Optical module with a wavelength of 40km



Overview

SFP+ 40km (10GBASE-ER): Extended-Reach Optical Module GuideSFP+ 40km is a type of 10 Gigabit optical transceiver designed for long-distance data transmissi.

Key Takeaways

Optical modules capable of 40km transmission are available in 10G and 100G variants, using wavelengths such as 1310nm, 1550nm, and CWDM/DWDM channels, suitable for long-reach single-mode fiber networks. 100G Optical ModulesFor high-speed 100G networks, several 40km modules are available: 100G OWDM QSFP28: Supports 8 channels in the O-band (1295. 56nm–1311.

43nm) with 400GHz spacing, reaching 40km without amplifiers or dispersion compensation. It features low power consumption (max 5. 5W) and built-in FEC for reliable transmission, ideal for DCI and metro networks.

100GBASE-ER4L QSFP28: Operates at 1310nm over single-mode fiber, supporting 100G data rates up to 40km with FEC enabled (30km without FEC). Compliant with IEEE 802. 3bm standards, suitable for backbone and enterprise networks.

100G BiDi QSFP28: Enables bidirectional transmission over a single fiber, saving fiber resources while achieving 40km reach. Supports 4x25. 78 Gbps lanes with FEC for robust performance.



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10G Optical ModulesFor 10G networks, several 40km modules are widely used: SFP-10G-ER: Uses a 1550nm wavelength over single-mode fiber, supporting 10Gbps up to 40km. Hot-pluggable with LC duplex connectors, it is suitable for metro Ethernet, campus backbones, and data center interconnects. CWDM-10G-SFP-40: Supports 18 CWDM channels (1270–1610nm) with a 16 dB link budget over 40km single-mode fiber.

Multi-rate operation from 1. 25 to 11. 32 Gbps makes it flexible for metropolitan and regional networks.

DWD

M 10G SFP+: Offers C-band 100GHz/50GHz wavelength options, single-mode fiber transmission, and distances up to 40km (with extended options up to 70–80km). Compatible with 10G Ethernet, CPRI, 10GFC, SONET/SDH, and OTN OTU2e protocols.

Key Considerations

Wavelength Selection: 1310nm is common for 100G ER4L modules, 1550nm for 10G ER modules, and CWDM/DWDM modules use multiple channels for wavelength division multiplexing. Fiber Type: All modules are designed for single-mode fiber (SMF) to achieve 40km reach.

FE

C and Link Budget: Forward Error Correction (FEC) is often required to reach the full 40km distance reliably. Connector Type: LC/UPC duplex connectors are standard for these modules. Applications: Suitable for data center interconnects, metro networks, telecom backbones, and enterprise long-reach links.

These modules provide a balance of high bandwidth, long reach, and cost efficiency, enabling scalable and reliable optical networks for modern infrastructure.

Article Content

SFP+ 40km (10GBASE-ER): Extended-Reach Optical Module Guide

SFP+ 40km is a type of 10 Gigabit optical transceiver designed for long-distance data transmission up to 40 kilometers over single-mode fiber (SMF). In most cases, this term specifically

Up to 40Gbps Data over 40km with 40GBASE-ER4 QSFP+ Module

The 40GBASE-ER4 QSFP+ 1310nm Optical Transceiver Module is designed to transmit 40GBASE Ethernet throughput up to 40km over duplex LC connectors using single-mode fiber

40GBASE ER4 QSFP+ Transceiver | 40G DWDM, 40km LC Optical

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To achieve reliable data transmission over a distance of 40 kilometers, the 40GBASE-ER4 transceiver must utilize highly stable and high-quality components. The transceiver''s transmitter and receiver

QSFP-10040-ER4 100G QSFP28 ER4 Transceiver 40Km

The QSFP-10040-ER4 is a full 40Km transceiver (not the Lite version), using EA-DFB lasers and APN photo diodes for a full 40Km reach optical budget. It is designed for 100G Ethernet service, being

Fiber Optic Transceiver 40G QSFP+ Single Mode Optic Module ER4

Fiber Optic Transceiver 40G QSFP+ Single Mode Optic Module ER4 40km 1310nm Wavelength LC A 40G transceiver module is an optical that supports data rates of up to 40 Gigabits

CWDM SFP+ 1470nm~1610nm 40km Transceiver Datasheet

This module is designed for single mode fiber and operates at a nominal wavelength of CWDM wavelength. There are eight center wavelengths available from 1470nm to 1610nm, with each step

SFP-10G-ER Explained: Powering 40km 10Gbps Optical Links

SFP-10G-ER is a 10G SFP+ transceiver for up to 40km over single-mode fiber, featuring 1550nm wavelength, LC connector, and real-time monitoring.

10G BiDi SFP+ 40km | Tx1270/Rx1330 | Single Fiber Compatible

Our 10G BiDi SFP+ 40km transceiver delivers extended single-fiber reach with Tx1270nm/Rx1330nm wavelength technology. Providing robust 16 dB link budget over 40km single-mode fiber, this 10G

100G QSFP28 ER4 40km Optical Module

HTFuture''s 100G QSFP28 ER4 Optical Module supports 40km SMF transmission at 100Gbps, ideal for high-speed data centers and telecom applications.

The Ultimate Guide to ZTE SFP Module Distance and Wavelength

A deep understanding of ZTE SFP module distance and wavelength specs is a prerequisite for designing reliable, scalable, and high-performance networks. From the cost-effective 850 nm SR

10Gbps SFP+ Optical Module

Describes the chassis, power supply, fans, boards, optical modules, and power distribution box of the NetEngine 8000 M14K, M14, M8K, M8, M4, 8000E M14, M8.

Understanding Single-mode and Multi-mode SFP Optical Modules

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Single-mode SFP optical modules typically operate at wavelengths of 1310nm or 1550nm, which are well-suited for long-distance transmission. They are commonly used in applications such as long

10GE SFP+ Optical Modules

Fan Modules Installing a Power Surge Protector Pluggable Modules for Ports Understanding Optical Modules Understanding Copper Modules Understanding Hybrid Modules Guide to Using Pluggable

EML vs VCSEL vs CW Laser: Optical Transceiver Guide (2025)

Compare EML, VCSEL, and CW laser technologies in optical transceivers. Covers cost, reach, speed, the 2025 EML shortage, and silicon photonics alternatives.

Optical Transceiver Market Size, Growth Drivers | Industry Report 2031

The Optical Transceiver Market worth USD 15.42 billion in 2026 is growing at a CAGR of 13.67% to reach USD 29.26 billion by 2031. Coherent Corp., Lumentum Holdings, Broadcom Inc.,

400G Optical Modules Explained: SR4 Vs. DR4 Vs. FR4 Vs. LR4

Key differences between SR4, DR4, FR4, and LR4 400G optical modules. Expert advice from Asterfusion engineers to optimize your data center network.

180km~200km 100Mbps SFP Optical Transceiver with 1550nm DFB

1. What Is a 180km~200km 100Mbps SFP Optical Transceiver? The C-LIGHT 180km~200km 100Mbps SFP optical transceiver is an industrial-grade optical module designed for

Explanation of Optical Module Parameters

Considering that some newcomers to optical modules may not understand the letters on the optical module or the specific meanings of the parameters on the optical module, the following is

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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