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# Cisco 100GBASE Q100-ZR4-S-EA Module

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## Product overview

The Cisco® 100GBASE Quad Small Form-Factor Pluggable (QSFP) Q100-ZR4-S-EA provides customers with a 100 Gigabit Ethernet ZR connectivity option for data centers, high-performance computing networks, enterprise core and distribution layers, and service provider applications. This QSFP-100G module is our latest generation of 100G transceiver module based on a QSFP form factor (See Figure 1).



**Figure 1.**  
Q100-ZR4-S-EA ZR4 transceiver

## Features and benefits of Cisco QSFP modules

- Hot-swappable input/output device that plugs into a 100G Gigabit Ethernet Cisco QSFP port
- Certified and tested on Cisco QSFP-100G ports for superior performance, quality, and reliability
- High-speed electrical interface compliant to IEEE 802.3bm

Table 1 offers a high-level description of the Cisco Q100-ZR4-S-EA module.

**Table 1.** Cisco Q100-ZR4-S-EA

| Product       | Description                                       | Connector Type |
|---------------|---------------------------------------------------|----------------|
| Q100-ZR4-S-EA | 100GBASE ZR4 QSFP Transceiver, LC, 80 km over SMF | LC             |

### Cisco Q100-ZR4-S-EA

The Cisco Q100-ZR4-S-EA supports link lengths of up to 80 km over a standard pair of G.652 single-mode fiber with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. The module requires the use of FEC on the host platform.

## Technical specifications

### Platform support

Cisco QSFP modules are supported on only the following Cisco switches platforms.

#### NCS-5501-SE:

- 4 x QSFP Ports – Only two Q100-ZR4-S-EA Modules can be used.

#### NCS-55A1-24H:

- 24 x QSFP ports – Only six Q100-ZR4-S-EA Modules can be used.

### Minimum platform software support:

#### NCS-5501-SE:

- Cisco IOS® XR 6.3.2 (Release 7.0.90)

#### NCS-55A1-24H:

- IOS XR 6.3.2 (Release 7.0.90)

### Show interface command:

Q100-ZR4-S-EA module would be identified as QSFP-100G-ER4L-S module. DOM optical power thresholds correct for ZR4.

### Power class

The Q100-ZR4-S-EA module is power class 8 (6W).

### SFF-8636 Memory Mapping

Revision 2.10

### Platform airflow

Only Front to back airflow supported

### Forward Error Correction (FEC)

Requires host-enabled RS (528,514) FEC

Pre-FEC BER  $5 \times 10^{-5}$

Post-FEC BER  $1 \times 10^{-12}$

### Interoperability

Only with itself. May work with other QSFP-100G-ZR4 or ER4 modules but not evaluated or tested.

## Connectors and cabling

Refer to Table 2 for connector type information and cabling specifications.

**Note:** Connections with patch cords with PC or Ultra-Physical Contact (UPC) connectors are supported. All cables and cable assemblies used must be compliant with the standards specified in the standards section of this data sheet.

**Table 2.** Cabling specifications

| Cisco QSFP           | Nominal Wavelength (nm) | Cable Type | Core Size (Microns) | Modal Bandwidth (MHz* km) <sup>*1</sup> | Cable Distance | Power Consumption (W) | Pull Tab Color |
|----------------------|-------------------------|------------|---------------------|-----------------------------------------|----------------|-----------------------|----------------|
| <b>Q100-ZR4-S-EA</b> | 1295, 1300, 1304, 1309  | SMF        | G.652               | -                                       | 80 km*         | 6                     | Black          |

\*Maximum reach of 80 km (engineered Link) with 29dB link loss. Fiber attenuation of 0.35dB/km (instead of 0.43dB/km worst case) with 1dB connectors loss. Average dispersion characteristics.

Table 3 shows the key optical characteristics for the Cisco Q100-ZR4-S-EA modules.

**Table 3.** Optical characteristics

| Product               | Descriptions                                               | Transmit Power (dBm) per Lane <sup>*1</sup> |         | Receive Power (dBm) per Lane <sup>*1*2</sup> |         | Transmit and Receive Wavelength (nm) |
|-----------------------|------------------------------------------------------------|---------------------------------------------|---------|----------------------------------------------|---------|--------------------------------------|
|                       |                                                            | Maximum                                     | Minimum | Maximum                                      | Minimum |                                      |
| <b>Q100G-ZR4-S-EA</b> | 100GBASE QSFP Transceiver, 80 km reach over SMF, Duplex LC | +7                                          | +2      | -4.5                                         | -27     | Four lanes: 1295, 1300, 1304, 1309   |

<sup>\*1</sup> Transmitter and receiver power is average optical power, unless specified.

<sup>\*2</sup> Optical power at RX is informative only. A received power within this range is required but does not ensure operation.

## Dimensions

Maximum outer dimensions for the QSFP connector module are (H x W x D) 13.5 x 18.4 x 72.5-79 mm; D at top of range is 6.5 mm greater than MSA.

Typically weighs 100 grams or less.

## Environmental conditions

### Operating temperature range:

- Commercial temperature range: 0 to 70°C (32 to 158°F); however, the exception is that the platform ambient range is limited to 0 to 46°C (32 to 115°F).
- Storage temperature range: -40 to 85°C (-40 to 185°F)

## Warranty

- Standard warranty: 5 years

## Ordering information

Table 4 provides the ordering information for the module.

**Table 4.** Ordering information

| Description                                                      | Product Number |
|------------------------------------------------------------------|----------------|
| Cisco 100G ZR4 QSFP Transceiver, 80 km reach over SMF, Duplex LC | Q100-ZR4-S-EA= |

## Product sustainability

Information about Cisco's Environmental, Social, and Governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability [reporting](#).

**Table 5.** Cisco environmental sustainability information

| Sustainability Topic |                                                                                                        | Reference                                                                                                                                                                                                                    |
|----------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General              | Information on product-material-content laws and regulations                                           | <a href="#">Materials</a>                                                                                                                                                                                                    |
|                      | Information on electronic waste laws and regulations, including our products, batteries, and packaging | WEEE Compliance<br><a href="https://www.cisco.com/c/en/us/about/takeback-and-reuse/product-recycling/weee-compliance.html">https://www.cisco.com/c/en/us/about/takeback-and-reuse/product-recycling/weee-compliance.html</a> |
|                      | Information on product takeback and reuse program                                                      | <a href="#">Cisco Takeback and Reuse Program</a>                                                                                                                                                                             |
|                      | Sustainability inquiries                                                                               | Contact: <a href="mailto:csr_inquiries@cisco.com">csr_inquiries@cisco.com</a>                                                                                                                                                |
| Material             | Product packaging weight and materials                                                                 | Contact: <a href="mailto:environment@cisco.com">environment@cisco.com</a>                                                                                                                                                    |

## Regulatory and standards compliance

### Standards

- SFF-8665: QSFP+ 28 Gb/s 4X Pluggable Transceiver Solution (QSFP28) - Rev 1.8 May 10, 2013
- SFF-8636: Common Management Interface - Rev 2.10
- 802.3™-2012 IEEE Standard for Ethernet
- IEEE 802.3ba Amendment of IEEE Std 802.3-2012
- IEEE 802.3bm Amendment of IEEE Std 802.3-2012 (D3.1, 1st August 2014)
- GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable
- GR-326-CORE: Generic Requirements for Single-Mode Optical Connectors and Jumper Assemblies
- GR-468-CORE: Generic Requirements for Optoelectronic Devices Used in Telecommunications Equipment
- GR-1435-CORE: Generic Requirements for Multifiber Optical Connectors
- RoHS 6

### Safety

- Modules are compliant with Laser Class 1 as defined in IEC 60825-1 and IEC 60825-2 and comply with 21 CFR 1040.10 and 1040.11.

**Table 6.** Laser class

| Product             | Laser Class |
|---------------------|-------------|
| Cisco Q100-ZR4-S-EA | 1           |

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### Additional information

For more information about Cisco 100GBASE QSFP optics and copper modules, contact your sales representative or visit [www.cisco.com/en/US/products/hw/modules/ps5455/prod\\_module\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_module_series_home.html).

## Document history

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|----------------------|--------------|-----------|
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