How much does an optical module chip socket cost

Overview

An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications.

Key Takeaways

The cost of an optical module chip socket typically ranges from $5 to $50 per unit, depending on speed, material, and supplier.Cost Factors
• Module Speed and Performance Optical module sockets for higher-speed modules (e.g., 400G or 800G) are more expensive due to tighter tolerances, higher signal integrity requirements, and advanced thermal management . Lower-speed modules like 25G or 100G generally use simpler PCB or ceramic substrates, which are less costly.

• Material Type
• Ceramic substrates: Offer excellent thermal stability and electrical insulation, suitable for high-power or coherent optical modules; these are on the higher end of the price range .

• Organic laminates / PCB substrates: Lightweight, cost-effective, and suitable for short-reach modules; these are generally cheaper .

• Metal-core or copper-molybdenum substrates: Optimized for thermal dissipation in dense module designs, moderately priced .

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• Supplier and Brand Leading suppliers like Nanya PCB, Unimicron, Ibiden, and AT&S provide high-quality, high-speed sockets with low insertion loss and high thermal performance, which can increase cost . OEMs may charge a premium for reliability, certification, and support.

• Production Complexity Precision manufacturing in cleanroom environments, multi-layer PCB designs, and co-packaged optics integration add to the cost . Modules with advanced features like PAM4 IC support or multi-terabit data center compatibility are more expensive.

• Market Dynamics Supply chain constraints, semiconductor material shortages, and demand surges for hyperscale data centers or 5G infrastructure can temporarily increase prices . Conversely, mature standards and high-volume production can reduce costs over time.
Summary

For budgeting purposes, low-speed optical module chip sockets (25G–100G) typically cost $5–$15 per unit, while high-speed sockets (400G–800G) can range from $20–$50 per unit. Prices may vary based on material, supplier, and module specifications, and additional costs may arise from logistics, R&D, and integration requirements .

Article Content

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An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications. Optical

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In conclusion, the choice of modulation method needs to take into account multiple factors, including transmission

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A microscope image of an integrated circuit die used to control LCDs. The pinouts are the dark circles surrounding the integrated

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The optical engine of a transceiver — whether co-packaged or part of a pluggable module — typically includes an

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Chinese Optical Modules Own 7 of the Top 10 Seats. So Why Are

Behind them, Hisense Broadband holds a full chain from optical chips to terminal devices, HG Genuine has secured

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