Optical power of a 10g optical module over 10km

AI Overview

A typical 10G SFP+ optical module for 10 km single-mode fiber operates at 1310 nm with a transmitter power around -8 to 0 dBm and receiver sensitivity near -14 dBm, consuming approximately 1 W of electrical power.Key SpecificationsTransmitter and Wavelength: Most 10GBASE-LR SFP+ modules use a 1310 nm DFB laser for long-range transmission over single-mode fiber, which minimizes dispersion and maintains signal integrity over 10 km . CWDM variants may operate in the 1270–1610 nm range while still supporting 10 km reach . Optical Power Levels:Transmitter output power: Typically ranges from -8 dBm to 0 dBm, sufficient to overcome fiber attenuation over 10 km .Receiver sensitivity: Around -14 dBm, ensuring reliable detection of the optical signal with low bit error rates (BER < 10^{-12}), . Power Consumption: Low-power 10G modules are optimized for energy efficiency, generally consuming 0.8–1 W, which reduces heat output and improves system stability in high-density deployments . Interface and Compatibility: These modules use LC duplex connectors and are compliant with SFP+ MSA standards, allowing plug-and-play integration with switches, routers, and network interface cards . Performance Considerations:Single-mode fiber is preferred for 10 km links due to its small core diameter, which reduces attenuation and dispersion, maintaining high signal integrity .Modules are designed to meet IEEE 802.3ae 10GBASE-LR standards, ensuring reliable 10 Gbps data transmission over the specified distance .SummaryFor a 10 km single-mode fiber link, a standard 10G SFP+ optical module:Uses a 1310 nm DFB laserProvides transmitter power of -8 to 0 dBmHas receiver sensitivity around -14 dBmConsumes ~1 W of electrical powerSupports 10 Gbps data rates with low BER These specifications ensure stable, long-range 10G Ethernet connectivity while maintaining energy effici...

Article Content

Cisco 40GBASE QSFP Modules Data Sheet

This module can be used for native 40G optical links over 12-fiber ribbon cables with MPO/MTP connectors or in 4x10G mode with parallel-to-duplex fiber breakout cables for connectivity

The Critical Role of Low-Power Optical Transceivers in Energy

Explore the definition, applications, and product advantages that set 10G low-power optical modules apart from standard options. Learn how FS helps reduce power consumption and

10Gb/s 10km SFP+ Optical Transceiver Module

Low power consumption and high sensitivity (-14.4 dBm receiver sensitivity) for efficient operation. Complies with IEEE 802.3ae eye masks, guaranteeing reliable data transmission.

40G QSFP+ Optical Transceivers Complete Guide | Fibrecross

Hot-swap QSFP+ form factor Plug-and-play interoperability via IEEE/MSA standards These 40g qsfp+ optical transceivers deliver 4×10G in one module with lower power per bit than four separate 10G

Optical Module & Fiber Optic SFP Module Factory

Boost speeds with an effortless optical module transceiver supplier. Find the best fiber optic module factory and SFP optical module manufacturer here st

10G Base LR Industrial SFP+ | 10km SMF | -40 to 85°C

Our 10G Base LR Industrial SFP+ transceiver delivers reliable 10km connectivity across extreme temperature range (-40 to 85°C). Operating at 1310nm wavelength with 6 dB link budget, this 10G

DATASHEET MODULETEK:SFP-10G-LR-10KM-x-H15

er chip supplies the bias current and the modulation current to the laser. The laser driver chip simultaneously uses an automatic optical power control (APC) feed ack loop to maintain a constant

10G BiDi SFP+ TX1550nm/RX1490nm 70KM LC Optical Transceiver

Product Description□10G BiDi SFP+ 1490nm/1550nm 70KM LC Optical Transceiver This high-performance bidirectional SFP+ transceiver delivers 10Gbps connectivity over 70km single-mode

SFP Optical Transceiver Modules for Long Distance: A Complete

What Are Long-Distance SFP Modules? SFP (Small Form-factor Pluggable) modules are standardized network transceivers that support a range of data rates (1G, 10G, 25G) and fiber types.

Optical Fibre SFP Module for 5G Networks An SFP (Small Form-factor ...

Optical Fibre SFP Module for 5G Networks An SFP (Small Form-factor Pluggable) is a hot-swappable optical transceiver module that converts electrical signals into optical signals (and vice versa ...

Small Form-factor Pluggable

Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for both telecommunication and

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

Optical Specifications: 10GBASE-LR uses 1310 nm wavelength, DFB lasers, and supports optical power budgets of 8–11 dB, enabling 10 km links over standard G.652 SMF.

Moduletek Limited SFP-10G-LR-10KM-C-D12 Optical Transceiver

Moduletek''s SFP-10G-LR-10KM-C-D12 optical transceiver supports 10G Ethernet transmission up to 10km over single-mode fiber (SMF). Moduletek Laboratory conducted sampling

10G SFP+ LR 1310nm 10KM

Operating at a wavelength of 1310nm, this module supports 10G Ethernet and 10G Fibre Channel, making it ideal for enterprise, data center, and long-distance access network applications.

Ericsson RDH 102 414/35 R1A (RTXM228-525-C25) 10G CWDM SFP+ optical ...

The Ericsson RDH 102 414/35 R1A is a high-performance 10G CWDM SFP+ optical transceiver designed for medium-reach 10Gbps fiber communications in telecom and wireless infrastructure

10G SR vs LR vs ER vs ZR – Optical Transceiver Distance

When deploying a 10G network, choosing the right optical transceiver is critical. The main difference between SR, LR, ER, and ZR modules lies in transmission distance, fiber type,

MikroTik 10G Single-Mode SFP+ Module Pair, 10 km | Getic

The MikroTik S+2733LC10D is a pair of industrial-grade 10G SFP+ modules designed for single-mode fiber links over distances of up to 10 km. The modules are intended for networks that need 10G

DAC vs AOC vs Fiber + Optics Buying Guide | How to Choose the

Not sure whether to choose DAC, AOC, or Fiber + Optics? Learn the differences, transmission distances, applications, and recommended optical modules for data centers, enterprise

Contact Us

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