

# Cisco 40GBASE QSFP Modules

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## Product overview

The Cisco® 40GBASE QSFP (Quad Small Form-Factor Pluggable) portfolio offers customers a wide variety of high-density and low-power 40 Gigabit Ethernet connectivity options for data center, high-performance computing 00networks, enterprise core and distribution layers, and service provider applications.



## Features and benefits of Cisco QSFP modules

- Hot-swappable input/output device that plugs into a 40 Gigabit Ethernet Cisco QSFP port
- Interoperable with other IEEE-compliant 40GBASE interfaces where applicable
- Certified and tested on Cisco QSFP 40G ports for superior performance, quality, and reliability
- High-speed electrical interface compliant to the IEEE 802.3ba standard
- QSFP Form factor, 2-wire I2C communication interface and other low-speed electrical interface compliant to SFF 8436 and QSFP Multisource Agreement (MSA)

**Table 1.** Cisco QSFP40G portfolio

| Product         | Type  | Connector Type |
|-----------------|---|----------------|
| QSFP-40G-SR4-S  | 40GBASE-SR4, 4 lanes, 850 nm MMF                      | MPO-12         |
| QSFP-40G-SR4    | 40GBASE-SR4, 4 lanes, 850 nm MMF                      | MPO-12         |
| QSFP-40G-SR-BD  | 40GBASE-SR-BiDi, duplex MMF                           | LC             |
| QSFP-40G-BD-RX  | 40GBASE-SR-BiDi, duplex MMF, Monitor                  | LC             |
| FET-40G         | Fabric Extender, 4 lanes, 850 nm MMF                  | MPO-12         |
| QSFP-40G-CSR-S  | 40GBASE-SR-, duplex MMF                               | LC             |
| QSFP-40G-CSR4   | 40GBASE-CSR4, 4 lanes, 850 nm MMF                     | MPO-12         |
| WSP-Q40GLR4L    | 40GBASE-LR4-Lite, 1310 nm, SMF                        | LC             |
| QSFP-40G-LR4-S  | 40GBASE-LR4, 1310 nm, SMF                             | LC             |
| QSFP-40G-LR4    | 40GBASE-LR4, 1310 nm, SMF with OTU3 data-rate support | LC             |
| QSFP-4X10G-LR-S | 4x10GBASE-LR  | MPO-12         |
| QSFP-40G-ER4    | 40GBASE-ER4, 1310 nm, SMF with OTU3 data-rate support | LC             |

| Product  | Type   | Connector Type |
|--|--|----------------|
| <b>QSFP-H40G-CU<br/>(0.5M,1M,2M, 3M,4M, 5M)</b>                            | QSFP to QSFP copper direct-attach cables         | -              |
| <b>QSFP-H40G-ACU<br/>(7M, 10M)</b>   | QSFP to QSFP copper direct-attach active cables  | -              |
| <b>QSFP-4SFP10G-CU<br/>(.5M, 1M,2M, 3M,4M, 5M)</b>                         | QSFP to 4 SFP+ copper break-out cables           | -              |
| <b>QSFP-4X10G-AC<br/>(7M, 10M)</b>   | QSFP to 4 SFP+ copper break-out active cables    | -              |
| <b>QSFP-H40G-AOC<br/>(1M, 2M, 3M, 5M, 7M, 10M,<br/>15M, 20M, 25M, 30M)</b> | QSFP to QSFP active optical cables               | -              |
| <b>QSFP-4X10G-AOC<br/>(1M, 2M, 3M, 5M, 7M, 10M)</b>                        | QSFP to four SFP+ active optical breakout cables | -              |
| <b>CVR-QSFP-SFP10G</b>   | QSFP 40G to SFP+ 10G adapter                     | -              |

### Cisco QSFP-40G-SR4-S (S-Class)

The S-Class Cisco 40GBASE-SR4-S QSFP module supports link lengths of 100 and 150 meters, respectively, on laser-optimized OM3, and OM4/OM5 multimode fibers. QSFP-40G-SR4-S is aligned to IEEE 40GBASE-SR4 optical specifications which support high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. Because the QSFP-40G-SR4-S does not support 4x10G breakout connectivity, see QSFP-40G-SR4 or QSFP-40G-CSR4 for such applications. QSFP-40G-SR4-S does not support FCoE.

### Cisco QSFP-40G-SR4

The Cisco 40GBASE-SR4 QSFP Modules support link lengths of 100 meters and 150 meters, respectively, on laser-optimized OM3, and OM4/OM5 multimode fibers. It primarily enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. It can also be used in a 4x10G breakout mode for interoperability with 10GBASE-SR and SFP-10/25G-CSR-S (in 10G mode) interfaces up to 100 and 150 meters on OM3, and OM4/OM5 fibers, respectively. The worry-free 4x10G mode operation is enabled by the optimization of the transmit and receive optical characteristics of the Cisco QSFP-40G-SR4 to prevent receiver overload or unnecessary triggering of alarm thresholds on the 10GBASE-SR and SFP-10/25G-CSR-S (in 10G mode) receiver, and at the same time is completely interoperable with all standard 40GBASE-SR4 interfaces.

The 4x10G connectivity is achieved using an external 12-fiber parallel to 2-fiber duplex breakout cable, which connects the 40GBASE-SR4 module to four 10GBASE-SR optical interfaces. Cisco QSFP-40G-SR4 is optimized to guarantee interoperability with any IEEE 40GBASE-SR4 and in 4x10G mode with the 10GBASE-SR and SFP-10/25G-CSR (in10G mode).

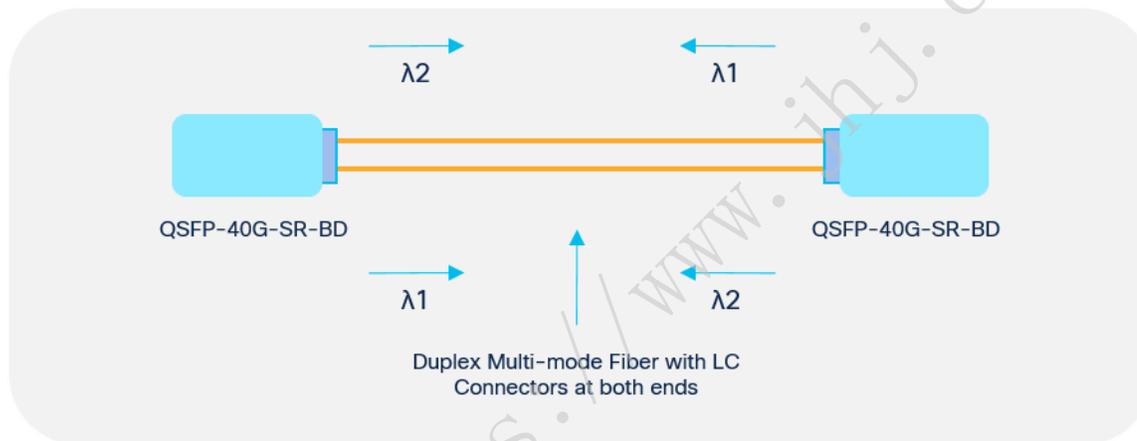
## Cisco QSFP-40G-SR-BD (40G BiDi)

The Cisco QSFP 40-Gbps BiDirectional (BiDi) transceiver (Figure 1) is a pluggable optical transceiver with a duplex LC connector interface for short-reach data communication and interconnect applications using MultiMode Fiber (MMF). The Cisco QSFP 40-Gbps BiDi transceiver offers customers a compelling solution that enables reuse of their existing 10 gigabit duplex MMF infrastructure for migration to 40 Gigabit Ethernet connectivity.

The Cisco QSFP 40-Gbps BiDi transceiver supports link lengths of 100 and 150 meters on laser-optimized OM3, and OM4/OM5 multimode fibers, respectively.

The Cisco BiDi transceiver complies with the QSFP MSA specification, enabling customers to use it on all QSFP 40-Gbps platforms to achieve high-density 40 Gigabit Ethernet networks.

Each Cisco QSFP 40-Gbps BiDi transceiver consists of two 20-Gbps transmit and receive channels in the 832-918 nanometer wavelength range, enabling an aggregated 40-Gbps link over a two-strand multimode fiber connection.



**Figure 1.**

Cisco QSFP BiDi 40Gbps transceiver: Duplex MMF with LC connectors at both ends

## Cisco QSFP-40G-BD-RX

The Cisco QSFP 40-Gbps BiDi monitor is a pluggable optical module for use with link monitor hardware, such as the Cisco Nexus® Data Broker. Like the QSFP BiDi transceiver, it has a duplex MMF LC connector interface. The QSFP BiDi monitor is used only in the monitoring path of a link containing a passive optical tap splitter. The Cisco QSFP monitor offers the same specifications as the QSFP BiDi Transceiver, except that it does not transmit any signal, and thus eliminates the risk of interfering with the live BiDi link path.

## Cisco FET-40G

Cisco FET-40G QSFP Modules are fabric-extender transceiver modules used to connect to fabric links (links between the fabric extender switch and the parent switch). The interconnect works over parallel multimode fiber across distances of up to 100 and 150 meters, respectively, on laser-optimized OM3, and OM4/OM5 multimode fiber cables. 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 to four FET-10G interfaces.

## Cisco QSFP-40G-CSR-S (S-Class)

The QSFP-40G-CSR-S is a pluggable optical transceiver with a duplex LC connector interface used for connectivity using MultiMode Fiber (MMF). The Cisco 40GBASE-CSR Modules support link lengths of 300, 400 meters, and 440m respectively, on laser-optimized OM3, OM4 and OM5\* multimode fibers. Customers benefit through the reuse of their existing 10 gigabit duplex MMF infrastructure as they migrate to 40 Gigabit Ethernet, while maintaining the same supported link distances as 10G Ethernet on OM3 and OM4. Additionally customers can benefit from improved reach on OM5. Each QSFP-40G-CSR-S operates at four different wavelengths. Each of the four wavelengths operates at 10G over existing duplex multimode fiber using standard LC connectors. The Cisco QSFP-40G-CSR-S transceiver does not support FCoE.

\*Depends on fiber quality.

## Cisco QSFP-40G-CSR4

Cisco 40GBASE-CSR4 QSFP Modules extend the reach of the IEEE 40GBASE-SR4 interface to 300 and 400 meters on laser-optimized OM3, and OM4/OM5 multimode parallel fiber, respectively. Each 10-gigabit lane of this module is compliant to IEEE 10GBASE-SR specifications. This module can be used for native 40G optical links over 12-fiber parallel cables with MPO/MTP female connectors or in a 4x10G breakout mode with parallel to duplex fiber breakout cables for connectivity to four 10GBASE-SR interfaces. Cisco QSFP-40G-CSR4 is optimized to guarantee interoperability over the complete specification range of 10GBASE-SR.

## Cisco WSP-Q40GLR4L (QSFP-LR4-Lite)

The Cisco WSP-Q40GLR4L QSFP module supports link lengths of up to 2 kilometers over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. It is interoperable with 40GBASE-LR4 for distances up to 2 kilometers. The operating temperature range is from +10 to +60°C with an optical link budget of 4 decibels. This 4-decibel link budget offers the ability to support the loss from patch panels in the link in a data center environment.

## Cisco QSFP-40G-LR4-S (S-Class)

The Cisco 40GBASE-LR4 QSFP module supports link lengths of up to 10 kilometer over a standard pair of G.652 single-mode fiber with duplex LC connectors. The QSFP-40G-LR4-S module supports 40GBASE Ethernet rate only. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed in the device. QSFP-40G-LR4-S does not support FCoE.

## Cisco QSFP-40G-LR4

The Cisco 40GBASE-LR4 QSFP module supports link lengths of up to 10 kilometers over a standard pair of G.652 single-mode fiber with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device.

## Cisco QSFP-4X10G-LR-S (S-Class)

The Cisco QSFP-4X10G-LR-S QSFP module supports link lengths of up to 10km on G.652 Single-Mode Fiber (SMF). It enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. It can also be used in a 4x10G mode for interoperability with 10GBASE-LR interfaces up to 10km.

The 4x10G connectivity is achieved using an external 12-fiber parallel to 2-fiber duplex breakout cable, which connects the 4x10G LR module to four 10GBASE-LR optical interfaces. Cisco's QSFP-4X10G-LR-S is optimized to guarantee interoperability in 4x10G mode over the full specification range of 10GBASE-LR and the SFP-10/25G-LR-S (in 10G mode). QSFP-4X10G-LR-S does not support FCoE.

## Cisco QSFP-40G-ER4

The Cisco 40GBASE-ER4 QSFP Module supports link lengths up to 40km over G.652 single-mode fiber with duplex LC connectors. The 40GE or OTU3 signal is carried over four wavelengths in the 1310nm range. Multiplexing and demultiplexing of the four wavelengths are managed within the device.

## Cisco QSFP to QSFP copper direct-attach cables

Cisco QSFP to QSFP copper direct-attach 40GBASE-CR4 cables (Figure 3) are suitable for very short distances and offer a very cost-effective way to establish a 40-gigabit link between QSFP ports of Cisco switches within racks and across adjacent racks. Cisco currently offers passive cables in lengths of 0.5, 1, 2, 3, 4 and 5 meters and active cables in lengths of 7 and 10 meters.

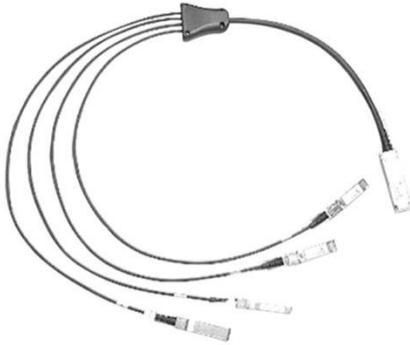


**Figure 2.**

Cisco 40GBASE-CR4 QSFP direct-attach copper cables

## Cisco QSFP to Four SFP+ copper breakout cables

Cisco QSFP to four SFP+ copper direct-attach breakout cables (Figure 2) are suitable for very short distances and offer a very cost-effective way to connect within racks and across adjacent racks. These breakout cables connect to a 40G QSFP port of a Cisco switch on one end and to four 10G SFP+ ports of a Cisco switch on the other end. Cisco currently offers passive cables in lengths of .5, 1, 2, 3, 4 and 5 meters and active cables in lengths of 7 and 10 meters.



**Figure 3.**

Cisco QSFP to Four SFP+ copper breakout cables

## Cisco QSFP to QSFP active optical cables

Cisco QSFP to QSFP copper direct-attach 40GBASE-CR4 cables (Figure 5) are suitable for very short distances and offer a flexible way to connect within racks and across adjacent racks. Active optical cables are much thinner and lighter than copper cables, which makes cabling easier. Active optical cables enable efficient system airflow and have no EMI issues, which is critical in high-density racks. Cisco currently offers active optical cables in lengths of 1, 2, 3, 5, 7, 10, 15, 20, 25 and 30 meters.



**Figure 4.**

Cisco 40G QSFP active optics cables

## Cisco QSFP to Four SFP+ active optical breakout cables

Cisco QSFP to four SFP+ active optical breakout cables (Figure 4) are suitable for very short distances and offer a flexible way to connect within racks and across adjacent racks. Active optical cables are much thinner and lighter than copper cables, which makes cabling easier. Active optical cables enable efficient system airflow and have no Electro Magnetic Interference (EMI) issues, which is critical in high-density racks. These breakout cables connect to a 40G QSFP port of a Cisco switch on one end and to four 10G SFP+ ports of a Cisco switch on the other end. Cisco currently offers active optical breakout cables in lengths of 1, 2, 3, 5, 7, and 10 meters.



**Figure 5.**

Cisco 40G QSFP to Four SFP+ breakout active optics cables

## Cisco QSFP-40G to SFP and SFP+ Adapter Module

The Cisco QSFP-40G to SFP or SFP+ Adapter (QSA) Module offers 10 Gigabit Ethernet and 1 Gigabit Ethernet connectivity for QSFP 40G ports. It allows smooth and cost-effective migration to 40 Gigabit Ethernet by providing an option to use lower-speed SFP or Enhanced Small Form-Factor Pluggable SFP or SFP+ modules in QSFP+ ports when the other end of the network is running at lower speeds.

The Cisco QSA Module (Figure 6 and Figure 7) converts a QSFP+ port to an SFP or SFP+ port. With this adapter, customers have the flexibility to use a SFP or SFP+ module, or cable to connect to a lower-speed port on the other end of the network. This flexibility allows a cost-effective transition to 40 Gigabit Ethernet by maximizing the use of high-density 40 Gigabit Ethernet QSFP platforms.



**Figure 6.**

Cisco QSA module



**Figure 7.**

Cisco QSA Module with SFP or SFP+ Plugged In

## Compatible switch models and SFP or SFP+ modules

The list of switch models supporting the Cisco QSA Module is available in the “Cisco Optics-to-Device Compatibility Matrix” at <https://tmgmatrix.cisco.com/>

A list of Cisco SFP or SFP+ transceiver modules that can be plugged in to the QSA module is provided in the “Cisco Optic-to-Optics Interoperability Matrix” at <https://tmgmatrix.cisco.com/iop?tpid=255>

## Technical specifications

Following are technical specifications for platform support, and connectors and cabling.

### Platform support

Cisco QSFP modules are supported on Cisco switches and routers. For more details, refer to the “Cisco Optics-to-Device Compatibility Matrix” at <https://tmgmatrix.cisco.com/>

### Connectors and cabling

Refer to Table 3 for connector type information and cabling specifications for each QSFP product.

**Note:** Except for QSFP-4X10G-LR-S, only connections with patch cords with PC or Ultra-Physical Contact (UPC) connectors are supported. QSFP-4X10G-LR-S requires patch cords with Angled Physical Contact (APC) MPO connectors. All cables and cable assemblies used must be compliant with the standards specified in the standards section of this data sheet.

## Product specifications

Table 2 provides cabling specifications for the Cisco QSFP modules.

**Table 2.** QSFP Port cabling specifications

| Cisco QSFP           | Wavelength (nm) | Cable type | Core size (Microns) | Modal bandwidth (MHz*km) <sup>3</sup> | Cable distance <sup>1</sup> | Power consumption (W) | Pull tab color                    |
|----------------------|-----------------|------------|---------------------|---------------------------------------|-----------------------------|-----------------------|-----------------------------------|
| Cisco QSFP-40G-SR4-S | 850             | MMF        | 50.0                | 2000 (OM3)                            | 100m                        | 1.5                   | Beige                             |
|                      |                 |            | 50.0                | 4700 (OM4/OM5)                        | 150m <sup>2</sup>           |                       |                                   |
| QSFP-40G-SR4         | 850             | MMF        | 50.0                | 500 (OM2)                             | 30m                         | 1.5                   | Beige                             |
|                      |                 |            | 50.0                | 2000 (OM3)                            | 100m                        |                       |                                   |
|                      |                 |            | 50.0                | 4700 (OM4/OM5)                        | 150m <sup>2</sup>           |                       |                                   |
| Cisco QSFP-40G-SR-BD | 832 - 918       | MMF        | 50.0                | 500 (OM2) <sup>6</sup>                | 30m                         | 3.5                   | Gray                              |
|                      |                 |            | 50.0                | 2000 (OM3) <sup>6</sup>               | 100m                        |                       |                                   |
|                      |                 |            | 50.0                | 4700 (OM4/OM5) <sup>6</sup>           | 150m <sup>2</sup>           |                       |                                   |
| Cisco QSFP-40G-BD-RX | 832 - 918       | MMF        | 50.0                | 500 (OM2)                             | 30m                         | 3.5                   | Beige<br>(or Gray with “Rx” mark) |
|                      |                 |            | 50.0                | 2000 (OM3)                            | 100m                        |                       |                                   |
|                      |                 |            | 50.0                | 4700 (OM4/OM5)                        | 150m <sup>2</sup>           |                       |                                   |
| FET-40G              | 850             | MMF        | 50.0                | 500 (OM2)                             | 30m                         | 1.5                   | Brown                             |
|                      |                 |            | 50.0                | 2000 (OM3)                            | 100m                        |                       |                                   |
|                      |                 |            | 50.0                | 4700 (OM4/OM5)                        | 150m <sup>2</sup>           |                       |                                   |
| QSFP-40G-CSR-S       | 850             | MMF        | 50.0                | 2000 (OM3) <sup>6</sup>               | 300m <sup>5</sup>           | 3.5                   | Orange                            |

| Cisco QSFP           | Wavelength (nm) | Cable type                          | Core size (Microns)  | Modal bandwidth (MHz*km) <sup>*3</sup>               | Cable distance <sup>*1</sup>             | Power consumption (W) | Pull tab color |        |
|----------------------|-----------------|-------------------------------------|----------------------|--|--|-----------------------|----------------|--------|
|                      |                 |                                     |                      | 4700 (OM4) <sup>*6</sup><br>4700 (OM5) <sup>*6</sup> | 400m <sup>*5</sup><br>440m <sup>*5</sup> |                       |                |        |
| QSFP-40G-CSR4        | 850             | MMF                                 | 50.0<br>50.0<br>50.0 | 500 (OM2)<br>2000 (OM3)<br>4700 (OM4/OM5)            | 82m<br>300m<br>400m                      | 1.5                   | Orange         |        |
| WSP-Q40GLR4L         | 1310            | SMF                                 | G.652                | -  | 2km                                      | 3.5                   | Yellow         |        |
| Cisco QSFP-40G-LR4-S | 1310            | SMF                                 | G.652                | -  | 10km                                     | 3.5                   | Blue           |        |
| QSFP-40G-LR4         | 1310            | SMF                                 | G.652                | -  | 10km                                     | 3.5                   | Blue           |        |
| QSFP-4X10G-LR-S      | 1310            | SMF                                 | G.652                | -  | 10km                                     | 3.5                   | Blue           |        |
| QSFP-40G-ER4         | 1310            | SMF                                 | G.652                | -  | 40km <sup>*4</sup>                       | 3.5                   | Red            |        |
| QSFP-H40G-CU0-5M     | -               | Direct-attach copper cable assembly | -                    | -  | 0.5m                                     | 1/10                  | Beige          |        |
| QSFP-H40G-CU1M       | -               |                                     | -                    | -  | 1m                                       |                       | Beige          |        |
| QSFP-H40G-CU2M       | -               |                                     | -                    | -  | 2m                                       |                       | Brown          |        |
| QSFP-H40G-CU3M       | -               |                                     | -                    | -  | 3m                                       |                       | Orange         |        |
| QSFP-H40G-CU4M       | -               |                                     | -                    | -  | 4m                                       |                       | Orange         |        |
| QSFP-H40G-CU5M       | -               |                                     | -                    | -  | 5m                                       |                       | Gray           |        |
| QSFP-H40G-ACU7M      | -               |                                     | -                    | -  | 7m                                       | 1.5 each end          | Blue           |        |
| QSFP-H40G-ACU10M     | -               |                                     | -                    | -  | 10m                                      |                       | Red            |        |
| QSFP-4SFP10-CU0-5    | -               |                                     | -                    | -  | -  | .5m                   | 1/10           | Beige  |
| QSFP-4SFP10G-CU1M    | -               |                                     | -                    | -  | 1m                                       |                       |                | Beige  |
| QSFP-4SFP10G-CU2M    | -               |                                     | -                    | -  | 2m                                       |                       |                | Brown  |
| QSFP-4SFP10G-CU3M    | -               |                                     | -                    | -  | 3m                                       |                       |                | Orange |
| QSFP-4SFP10G-CU4M    | -               |                                     | -                    | -  | 4m                                       |                       |                | Orange |
| QSFP-4SFP10G-CU5M    | -               |                                     | -                    | -  | 5m                                       |                       |                | Gray   |
| QSFP-4X10G-AC7M      | -               |                                     | -                    | -  | -  | 7m                    | 1.5 each end   | Blue   |
| QSFP-4X10G-AC10M     | -               |                                     | -                    | -  | 10m                                      |                       |                | Red    |
| QSFP-H40G-AOC1M      | -               |                                     |                      | -  | -  | 1m                    |                | Beige  |

| Cisco QSFP        | Wavelength (nm) | Cable type                    | Core size (Microns) | Modal bandwidth (MHz*km) <sup>*3</sup> | Cable distance <sup>*1</sup> | Power consumption (W) | Pull tab color |   |   |
|-------------------|-----------------|-------------------------------|---------------------|--|------------------------------|-----------------------|----------------|---|---|
| QSFP-H40G-AOC2M   | -               |                               | -                   | -                                      | 2m                           |                       | Brown          |   |   |
| QSFP-H40G-AOC3M   | -               |                               | -                   | -                                      | 3m                           |                       | Orange         |   |   |
| QSFP-H40G-AOC5M   | -               |                               | -                   | -                                      | 5m                           |                       | Gray           |   |   |
| QSFP-H40G-AOC7M   | -               |                               | -                   | -                                      | 7m                           |                       | Blue           |   |   |
| QSFP-H40G-AOC10M  | -               |                               | -                   | -                                      | 10m                          |                       | Red            |   |   |
| QSFP-H40G-AOC15M  | -               |                               | -                   | -                                      | 15m                          |                       | Black          |   |   |
| QSFP-H40G-AOC20M  | -               |                               | -                   | -                                      | 20m                          |                       | Green          |   |   |
| QSFP-H40G-AOC25M  | -               | Active optical cable assembly | -                   | -                                      | 25m                          | 1.5 each end          | Green          |   |   |
| QSFP-H40G-AOC30M  | -               |                               | -                   | -                                      | 30m                          |                       | Green          |   |   |
| QSFP-4X10G-AOC1M  | -               |                               | -                   | -                                      | 1m                           |                       | Beige          |   |   |
| QSFP-4X10G-AOC2M  | -               |                               | -                   | -                                      | 2m                           |                       | Brown          |   |   |
| QSFP-4X10G-AOC3M  | -               |                               | -                   | -                                      | 3m                           |                       | Orange         |   |   |
| QSFP-4X10G-AOC5M  | -               |                               | -                   | -                                      | 5m                           |                       | Gray           |   |   |
| QSFP-4X10G-AOC7M  | -               |                               | -                   | -                                      | 7m                           |                       | Blue           |   |   |
| QSFP-4X10G-AOC10M | -               |                               | -                   | -                                      | 10m                          |                       | Red            |   |   |
| CVR-QSFP-SFP10G   | -               |                               | Adapter             | -                                      | -                            |                       | -              | - | - |

<sup>\*1</sup> Minimum cabling distance is 0.5 meters for -SR4 and -CSR4 modules, and 2 meters for -LR4 and -ER4 according to the IEEE 802.3 standard.

<sup>\*2</sup> Considered an engineered link with maximum 1 decibel loss budget.

<sup>\*3</sup> Specified at transmission wavelength, when available.

<sup>\*4</sup> Links longer than 30 km for the same link power budget are considered engineered links as per IEEE 802.3 Table 87-6. Depending upon link architecture, attenuation may be required to guarantee operation.

<sup>\*5</sup> Depends upon fiber quality.

<sup>\*6</sup> Modal Bandwidth at 850nm

**Note:** All Cisco QSFP modules and cables exceed IEEE specifications, guaranteeing a link Bit-Error Rate (BER) better than 1E-15 with some exceptions:

- QSFP-40G-CSR-S guarantees a link BER of 1E-12 when supporting 300/400/440m on OM3/OM4/OM5.
- QSFP-40G-SR-BD guarantees a link BER of 1E-12 when supporting 150/150m on OM4/OM5.
- QSFP-40G-SR4-S guarantees a link BER of 1E-12 when supporting 100/150/150m on OM3/OM4/OM5.
- QSFP-40G-CSR4 complies with IEEE specifications, guaranteeing a link BER better than 1E-12.

- QSFP-40G-LR4-S guarantees a link BER of 1E-12 when supporting 10km on SMF.
- QSFP-40G-ER4 complies with IEEE/OTU3 specifications, is guaranteed up to BER 1E-12.
- QSFP-4x10G-LR-S guarantees a link BER of 1E-12 when supporting 10km on SMF.
- WSP-Q40GLR4L guarantees a link BER of 1E-12 when supporting 2km on SMF.

**Table 3.** Loss budget comparison of Cisco QSFP BiDi with 40GBASE-SR4 specifications

| Optical modules | MMF type | Reach (Meters) | Total loss budget (dB) | BER   |
|-----------------|----------|----------------|------------------------|-------|
| QSFP-40G-SR4    | OM3      | 100m           | 1.9                    | 1E-15 |
|                 | OM4/OM5  | 150/150m       | 1.5                    | 1E-15 |
| QSFP-40G-SR-BD  | OM3      | 100m           | 1.9*                   | 1E-15 |
| QSFP-40G-BD-RX  | OM4/OM5  | 150/150m       | 1.5                    | 1E-12 |

\* QSFP-40G-SR-BD has 0.7 decibel incremental margin (in addition to 1.9 decibel total loss budget shown in Table 4), which can be allocated to connector losses in the link for OM3 fiber for applications when a link BER of 1E-12 is sufficient. Cisco recommends that this margin be allocated to connector losses. Care should be taken to not exceed 120 meters in fiber link distance with the OM3 fiber.

**Table 4.** Allowable connector loss for BiDi links

| Distance (m) | Allowable connector loss (dB) |                      |                  |                      |
|--------------|-------------------------------|----------------------|------------------|----------------------|
|              | OM3                           |                      | OM4/OM5          |                      |
|              | FCoE (BER 1e-15)              | Ethernet (BER 1e-12) | FCoE (BER 1e-15) | Ethernet (BER 1e-12) |
| 10           | 3.9                           | 4.6                  | 3.9              | 4.6                  |
| 20           | 3.8                           | 4.5                  | 3.8              | 4.5                  |
| 30           | 3.7                           | 4.4                  | 3.7              | 4.4                  |
| 40           | 3.5                           | 4.2                  | 3.6              | 4.3                  |
| 50           | 3.3                           | 4.0                  | 3.5              | 4.2                  |
| 60           | 3.1                           | 3.8                  | 3.4              | 4.1                  |
| 70           | 2.8                           | 3.5                  | 3.3              | 4.0                  |
| 80           | 2.5                           | 3.2                  | 3.1              | 3.8                  |
| 90           | 2.0                           | 2.7                  | 2.8              | 3.5                  |
| 100          | 1.5                           | 2.2                  | 2.6              | 3.3                  |
| 110          | -                             | -                    | 2.3              | 3.0                  |
| 120          | -                             | -                    | 1.9              | 2.6                  |
| 130          | -                             | -                    | 1.5              | 2.2                  |

| Distance (m) | Allowable connector loss (dB)     |                                   |                                   |                                   |
|--------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|              | OM3                               |                                   | OM4/OM5                           |                                   |
|              | FCoE (BER 1e-15)                  | Ethernet (BER 1e-12)              | FCoE (BER 1e-15)                  | Ethernet (BER 1e-12)              |
| 140          | -                                 | -                                 | 1.0                               | 1.7                               |
| 150          | -                                 | -                                 | 0.4                               | 1.1                               |
| Comments     | Assumed fiber loss at 100m: 0.4dB | Assumed fiber loss at 100m: 0.4dB | Assumed fiber loss at 150m: 0.5dB | Assumed fiber loss at 150m: 0.5dB |

Table 5. Allowable connector loss for BiDi links with passive optical tap

| Distance (m) | Allowable connector loss (dB)  |         |
|--------------|--|---------|
|              | OM3  | OM4/OM5 |
| 20           | 1.5  | 1.5     |
| 50           | 1.0  | 1.2     |
| 75           | -  | 1.0     |
| Comments     | Fiber loss @max distance: 0.4dB<br>Ethernet (BER 1e-12)<br>Passive Optical Tap Loss: 3.5dB |         |

Table 6 shows the key optical characteristics for the Cisco QSFP modules.

Table 6. Optical characteristics

| Product              | Type                                 | Transmit power (dBm) <sup>*5</sup> |                | Receive power (dBm) <sup>*5</sup> |                | Transmit and receive wavelength (nm) |
|----------------------|--------------------------------------|------------------------------------|----------------|-----------------------------------|----------------|--------------------------------------|
|                      |                                      | Maximum                            | Minimum        | Maximum                           | Minimum        |                                      |
| Cisco QSFP-40G-SR4-S | 40GBASE-SR4, 4 lanes, 850 nm MMF     | 2.4, per lane                      | -7.6, per lane | 2.4, per lane                     | -9.5, per lane | 840 to 860                           |
| Cisco QSFP-40G-SR4   | 40GBASE-SR4, 4 lanes, 850 nm MMF     | -1, per lane <sup>*6</sup>         | -7.6, per lane | 2.4, per lane                     | -9.5, per lane | 840 to 860                           |
| Cisco QSFP-40G-SR-BD | 40GBASE-SR-BiDi, Duplex MMF          | +5, per lane                       | -4, per lane   | +5, per lane                      | -6, per lane   | 832 to 918                           |
| Cisco QSFP-40G-BD-RX | 40GBASE-SR-BiDi, Duplex MMF, Monitor | N/A                                | N/A            | +5, per lane                      | -6, per lane   | 832 to 918                           |
| Cisco FET-40G        | Fabric Extender, 4 lanes, 850 nm MMF | -1, per lane <sup>*6</sup>         | -8.0, per lane | -1.0, per lane                    | -9.9, per lane | 840 to 860                           |
| Cisco QSFP-40G-CSR-S | 40GBASE-CSR, Duplex MMF              | +3, per lane                       | -7, per lane   | +3, per lane                      | -9, per lane   | Four lanes: 850, 880, 910, 940       |

| Product               | Type  | Transmit power (dBm) <sup>5</sup> |                | Receive power (dBm) <sup>5</sup> |                 | Transmit and receive wavelength (nm) |
|-----------------------|---|-----------------------------------|----------------|----------------------------------|-----------------|--------------------------------------|
|                       |   | Maximum                           | Minimum        | Maximum                          | Minimum         |                                      |
| Cisco QSFP-40G-CSR4   | 40GBASE-CSR4, 4 lanes, 850 nm MMF                     | 0, per lane                       | -7.3, per lane | 0, per lane                      | -9.9, per lane  | 840 to 860                           |
| Cisco WSP-Q40GLR4L    | 40GBASE-LR4-Lite, 1310 nm, SMF                        | 2.3, per lane                     | -10, per lane  | 2.3, per lane                    | -13.7, per lane | Four lanes: 1271, 1291, 1311, 1331   |
| Cisco QSFP-40G-LR4-S  | 40GBASE-LR4, 1310 nm, SMF                             | 2.3, per lane                     | -7, per lane   | 2.3, per lane                    | -13.7, per lane | Four lanes: 1271, 1291, 1311, 1331   |
| Cisco QSFP-40G-LR4    | 40GBASE-LR4 with OTU3 data rate support, 1310 nm, SMF | 2.3, per lane                     | -7, per lane   | 2.3, per lane                    | -13.7, per lane | Four lanes: 1271, 1291, 1311, 1331   |
| Cisco QSFP-4X10G-LR-S | 4x10GBASE-LR, 1310 nm, SMF                            | 0.5, per lane                     | -8.2, per lane | 0.5, per lane                    | -14.4, per lane | 1260 to 1355                         |
| Cisco QSFP-40G-ER4    | 40GBASE-ER4 with OTU3 data rate support, 1310 nm, SMF | 4.5, per lane                     | -2.7, per lane | -4.5, per lane                   | -21.2, per lane | Four lanes: 1271, 1291, 1311, 1331   |

<sup>5</sup> Transmitter and receiver power is average, unless specified.

<sup>6</sup> Version -01 of QSFP-40G-SR4 allows for a maximum transmit power of +1 decibel per milliwatt per lane.

**Table 7.** Cable breakout location

| Product name            | Breakout location (From 40G End) |
|-------------------------|----------------------------------|
| <b>Copper Cables</b>    |                                  |
| Cisco QSFP-4SFP10-CU0-5 | 0 meters                         |
| Cisco QSFP-4SFP10G-CU1M | 0.33 meters                      |
| Cisco QSFP-4SFP10G-CU2M | 0.66 meters                      |
| Cisco QSFP-4SFP10G-CU3M | 1 meter                          |
| Cisco QSFP-4SFP10G-CU4M | 1.5 meters                       |
| Cisco QSFP-4SFP10G-CU5M | 2 meters                         |
| Cisco QSFP-4X10G-AC7M   | 4 meters                         |
| Cisco QSFP-4X10G-AC10M  | 7 meters                         |

| Product name                 | Breakout location (From 40G End) |
|------------------------------|----------------------------------|
| <b>Active Optical Cables</b> |                                  |
| Cisco QSFP-4X10G-AOC1M       | 0.33 meters                      |
| Cisco QSFP-4X10G-AOC2M       | 0.66 meters                      |
| Cisco QSFP-4X10G-AOC3M       | 1 meter                          |
| QSFP-4X10G-AOC5M             | 2 meters                         |
| Cisco QSFP-4X10G-AOC7M       | 4 meters                         |
| Cisco QSFP-4X10G-AOC10M      | 7 meters                         |

\* The breakout structure should not causing interference with adjacent port module or cable

### Dimensions

Maximum outer dimensions for the QSFP connector module are (H x W x D) 13.5 x 18.4 x 72.4 mm.

Cisco QSFP connector module typically weigh 100 grams or less.

Table 8 provides the cable dimensions, bend radius, face plate distance and jacket material and jacket color for the AOCs and DACs.

**Table 8.** Cable Dimensions

| Product Number     | AWG | QSFP end      |                  |                          | SFP end       |                  |                          | Jacket Material | Jacket Color |
|--------------------|-----|---------------|------------------|--------------------------|---------------|------------------|--------------------------|-----------------|--------------|
|                    |     | Diameter (mm) | Bend Radius (mm) | Face plate distance (mm) | Diameter (mm) | Bend Radius (mm) | Face plate distance (mm) |                 |              |
| QSFP-H40G-CU0-5M=  | 30  | 7             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-CU1M=    | 30  | 7             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-CU2M=    | 30  | 7             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-CU3M=    | 30  | 7             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-CU4M=    | 26  | 9             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-CU5M=    | 26  | 9             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-ACU7M=   | 26  | 9             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-H40G-ACU10M=  | 26  | 9             | 50               | 100                      |               |                  |                          | PVC             | Black        |
| QSFP-4SFP10-CU0-5= | 30  | 7             | 50               | 100                      | 5             | 45               | 70                       | PVC             | Black        |
| QSFP-4SFP10G-CU1M= | 30  | 7             | 50               | 100                      | 5             | 45               | 70                       | PVC             | Black        |
| QSFP-4SFP10G-CU2M= | 30  | 7             | 50               | 100                      | 5             | 45               | 70                       | PVC             | Black        |

| Product Number     | AWG | QSFP end      |                  |                          | SFP end       |                  |                           | Jacket Material | Jacket Color |
|--------------------|-----|---------------|------------------|--------------------------|---------------|------------------|---------------------------|-----------------|--------------|
|                    |     | Diameter (mm) | Bend Radius (mm) | Face plate distance (mm) | Diameter (mm) | Bend Radius (mm) | Face plate distance. (mm) |                 |              |
| QSFP-4SFP10G-CU3M= | 30  | 7             | 50               | 100                      | 5             | 45               | 70                        | PVC             | Black        |
| QSFP-4SFP10G-CU4M= | 26  | 9             | 50               | 100                      | 5             | 45               | 70                        | PVC             | Black        |
| QSFP-4SFP10G-CU5M= | 26  | 9             | 50               | 100                      | 5             | 45               | 70                        | PVC             | Black        |
| QSFP-4X10G-AC7M=   | 26  | 9             | 50               | 100                      | 5             | 45               | 70                        | PVC             | Black        |
| QSFP-4X10G-AC10M=  | 26  | 9             | 50               | 100                      | 5             | 45               | 70                        | PVC             | Black        |
| QSFP-H40G-AOC1M=   |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC2M=   |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC3M=   |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC5M=   |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC7M=   |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC10M=  |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC15M=  |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC20M=  |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC25M=  |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-H40G-AOC30M=  |     | 3.5           | 60               | 115                      |               |                  |                           | PVC             | Orange       |
| QSFP-4X10G-AOC1M=  |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |
| QSFP-4X10G-AOC2M=  |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |
| QSFP-4X10G-AOC3M=  |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |
| QSFP-4X10G-AOC5M=  |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |
| QSFP-4X10G-AOC7M=  |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |
| QSFP-4X10G-AOC10M= |     | 3.5           | 60               | 100                      | 3             | 30               | 80                        | PVC             | Orange       |

## Environmental conditions

Operating temperature range:

- Commercial temperature range: 0 to 70° C (32 to 158° F). Exceptions are
  - QSFP BiDi (QSFP-40G-SR-BD): +10 to 70° C (50 to 158° F)
  - QSFP BiDi Monitor (QSFP-40G-BD-RX): +10 to 70° C (50 to 158° F)
  - QSFP LR4 Lite (WSP-Q40GLR4L): +10 to 60° C (50 to 140° F)
- Storage temperature range: -40 to 85° C (-40 to 185° F)

## Warranty

- Standard warranty: 5 years
- Expedited replacement available via a Cisco SMARTnet® Service support contract

## Product Sustainability

Information about Cisco's environmental, social and governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability reporting.

**Table 9.** Product Sustainability

| Sustainability Topic |   | Reference   |
|----------------------|---|---|
| <b>General</b>       | 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 | <a href="#">WEEE Compliance</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> |
| <b>Power</b>         | Power (including Pluggable)   | <a href="#">Table 2: Power Consumption</a>                                    |
| <b>Material</b>      | Product packaging weight and materials  | Contact: <a href="mailto:environment@cisco.com">environment@cisco.com</a>     |
|                      | Weight  | <a href="#">Dimensions section: page 16</a>                                   |

## Ordering information

Table 10 provides the ordering information for Cisco SFP+ modules and related cables.

**Table 10.** Ordering information

| Description  | Product number    |
|--|-------------------|
| <b>QSFP Optics Modules</b>   |                   |
| Cisco 40GBASE-SR4 QSFP Module for MMF  | QSFP-40G-SR4-S    |
| Cisco 40GBASE-SR4 QSFP Module for MMF  | QSFP-40G-SR4      |
| Cisco 40GBASE-SR Bi-Directional QSFP Module for Duplex MMF                                   | QSFP-40G-SR-BD    |
| Cisco 40GBASE-SR Bi-Directional QSFP Monitor Module for Duplex MMF                           | QSFP-40G-BD-RX    |
| Cisco Fabric Extender Transceiver  | FET-40G           |
| Cisco 40GBASE-CSR QSFP Module for Duplex MMF   | QSFP-40G-CSR-S    |
| Cisco 40GBASE-CSR4 QSFP Module for MMF   | QSFP-40G-CSR4     |
| Cisco 40GBASE-LR4L QSFP Module for SMF   | WSP-Q40GLR4L      |
| Cisco 40GBASE-LR4 QSFP Module for SMF  | QSFP-40G-LR4-S    |
| Cisco 40GBASE-LR4 QSFP Module for SMF with OTU-3 data-rate support                           | QSFP-40G-LR4      |
| Cisco 4x10GBASE-LR QSFP Modules for SMF  | QSFP-4X10G-LR-S   |
| Cisco 40GBASE-ER4 Module for SMF with OTU-3 data-rate support                                | QSFP-40G-ER4      |
| <b>QSFP Direct-Attach Copper Modules</b>   |                   |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 0.5-meter, passive                        | QSFP-H40G-CU0-5M  |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 1-meter, passive                          | QSFP-H40G-CU1M    |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 2-meter, passive                          | QSFP-H40G-CU2M    |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 3-meter, passive                          | QSFP-H40G-CU3M    |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 4-meter, passive                          | QSFP-H40G-CU4M    |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 5-meter, passive                          | QSFP-H40G-CU5M    |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 7-meter, active                           | QSFP-H40G-ACU7M   |
| Cisco 40GBASE-CR4 QSFP direct-attach copper cable, 10-meter, active                          | QSFP-H40G-ACU10M  |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 1/2-meter, passive | QSFP-4SFP10-CU0-5 |

| Description  | Product number    |
|--|-------------------|
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 1-meter, passive | QSFP-4SFP10G-CU1M |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 2-meter, passive | QSFP-4SFP10G-CU2M |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 3-meter, passive | QSFP-4SFP10G-CU3M |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 4-meter, passive | QSFP-4SFP10G-CU4M |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 5-meter, passive | QSFP-4SFP10G-CU5M |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 7-meter, active  | QSFP-4X10G-AC7M   |
| Cisco 40GBASE-CR4 QSFP to 4 10GBASE-CU SFP+ direct-attach breakout cable, 10-meter, active | QSFP-4X10G-AC10M  |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 1-meter                         | QSFP-H40G-AOC1M   |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 2-meter                         | QSFP-H40G-AOC2M   |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 3-meter                         | QSFP-H40G-AOC3M   |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 5-meter                         | QSFP-H40G-AOC5M   |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 7-meter                         | QSFP-H40G-AOC7M   |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 10-meter                        | QSFP-H40G-AOC10M  |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 15-meter                        | QSFP-H40G-AOC15M  |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 20-meter                        | QSFP-H40G-AOC20M  |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 25-meter                        | QSFP-H40G-AOC25M  |
| Cisco 40GBase-AOC QSFP direct-attach Active Optical Cable, 30-meter                        | QSFP-H40G-AOC30M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 1-meter                    | QSFP-4X10G-AOC1M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 2-meter                    | QSFP-4X10G-AOC2M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 3-meter                    | QSFP-4X10G-AOC3M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 5-meter                    | QSFP-4X10G-AOC5M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 7-meter                    | QSFP-4X10G-AOC7M  |
| Cisco 40GBase-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 10-meter                   | QSFP-4X10G-AOC10M |
| QSFP 40G to SFP+ 10G Adapter Module  | CVR-QSFP-SFP10G   |

## Regulatory and standards compliance

### Standards:

- 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-1435-CORE: Generic Requirements for Multifiber Optical Connectors
- IEEE 802.3ba (-SR4, -LR4)
- IEEE 802.3ae (-CSR4)
- QSFP+ MSA SFF-8436
- SFP+ MSA SFF-8431 and -8461
- RoHS 6

### Safety:

- Cable jacket of QSFP copper modules is UL E116441 Compliant
- QSFP copper cables are ELV Compliant

Table 11. Laser class

| Product               | Laser Class |
|-----------------------|-------------|
| Cisco QSFP-40G-SR4-S  | 1           |
| Cisco QSFP-40G-SR4    | 1M          |
| Cisco QSFP-40G-SR-BD  | 1M          |
| Cisco QSFP-40G-BD-RX  | 1           |
| Cisco FET-40G         | 1           |
| Cisco QSFP-40G-CSR-S  | 1           |
| Cisco QSFP-40G-CSR4   | 1M          |
| Cisco WSP-Q40GLR4L    | 1           |
| Cisco QSFP-40G-LR4-S  | 1           |
| Cisco QSFP-40G-LR4    | 1           |
| Cisco QSFP-4X10G-LR-S | 1           |
| Cisco QSFP-40G-ER4    | 1           |

## Cisco Capital

### Flexible payment solutions to help you achieve your objectives

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### Additional information

For more information about Cisco 40GBASE QSFP optics and copper modules, contact your sales representative or visit

[https://www.cisco.com/en/US/products/hw/modules/ps5455/prod\\_module\\_series\\_home.html](https://www.cisco.com/en/US/products/hw/modules/ps5455/prod_module_series_home.html).

https://www.jhj.cn

## Document history

| New or Revised                                   | Topic   | Described In Date |
|--|---|-------------------|
| Addition of 440m reach on OM5 for QSFP-40G-CSR-S | For the power section refer to <a href="#">Table 2: Power consumption</a><br>Weight is in <a href="#">Dimensions section</a> on Page 16 |                   |
|  | <a href="#">Table 2: Cable distance</a>   | April 26, 2022    |

<https://www.jhj.cn>

**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA

**Asia Pacific Headquarters**  
Cisco Systems (USA) Pte. Ltd.  
Singapore

**Europe Headquarters**  
Cisco Systems International BV Amsterdam,  
The Netherlands

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