# Optical Module Oligopoly



## Overview

Chinese Optical Modules Own 7 of the Top 10 Seats. So Why Are Chip Companies Still Making the Money?

## Key Takeaways

The optical module market has historically been dominated by a few major players, but new entrants like Credo are beginning to challenge this oligopoly, driven by high-speed data and AI infrastructure demand.

### Market Overview

Optical modules are critical components in fiber-optic communications, performing both photoelectric and electro-optical conversion. They are essential for high-speed data transmission in data centers, telecom networks, and 5G infrastructure. The global optical module DSP chip market was valued at USD 2.

85 billion in 2025 and is projected to reach USD 11. 14 billion by 2032, reflecting a 21. 5% CAGR due to increasing demand for higher data rates and efficient digital signal processing.

Similarly, the broader optical module chip market is expected to grow from USD 823 million in 2024 to USD 1. 52 billion by 2032, driven by hyperscale data centers and 5G deployments.

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## Oligopoly Structure

Historically, the optical module market has been controlled by a small number of international giants, including Coherent Corp, Lumentum, and Accelink Technologies, who dominated high-speed optical modules and DSP chips. This concentration created an oligopoly, where a few firms set pricing, technology standards, and supply chain practices. The market's high barriers to entry—complex DSP design, precision assembly, and yield-sensitive components—reinforced this structure.

## Emerging Competition

Recent developments indicate a shift in this oligopoly. Credo (Mosheng Technology), founded in 2008 in Shanghai, has entered the market with high-performance DSP chips for PAM4 optical modules, supporting 400G and 800G data rates. Credo's Seagull 50 and Dove series DSPs offer competitive power efficiency and cost advantages, enabling broader adoption of DML lasers and accelerating the development of less mature optical components.

This entry challenges the dominance of traditional players and introduces more competition in pricing and innovation.

## Technological Drivers

The rise of AI and hyperscale data centers is reshaping the optical module market. Next-generation pluggable modules, such as Arista's XPO, deliver extremely high bandwidth (up to 12. 8Tbps per module) and improved density, cooling, and power efficiency, reflecting the growing performance demands of AI workloads.

These technological pressures are forcing both incumbents and new entrants to innovate rapidly, further eroding the traditional oligopoly.

## Market Implications

Pricing and competition: New entrants like Credo may drive down costs and increase module availability. Innovation acceleration: AI and 5G demand incentivizes faster development of high-speed DSPs and PAM4 modules. Supply chain complexity: Despite new players, the market remains sensitive to semiconductor material constraints and yield-sensitive component production.

## Conclusion

While the optical module market has long been an oligopoly dominated by a few global firms, the combination of AI-driven data center growth, 5G expansion, and new DSP entrants like Credo is gradually reshaping the competitive landscape. This transition promises more innovation, potential cost reductions, and a more dynamic market structure in the coming years.

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## Article Content

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Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right module for your fiber network.

Optical Module Market Analysis and Forecast in 2026

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Designing a Module for High-Speed Optical Communication

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The ultimate goal for all-optical connectivity with an ultra-high F5G bandwidth is to increase transmission rates. Optical modules — the foundation of optical communication networks — face the design

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