope**

In this report, the Global Ethernet PHY Chip Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

### Ethernet PHY Chip Market, By Data Rate

10-100Mbps

100-1000Mbps

Greater than 100 Gbps

### Ethernet PHY Chip Market, By Application

Telecom

Consumer Electronics

Automotive

Enterprise Networking

## Industrial Automation

### Ethernet PHY Chip Market, By Region

#### North America

United States

Canada

Mexico

#### Europe

France

United Kingdom

Italy

Germany

Spain

#### Asia Pacific

China

India

Japan

Australia

South Korea

#### South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

### **Competitive Landscape**

Company Profiles: Detailed analysis of the major companies present in the Global Ethernet PHY Chip Market.

### **Available Customizations:**

Global Ethernet PHY Chip Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

### **Company Information**

Detailed analysis and profiling of additional market players (up to five).

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