

# **GIGALIGHT Marketing Report**

Next-Gen 5G and Metro DWDM Optical Modules and COLOR ZR+ DWDM Optical Modules Solutions

# Issue 1, 2024

25G SFP28 DWDM (O-BAND DML)

25G SFP28 DWDM (C-BAND EML)

50G SFP56 DWDM (O-BAND DML)

50G SFP56 DWDM (C-BAND EML)

100G QSFP28 PSM DWDM4(C-BAND)

100G QSFP28 PSM DWDM4(O-BAND)

The DWDM optical module is widely used in telecommunications, cable TV, and data centers with large data traffic, especially in ultra-large-scale cloud service providers or multi-tenant data centers (hosted data centers). With the development of 5G communication, DWDM is applied to 5G fronthaul and metropolitan transmission due to its narrow wavelength spacing, allowing more wavelengths to be multiplexed on a single fiber, saving more fiber resources. Following the 25G SFP28 DWDM optical module, the 50G SFP56 DWDM optical module with higher-order modulation using 50G and even 100G PAM4, and the 100G QSFP28 PSM DWDM4 optical module, have also been introduced successively.



PAM4 DWDM modules seamlessly integrate into embedded DWDM, eliminating the need for extra converters. Directly plug into compatible data center routers or switches for cost-effective and simplified deployment. Enhance existing DWDM networks by adding PAM4 modules with Dispersion Compensation Modules (DCM) and EDFA amplification for versatile transmission.

# **Product Introduction**

### 25G SFP28 DWDM



GIGALIGHT innovative O-BAND 25G DWDM SFP28 offers industrial-grade temperature products for 5G fronthaul. With 16 wavelengths, it provides more bandwidth for applications with tight fiber resources, reducing operational costs. SOA amplification enables long-distance transmission.

GIGALIGHT C-BAND 25G DWDM SFP28, available in 48 wavelengths, meets industrial-grade temperature requirements. It's suitable for 5G fronthaul or DCI scenarios, providing a total bandwidth of 1200 and supporting single-fiber transmission.

Both C-band and O-band options support transmission distances exceeding 80km, offering cost-effective DWDM transmission solutions for Data Center Interconnect (DCI) and metropolitan networks. This solution has advantages such as lower cost, lower power consumption, low latency, and easy deployment compared to traditional coherent solutions.

- Utilize 4x25G SFP28 to 100G QSFP28 Muxponder for 80km+ 100GE transmission.
- Achieve dual-fiber total bandwidth with 48x25G, totaling 1200G.
- Explore a single-fiber transmission solution supporting 400G total bandwidth.



### 50G SFP56 DWDM



GIGALIGHT 50G SFP56 DWDM optical transceiver module designed for 5G fronthaul, complying with the 50G Ethernet transmission protocol and compatible with the 50G eCPRI transmission protocol. This series of products utilizes single-mode fiber transmission, with optional C-band/O-band operating wavelengths, reaching distances of up to 80km (with the EDFA and DCM). The modules are available with an industrial-grade operating temperature range.

Compared to the current 25G optical modules used in 5G fronthaul, the 50G SFP56 series achieves a 50Gb/s rate within the same form factor, allowing for a 50% reduction in ports. This improvement enhances the density and bandwidth of wireless fronthaul, aiding in the smooth evolution of O-RAN and vRAN architecture systems into the next generation.



Product	ТХ	RX	Power Consumption	Distance	Temp.	P/N
50G SFP56 DWDM	C-BAND EML	PIN	3W	5km	0~70 -40~+85	GSS-Dxx500-05C GSS-Dxx500-05T
50G SFP56 DWDM	O-BAND EML	PIN	3W	10km	0~70 -40~+85	GSS-Oxx500-LRC GSS-Oxx500-LRT

## 100G QSFP28 PSM DWDM4



In November 2023, GIGALIGHT officially announced the release of two innovative 100G QSFP28 PSM DWDM4 coherent long-distance optical modules.

These modules feature a quad-carrier DWDM solution based on 4x25G NRZ, offering options for both C-band and O-band wavelengths. They support transmission distances exceeding 80km and are designed to provide a more cost-effective and efficient DWDM transmission solution for Data Center Interconnect (DCI) and metropolitan area networks.

This solution, compared to traditional coherent solutions, boasts advantages such as lower cost, lower power consumption, lower latency, and easy deployment.



#### Color ZR+ C-BAND 100G PSM QSFP28 DWDM4

The GIGALIGHT Quad-Carrier Color ZR+ C-BAND 100G QSFP28 PSM DWDM4 optical module features an MPO-12 interface on the optical side, utilizing a 12-core MPO. Coupled with an external wavelength division multiplexer/demultiplexer, and under the compensation of dispersion compensation modules (DCM) and amplification of Erbium-doped fiber amplifiers (EDFA), it can meet transmission distance requirements of at least 80km.

The product's transmitting end employs 4x25G C-band 100GHz DWDM EML lasers, and the receiving end uses PIN detectors, providing 48 channels of wavelength. The optical module's total power consumption is less than 5W, and it achieves a total network bandwidth of 1200G under dual-fiber transmission conditions and 400G under single-fiber conditions. This product can be directly inserted into a 100G QSFP28 switch port, eliminating the need for traditional DWDM wavelength layer equipment.

GIGALIGHT also offers a one-stop solution, including self-developed intelligent 1U optical layer equipment, which comprises DWDM EDFA, AAWG, and adjustable TDM or fixed DCM. This comprehensive solution enables customers to deploy the entire coherent DWDM transmission system rapidly.

#### Wavelength Table of Color ZR+ C-BAND 100G QSFP28 PSM DWDM4 Modules:

	TX1		TX2		TX3		TX4	
P/N	Ch. No.	Frequency	Ch. No.	Frequency	Ch No	Frequency	Ch. No.	Frequency
		(THz)		(THz)	CII. NO.	(THz)		(THz)
GQS-D13101-124C	C13	191.3	C14	191.4	C15	191.5	C16	191.6
GQS-D17101-124C	C17	191.7	C18	191.8	C19	191.9	C20	192
GQS-D21101-124C	C21	192.1	C22	192.2	C23	192.3	C24	192.4
GQS-D25101-124C	C25	192.5	C26	192.6	C27	192.7	C28	192.8
GQS-D29101-124C	C29	192.9	C30	193	C31	193.1	C32	193.2
GQS-D33101-124C	C33	193.3	C34	193.4	C35	193.5	C36	193.6
GQS-D37101-124C	C37	193.7	C38	193.8	C37	193.7	C37	193.7
GQS-D41101-124C	C41	194.1	C42	194.2	C43	194.3	C44	194.4
GQS-D45101-124C	C45	194.5	C46	194.6	C47	194.7	C48	194.8
GQS-D49101-124C	C49	194.9	C50	195	C51	195.1	C52	195.2
GQS-D53101-124C	C53	195.3	C54	195.4	C55	195.5	C56	195.6
GQS-D57101-124C	C57	195.7	C58	195.8	C59	195.9	C60	196



#### Illustration of the 1200G Transmission Solution with COLOR ZR+ C-BAND 100G QSFP28 PSM DWDM4 Optical Module. Direct insertion into a 100GE switch.

When inserting the 100G QSFP28 4×25G DWDM into a 100G QSFP28 OEO Card:

- Dual-fiber total bandwidth capacity: 48×25G = 1200G
- Single-fiber total bandwidth capacity: 400G



Illustration of the 1200G Transmission Solution with COLOR ZR+ C-BAND 100G QSFP28 PSM DWDM4 Optical Module. The 100G QSFP28 PSM DWDM4 is utilized in the subsystem, facilitating business access through the customer-side optical module.

### Color ZR+ O-BAND 100G QSFP28 PSM DWDM4

GIGALIGHT'S Quad-Carrier Color ZR+ O-BAND 100G QSFP28 PSM DWDM4 optical module features an MPO interface with a 12-core configuration. When used in conjunction with an external wavelength division multiplexer/demultiplexer and SOA optical amplifier, it achieves a transmission distance of up to 80km. The product's transmitter employs a 25G O-BAND 150GHz DWDM DML laser, while the receiver utilizes a PIN detector. Offering 16 wavelengths, the module has a power consumption of less than 5W and provides a total network bandwidth of 400G under dual-fiber conditions. It can be directly inserted into the 100G QSFP28 switch port, eliminating the need for traditional DWDM optical layer equipment and DCM dispersion compensation modules. GIGALIGHT also offers a one-stop solution with its self-developed intelligent 1U optical layer equipment, including SOA amplification and a 150GHz AAWG, providing customers with a complete non-coherent DWDM transmission solution for rapid business deployment.

#### TX1 TX2 ТХЗ TX4 P/N Frequency Frequency Frequency Frequency Ch. No. Ch. No. Ch. No. Ch. No. (THz) (THz) (THz) (THz) 01 02 GQS-001101-ER4C 03 04 233.6 233.45 233.3 233.15 GQS-005101-ER4C 05 07 233 06 232.85 232.7 08 232.55 GOS-010101-ER4C 10 232.25 11 12 13 232.1 231.95 231.8 GQS-014101-ER4C 14 231.65 15 231.5 16 231.35 17 231.2

#### Wavelength Table of Color ZR+ O-BAND 100G QSFP28 PSM DWDM4 Modules:



#### Illustration of the 400G Transmission Solution with COLOR ZR+ O-BAND 100G QSFP28 PSM DWDM4 Optical Module.

When inserting the 100G QSFP28 4x25G DWDM into a 100G QSFP28 OEO Card:

- Dual-fiber total bandwidth capacity 48x25G = 1200G
- Single-fiber total bandwidth capacity 400G



Illustration of the 1200G Transmission Solution with COLOR ZR+ O-BAND 100G QSFP28 PSM DWDM4 Optical Module. The 100G QSFP28 PSM DWDM4 is utilized in the subsystem, facilitating business access through the customer-side optical module. GIGALIGHT offers a 48-channel MUX&DEMUX with MPO interface, enabling direct interconnection with the 100G QSFP28 PSM DWDM4. This streamlines fiber interconnection, reducing time and complexity.

The interconnection utilizes MPO-12/APC crossover B-polarity fiber ribbons between 1U AAWG and 100G QSFP28 PSM DWDM4.



# **Products in Development**

GIGALIGHT will develop cost-effective non-coherent DWDM solutions in 100G and 400G networks, creating a market for COLOR ZR+ non-coherent models. This aims to simplify network deployment and provide expert-level, cost-effective interconnection solutions. Stay tuned for updates.





**Open Optical Network Device Explore** 

For any needs, please contact sales@gigalight.com. Thanks!

http://www.gigalight.com/