# RG 100GBASE Series
# **Optical Transceivers**

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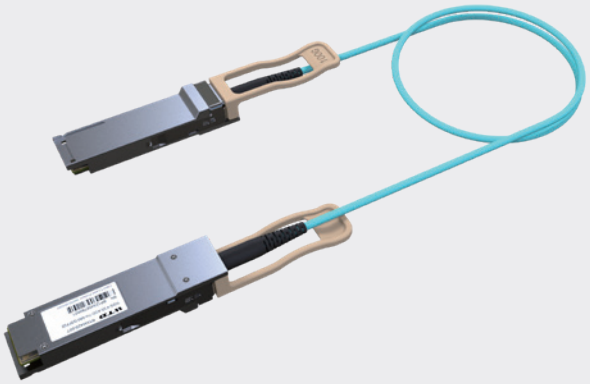
# Product Pictures



Appearance of 100G-AOC-xx

Appearance of 100G Module

# Product Overview

As an industry-leading ICT infrastructure and industry solution provider, Ruijie offers customers a wide variety of high-density and low-power 100G optical transceivers. They are applicable to data centers, high-performance computing (HPC) networks, and enterprise core and aggregation layers, enabling cost-effective and efficient high-speed interconnection between data center servers and switches.

## 100G-QSFP-SR-MM850 Module

The 100G-QSFP-SR-MM850 is aligned to IEEE 100GBASE-SR optical specifications and supports a link length of up to 100 m over an OM4 multimode fiber (MMF) or 70 m over an OM3 MMF with an MPO connector. It adopts the QSFP28 form factor and operates at a wavelength of 850 nm. The transceiver conforms to IEEE 802.3bm, QSFP28 Multisource Agreement (MSA), and RoHS standards.

## 100G-QSFP-LR4-SM1310 Module

The 100G-QSFP-LR4-SM1310 is aligned to IEEE 100GBASE-LR4 optical specifications and supports a link length of up to 10 kilometers over a single-mode fiber (SMF) with a Duplex LC connector. It adopts the QSFP28 form factor and operates at a wavelength of 1310 nm. The transceiver conforms to IEEE 802.3ba, QSFP28 MSA, and RoHS standards.

## 100G-QSFP-iLR4-SM1310 Module

The 100G-QSFP-iLR4-SM1310 is aligned to IEEE 100GBASE-iLR4 optical specifications and supports a link length of up to 2 kilometers over an SMF with a Duplex LC connector. It adopts the QSFP28 form factor and operates at a wavelength of 1310 nm. The transceiver conforms to 100GE CWDM4 MSA, QSFP28 MSA, IEEE 802.3bm and RoHS standards.

## 100G-QSFP-ER4-SM1310 Module

The 100G-QSFP-ER4-SM1310 is aligned to IEEE 100GBASE-ER4 optical specifications and supports a link length of up to 40 kilometers over an SMF with a Duplex LC connector. It adopts the QSFP28 form factor and operates at a wavelength of 1310 nm. The transceiver conforms to 100G 4WDM-40 MSA and RoHS standards.

## 100G-QSFP-SR-MM-BIDI Module

The 100G-QSFP-SR-MM-BIDI is aligned to IEEE 100GBASE-BIDI optical specifications and supports a link length of up to 100 m over an OM4 MMF or 70 m over an OM3 MMF with a Duplex LC connector. It adopts the QSFP28 form factor and operates at a wavelength of 850 nm or 908 nm. The transceiver conforms to IEEE 802.3bm, QSFP28 MSA, and RoHS standards.

## 100G-QSFP-DR1-SM1310 Module

The 100G-QSFP-DR1-SM1310 is aligned to IEEE 100GBASE-DR1 optical specifications and supports a link length of up to 500 m over an SMF with a Duplex LC connector. It adopts the QSFP28 form factor and operates at a wavelength of 1310 nm. The transceiver conforms to IEEE 802.3cu, QSFP28 MSA, and RoHS standards.

## 100G-Q56-SR2-MM850 Module

The 100G-Q56-SR2-MM850 is aligned to IEEE 100GBASE-SR2 optical specifications and supports a link length of up to 100 m over an OM4 MMF or 70 m over an OM3 MMF with an MPO connector. It adopts the QSFP56 form factor and operates at a wavelength of 850 nm.The transceiver conforms to IEEE 802.3cd, SFF8636, and RoHS standards.

## 100G-AOC-xx Cable

QSFP28 100G to QSFP28 100G active optical cables (AOCs) are suitable for short-distance transmission and offer a flexible way to connect within and across racks. AOCs are much thinner and lighter than copper cables, which makes cable management easier. AOCs enable efficient system airflow, which is crucial in high-density racks. The 100G-AOC-xx series cable comes into three models: 100G-AOC-3M, 100G-AOC-5M and 100G-AOC-10M in lengths of 5 meters and 10 meters, respectively.

## 100G-DAC-xx Cable

100G Direct Attach Copper (DAC) is a high-performance direct connect cable specifically designed for short-distance interconnection in data centers. It is suitable for connecting devices from 100G QSFP28 to 100G QSFP28. Data is transmitted through copper wires without the need for optical-to-electrical signal conversion, offering high cost-effectiveness and low power consumption, making it ideal for short-distance connections within data center racks. Currently, the 100G-DAC-xxM series copper cables include the 100G-DAC-1M model, which is a passive copper cable with a length of 1 m (3.28 ft.).

# Product Features

- Hot swapping, allowing for simplified maintenance
- High reliability and low power consumption, allowing for prolonged service life
- Compliance with RoHS, REACH, and FDA standards

# Product Specifications

## Optical Transceiver Specifications

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Data rate | 103.125 Gbps (4 x 25.78 Gbps) | | | |
| Form factor | QSFP28 | | | |
| Connector type | MPO 1 x 12 | Duplex LC | | |
| Cable type | MMF | SMF | | |
| Fiber end face finish type | Ultra Physical Contact (UPC) | | | |
| Laser type | VCSEL | EML | DFB | EML |
| Receiver type | PIN | | | |
| Reach | OM3: 70 m (229.66 ft.)<br>OM4: 100 m (328.08 ft.) | 10km (32,808.40 ft.) | 2 km (6,561.68 ft.) | 40 km (131,233.59 ft.) |
| Bit error ratio (BER) | 5.00E-05 | 1.00E-12 | 5.00E-05 | 5.00E-05 |
| Data diagnosis-capable (DDM/DOM) | Yes | | | |
| Power consumption | ≤ 3.5 W | ≤ 4.5 W | ≤ 3.5 W | ≤ 4.5 W |

**Transmitter Optical Parameters**

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Wavelength (nm) | (840, 860) | (1294.53, 1296.59)<br>(1299.02, 1301.09)<br>(1303.54, 1305.63)<br>(1308.09, 1310.19) | (1264.5, 1277.5)<br>(1284.5, 1297.5)<br>(1304.5, 1317.5)<br>(1324.5, 1337.5) | (1294.53, 1296.59)<br>(1299.02, 1301.09)<br>(1303.54, 1305.63)<br>(1308.09, 1310.19) |

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Max. transmit power (AVG) | 2.4 dBm | 4.5 dBm | 2.5 dBm | 6.5 dBm |
| Min. transmit power (AVG) | –8.4 dBm | –4.3 dBm | –6.5 dBm | –2.5 dBm |
| Min. extinction ratio | 2 dB | 4 dB | 3.5 dB | 4.5 dB |

**Receiver Optical Parameters**

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Receive sensitivity (OMA) | < –5.2 dBm | < –8.6 dBm | < –10 dBm | < –18.5 dBm |
| Overload optical power (AVG) | 2.4 dBm | 4.5 dBm | 2.5 dBm | –3.5 dBm |

**Environment and Reliability**

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Operating temperature | 0°C to 70°C (32°F to 158°F) | | | |
| Operating humidity | 10% RH to 90% RH | | | |
| Storage temperature | –40°C to +85°C (–40°F to +185°F) | | | |
| Storage humidity | 10% RH to 90% RH | | | |

**Dimensions and Weight**

| Model | 100G-QSFP-SR-MM850 | 100G-QSFP-LR4-SM1310 | 100G-QSFP-iLR4-SM1310 | 100G-QSFP-ER4-SM1310 |
|---|---|---|---|---|
| Dimensions (W x D x H) | 122 mm x 18 mm x 8.5 mm (4.80 in. x 0.71 in. x 0.33 in.) | | | |
| Weight | 50 g (0.11 lbs.) | | | |

## Optical Transceiver Specifications

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Data rate | 103.125 Gbps (4 x 25.78 Gbps) | | 100 Gbps |

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Form factor | QSFP28 | | QSFP56 |
| Connector type | Duplex LC | | MPO 1 x 12 |
| Cable type | MMF | SMF | MMF |
| Fiber end face finish type | UPC | | APC |
| Laser type | VCSEL | EML | VCSEL |
| Receiver type | PIN | | |
| Reach | OM3: 70 m (229.66 ft.)<br>OM4: 100 m (328.08 ft.) | 500 m (1,640.42 ft.) | OM3: 70 m (229.66 ft.)<br>OM4: 100 m (328.08 ft.) |
| BER | 1.00E-12 | 2.40E-04 | |
| Data diagnosis-capable (DDM/DOM) | Yes | | |
| Power consumption | ≤ 4 W | | ≤ 3.5W |

**Transmitter Optical Parameters**

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Wavelength (nm) | (844, 863)<br>(900, 918) | (1304.5, 1317.5) | (840, 860) |
| Max. transmit power (AVG) | 4 dBm | | |
| Min. transmit power (AVG) | –4.4 dBm | –2.9 dBm | –6 dBm |
| Min. extinction ratio | 3 dB | 3.5 dB | 3 dB |

**Receiver Optical Parameters**

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Receive sensitivity (OMA) | < –6.6 dBm | < –3.9 dBm | < –6.5 dBm |
| Overload optical power (AVG) | 3 dBm | 4.2 dBm | 4 dBm |

### Environment and Reliability

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Operating temperature | 0°C to 70°C (32°F to 158°F) | | |
| Operating humidity | 10% RH to 90% RH | | |
| Storage temperature | –40°C to +85°C (–40°F to +185°F) | | |
| Storage humidity | 10% RH to 90% RH | | |

### Dimensions and Weight

| Model | 100G-QSFP-SR-MM-BIDI | 100G-QSFP-DR1-SM1310 | 100G-Q56-SR2-MM850 |
|---|---|---|---|
| Dimensions (W x D x H) | 122 mm x 18 mm x 8.5 mm (4.80 in. x 0.71 in. x 0.33 in.) | | |
| Weight | 50 g (0.11 lbs.) | | |

## Cable Specifications

| Model | 100G-AOC-3M | 100G-AOC-5M | 100G-AOC-10M | 100G-DAC-1M |
|---|---|---|---|---|
| Data rate | 103.125 Gbps (4 x 25.78 Gbps) | | | 100Gbps |
| Form factor | QSFP28 | | | |
| Connector type | QSFP28 to QSFP28 | | | |
| Data diagnosis-capable (DDM/DOM) | Yes | | | NO |
| Length | 3 m (9.84 ft.) | 5 m (16.40 ft.) | 10 m (32.81 ft.) | 1 m |
| Transceiver type | Active | | | Passive |

# Order Information

| Model | Description |
|---|---|
| 100G-QSFP-SR-MM850 | 100G SR module, QSFP28 form factor, MPO, 850 nm, 70 m (229.66 ft.) over OM3 MMF or 100 m (328.08 ft.) over OM4 MMF |
| 100G-QSFP-LR4-SM1310 | 100G LR4 module, QSFP28 form factor, Duplex LC, 1310 nm, 10 km (32,808.40 ft.) over SMF |
| 100G-QSFP-iLR4-SM1310 | 100G iLR4 module, QSFP28 form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over SMF |
| 100G-QSFP-ER4-SM1310 | 100G ER4 module, QSFP28 form factor, Duplex LC, 1310 nm, 40 km (131,233.59 ft.) over SMF |
| 100G-QSFP-SR-MM-BIDI | 100G BIDI module, QSFP28 form factor, Duplex LC, 850 nm/908 nm, 100 m (328.08 ft.) over MMF |
| 100G-QSFP-DR1-SM1310 | 100G DR1 module, QSFP28 form factor, Duplex LC, 1310 nm, 500 m (1,640.42 ft.) over SMF |
| 100G-Q56-SR2-MM850 | 100G SR2 module, QSFP56 form factor, MPO, 850 nm, 70 m (229.66 ft.) over OM3 MMF or 100 m (328.08 ft.) over OM4 MMF |
| 100G-AOC-3M | 100G QSFP28 AOC cable, 3 m (9.84 ft.) |
| 100G-AOC-5M | 100G QSFP28 AOC cable, 5 m (16.40 ft.) |
| 100G-AOC-10M | 100G QSFP28 AOC cable, 10 m (32.81 ft.) |
| 100G-DAC-1M | 100G DAC cable, QSFP28 form factor, 1 m (3.28 ft.) |

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