DONEWIN
Global ICT Solutions Provider

CISCO
The bridge to possible

Cisco 400G QSFP-DD Cable and Transceiver Modules Datasheet

Contact Us

Phone: +852-51736677

Skype: wendycisco

WhatsAPP: +852-51736677

E-mail: wendy@donewin.com.hk

Contents

The Cisco® family of QSFP-DD modules provide the industry's highest bandwidth density while leveraging the backward compatibility to lower-speed QSFP pluggable modules and cables.

Product overview

The Cisco 400GBASE Quad Small Form-Factor Pluggable Double Density (QSFP-DD) portfolio offers customers a wide variety of super high-density transceiver modules and the flexibility of 400 Gigabit Ethernet connectivity options for data center, high- performance computing networks, enterprise core and distribution layers, and service provider applications. The QSFP-DD modules are our new generation of 400G transceiver modules based on a QSFP-DD form factor.

Table 1.   Feature and Benefits of Cisco QSFP-DD Modules

Feature	Benefit
Hot-swappable	Input/output device that plugs into 400G Ethernet Cisco QSFP-DD port
Interoperable	Interoperable with other IEEE-compliant 400GBASE interfaces where applicable
Certified on Cisco platform	Certified and tested on Cisco QSFP-DD 400G ports for superior performance, quality, and reliability
Compliant with IEEE 802.3	High-speed electrical and optical interfaces compliant to IEEE 802.3
Compatible with MSA	Compliant to QSFP-DD MSA CMIS Rev4.1, OIF 56G PAM4, IEEE 802.3 and 100G Lambda MSA
Backward compatibility	QSFP-DD port is backward compatible with QSFP+, QSFP28 and QSFP56 modules
Breakout capability	Some QSFP-DD modules have the capability to interface to multiple 100G modules when operated in breakout mode, providing higher port density for 100G interfaces, and easing the migration to 400G platforms

Table 2.   Cisco 400G QSFP-DD portfolio

Product ID	Description	Max power consumption (W)	Optical Connector
QDD-400-CUxM	400G, QSFP-DD to QSFP-DD, Passive Copper Cable, 0.5 meter, 1 meter, 2 meters, 2.5 meters, 3 meters	1.5 per end	N/A
QDD-400-AOCxM	400G QSFP-DD Transceiver, Active Optical Cable, 1, 2, 3, 5, 7, 10, 15, 20, 25, 30 meters	12 per end	N/A
QDD-400G-SR8-S	400G QSFP-DD Transceiver, MPO-16 APC MMF, 100m OM4 MMF, Can be used for 2X 200G-SR4 and 8x 50G-SR breakout	12	MPO-16 APC
QDD-400G-SR4.2-BD	400G QSFP-DD Transceiver, MPO-12, 100m OM4 MMF, 400GBASE-SR4.2 compliant. Can used for 4X breakout to QSFP-100G-SR1.2	12	MPO-12
QDD-400G-DR4-S	400G QSFP-DD Transceiver, 400GBASE-DR4, MPO-12 parallel SMF, 500m	12	MPO-12

Product ID	Description	Max power consumption (W)	Optical Connector
QDD-4X100G-FR-S	QSFP-DD Transceiver, 4x 100GBASE-FR1, MPO-12, 2km parallel SMF	12	MPO-12
QDD-4X100G-LR-S	QSFP-DD Transceiver, 4x 100GBASE-LR1, MPO-12, 10km parallel SMF	12	MPO-12
QDD-400G-FR4-S	400G QSFP-DD Transceiver, 400G-FR4, 2km Duplex SMF	12	Duplex LC
QDD-400G-LR4-S	400G QSFP-DD Transceiver, 400G-LR4, 10km Duplex SMF, 100% compliant with 400GBASE-LR4-6	12	Duplex LC
QDD-400G-LR8-S	400G QSFP-DD Transceiver, 400GBASE-LR8, 10km Duplex SMF	13	Duplex LC
QDD-2X100-SR4-S	2x100GBASE-SR4 Transceiver, 100GBASE-SR4, MPO-24, 100m MMF	5	MPO-24
QDD-2X100-CWDM4-S	2X 100G-CWDM4 Transceiver, 100G-CWDM4, Dual Duplex CS connector, 2km Duplex SMF	7	Dual Duplex CS
QDD-2X100-LR4-S	2x100GBASE-LR4 Transceiver, 100GBASE-LR4, Dual Duplex CS connector, 10km SMF	8	Dual Duplex CS

Note: Except for QDD-400G-SR8-S, QDD-400G-DR4-S, QDD-4X100G-FR-S, QDD-4X100G-LR-S, only connections with patch cords with PC or Ultra-Physical Contact (UPC) connectors are supported. QDD-400G-SR8-S, QDD-400G-DR4-S, QDD-4X100G-FR-S, QDD-4X100G-LR-S require patch cords with Angled Physical Contact (APC) MPO connectors. QDD-400G-SR8-S requires MPO-16 APC for MMF. All cables and cable assemblies used must be compliant with the standards specified in the standards section of this datasheet. For more information and references on QSFP-DD cable guides, please click on the following link: Cisco Transceiver Modules - Brochures - Cisco

Cisco 400G QSFP-DD transceiver prominent features and differentiators

Cisco QDD-400-CUxM

Figure 1.
QDD-400-CUxM

The Cisco 400G QDD-400-CUxM module (Figure 1) primarily enables high-bandwidth 400G links and supports 400G Ethernet rate. It provides a QSFP-DD-to-QSFP-DD copper direct-attach solution. QDD-400-CuxM cables are suitable for very short links and offer a cost-effective way to establish a 400-Gigabit link between QSFP-400G ports of switches/routers within racks and across adjacent racks. Cisco currently offers passive copper cables in lengths of x=0.5, 1, 2, 2.5, and 3 meters.

Cisco QDD-400-AOCxM

Figure 2.
QDD- 400-AOCxM

The Cisco QDD-400-AOCxM modules ([Figure 2](#)) with AOC cables are suitable for short distances and offer a flexible way to connect within racks and across racks. Active optical cables are much thinner and lighter than copper cables, which makes cable management easier. AOCs enable efficient system airflow, which is critical in high-density racks. Cisco currently offers active optical cables in lengths of x=1, 2, 3, 5, 7, 10, 15, 20, 25, and 30 meters.

Cisco QDD-400G-SR8-S

Figure 3.
QDD-400G-SR8-S

The Cisco QDD-400G-SR8-S Module (Figure 3) supports 400GE links and up to 8x 50GE breakouts or two 200GE breakout links lengths of up to 100m over OM4 MMF. The module has 8 pairs of MMF with an MPO-16 APC connector. It is compliant to the IEEE 802.3bm protocol and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over eight parallel pairs of fibers by 50Gbps signals per fiber. It can also be used as 8x 50GE breakout to SFP56-50G-SR modules or 2x QSFP-200G-SR4-S modules. FEC is performed on the host platform.

Cisco QDD-400G-SR4.2-BD

Figure 4.
QDD-400G-SR4.2-BD

The Cisco QDD-400G-SR4.2-BD Module (Figure 4) supports 400GE links and up to four 100GE breakout link lengths of up to 100m over OM4 MMF. The module has four pairs of MMF with an MPO-12 UPC connector. It is compliant to the IEEE 802.3bm protocol and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four parallel pairs of fibers by two 50Gbps bidirectional wavelength per fiber. It can also be used as 4x100GE breakout to QSFP-100G-SR1.2 modules. FEC is performed on the host platform.

QDD-400G-DR4-S

Figure 5.
QDD-400G-DR4-S

The Cisco QDD-400G-DR4-S Module (Figure 5) supports 400GE links and up to four 100GE breakout link lengths of up to 500m. The module has four pairs of SMF with an MPO-12 connector. It is compliant to the IEEE 802.3bs protocol and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four parallel lanes by one wavelength per lane. It can be used as 4x100G breakout to QSFP28 100G-DR, 100G-FR, and 100G-LR. FEC is performed on the host platform.

QDD-4X100G-FR-S

Figure 6.
QDD-4X100G-FR-S

The Cisco QDD-4X100G-FR-S Module (Figure 6) supports 100G breakout link lengths of up to 2km. The module has four pairs of SMF with an MPO-12 connector. It is compliant to the IEEE 802.3cu for 100GBASE-FR1, and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four parallel lanes by one wavelength per lane. It can be used as 4x100G breakout to QSFP28 100G-DR (up to 500m), 100G-FR, and 100G-LR. FEC is performed on the host platform.

QDD-4X100G-LR-S

Figure 7.
QDD-4X100G-LR-S

The Cisco QDD-4X100G-LR-S Module (Figure 7) supports 100G breakout link lengths of up to 10km. The module has four pairs of SMF with an MPO-12 connector. It is compliant to the IEEE 802.3cu for 100GBASE-LR1, and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four parallel lanes by one wavelength per lane. It can be used as 4x100G breakout to QSFP28 100G-DR (up to 500m), 100G-FR (up to 2km), and 100G-LR (up to10km). FEC is performed on the host platform.

QDD-400G-FR4-S

Figure 8.
QDD-400G-FR4-S

The Cisco QDD-400G-FR4-S Module(Figure 8) supports link lengths of up to 2km SMF with duplex LC connector. It is compliant to IEEE 802.3cu for 400GBASE-FR4 requirements and 100G Lambda MSA group, and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four CWDM grid optical wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. FEC is performed on the host platform.

QDD-400G-LR4-S

Figure 9.
QDD-400G-LR4-S

The Cisco QDD-400G-LR4-S Module(Figure 9) supports link lengths of up to 10km SMF with duplex LC connector. It is compliant to IEEE 802.3cu for 400GBASE-LR4-6km requirements but extends the reach to 10km, is compliant to100G Lambda MSA group 400G-LR4 requirements, and 400GAUI-8/CEI-56G-VSR-PAM4 standards. The 400 Gigabit Ethernet signal is carried over four CWDM grid optical wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. FEC is performed on the host platform.

QDD-400G-LR8-S

Figure 10.
QDD-400G-LR8-S

The Cisco QDD-400G-LR8-S module (Figure 10) supports link lengths of up to 10 km over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors, and is compliant to the IEEE 400GBASE-LR8 standard. The 400 Gigabit Ethernet signal is carried over eight wavelengths. Multiplexing and demultiplexing of the eight wavelengths are managed within the device. FEC is performed on the host platform.

QDD-2X100-SR4-S

Figure 11.
QDD-2X100-SR4-S

The Cisco QDD-2X100-SR4-S module (Figure 11) supports link lengths of up to 100m on OM4 MMF. The module uses an MPO-24 MMF connector. It is compliant to IEEE 802.3 100GBASE-SR4 requirements. The module provides backward compatibility to two 100GBASE-SR4 transceivers, improving port efficiency to legacy 100G optical interfaces.

QDD-2X100-CWDM4-S

Figure 12.
QDD-2X100-CWDM4-S

The Cisco QDD-2X100-CWDM4-S module (Figure 12) supports link lengths of up to 2km over SMF and uses a dual duplex CS connector. It is compliant to the 100G-CWDM4 MSA. The 100 Gigabit Ethernet signal is carried over four CWDM grid optical wavelengths at 25Gb/s each. Multiplexing and demultiplexing of the four wavelengths are managed within the device. FEC is performed on the host platform.

QDD-2X100-LR4-S

Figure 13.
QDD-2X100-LR4-S

The Cisco QDD-2X100-LR4-S module (Figure 13) supports link lengths of up to 10km over SMF and uses a dual duplex CS connector. It is compliant to IEEE 802.3 100GBASE-LR4 requirements. The module provides backward compatibility to two 100GBASE-LR4 transceivers, improving port efficiency to legacy 100G optical interfaces.

Table 3.   QSFP port and cabling specifications

Cisco 400G QSFP-DD	Nominal wavelength (nm)	Cable type	Core size (microns)	Modal bandwidth	Cable distance	Pull tab color
QDD-400-CU0.5M		Passive copper cable assembly			0.5m	Tan
QDD-400-CU1M					1 m	Tan
QDD-400-CU2M					2 m	Brown
QDD-400-CU2.5M					2.5 m	Yellow

Cisco 400G QSFP-DD	Nominal wavelength (nm)	Cable type	Core size (microns)	Modal bandwidth	Cable distance	Pull tab color
QDD-400-CU3M					3 m	Orange
QDD-400-AOC1M		Active optical cable assembly			1 m	Beige
QDD-400-AOC2M					2 m	Brown
QDD-400-AOC3M					3 m	Orange
QDD-400-AOC5M					5 m	Gray
QDD-400-AOC7M					7 m	Blue
QDD-400-AOC10M					10 m	Red
QDD-400-AOC15M					15 m	Black
QDD-400-AOC20M					20 m	Green
QDD-400-AOC25M					25 m	Green
QDD-400-AOC30M					30 m	Green
QDD-400G-SR8-S	850	MMF	50	2000 (OM3) 4700 (OM4) 4700 (OM5)	70m (OM3) 100m (OM4)	Tan
QDD-400G-SR4.2-BD	850, 908	MMF	50	2000 (OM3) 4700 (OM4) 4700 (OM5)	70m (OM3) 100m (OM4) 150m (OM5)	Gray
QDD-400G-DR4-S	1310	SMF	G.652		500 m	Orange
QDD-4X100G-FR-S	1310	SMF	G.652		2 km	Green
QDD-4X100G-LR-S	1310	SMF	G.652		10 km	Blue
QDD-400G-FR4-S	1270, 1290, 1310, 1330	SMF	G.652		2 km	Green
QDD-400G-LR4-S	1270, 1290, 1310, 1330	SMF	G.652		10 km	Blue
QDD-400G-LR8-S	1273, 1277, 1282, 1286, 1295, 1300, 1304, 1309	SMF	G.652		10 km	Blue
QDD-2X100-SR4-S	850	MMF	50	2000 (OM3) 4700 (OM4)	70m 100m	Beige

Cisco 400G QSFP-DD	Nominal wavelength (nm)	Cable type	Core size (microns)	Modal bandwidth	Cable distance	Pull tab color
QDD-2X100-CWDM4-S	1270, 1290, 1310, 1330	SMF	G.652		2 km	Green
QDD-2X100-LR4-S	1295, 1300, 1304, 1309	SMF	G.652		10 km	Blue

Platform support

Cisco QSFP-DD modules are supported on Cisco switches and routers. For more details, refer to the Cisco Transceiver Modules Compatibility Matrix.

Specifications

Table 4. Electrical specifications

Product	Description	Nominal Datarate (Gbs)	High-speed electrical	Link meter
QDD-400-CUxM	400G QSFP-DD Transceiver, Passive Copper Cable	425	400GAUI-8 C2M, OIF CEI-56G-VSR-PAM4	0.5, 1, 2, 2.5, 3
QDD-400-AOCxM	400G QSFP-DD Transceiver, Active Copper Cable	425	400GAUI-8	1,2,3,5,7,10,15, 20,25, 30
QDD-400G-SR8-S	400G QSFP-DD Transceiver, MPO-16 APC MMF, 100m OM4 MMF, Can be used for 2X 200G-SR4 and 8x 50G-SR breakout	425	400GAUI-8/CEI-56G-VSR- PAM4	70m (OM3) 100m (OM4)
QDD-400G-SR4.2-BD	400G QSFP-DD Transceiver, MPO-12 UPC, 100m OM4 MMF, 400GBASE-SR4.2, Can be used for 4X breakout to QSFP-100G-SR1.2	425	400GAUI-8/CEI-56G-VSR- PAM4	70m (OM3) 100m (OM4) 150m (OM5)
QDD-400G-DR4-S	400G QSFP-DD Transceiver, 400GBASE-DR4, MPO-12, 500m parallel SMF	425	400GAUI-8/CEI-56G-VSR- PAM4	500 m
QDD-4X100G-FR-S	QSFP-DD Transceiver, 4X 100GBASE-FR1, MPO-12, 2km parallel SMF	4x 100GE	400GAUI-8/CEI-56G-VSR- PAM4	2 km
QDD-4X100G-LR-S	QSFP-DD Transceiver, 4X 100GBASE-LR1, MPO-12, 10km parallel SMF	4x 100GE	400GAUI-8/CEI-56G-VSR- PAM4	10 km
QDD-400G-FR4-S	400G QSFP-DD Transceiver, 400G- FR4, Duplex LC, 2km Duplex SMF	425	400GAUI-8/CEI-56G-VSR- PAM4	2 km

Product	Description	Nominal Datarate (Gbs)	High-speed electrical	Link meter
QDD-400G-LR4-S	400G QSFP-DD Transceiver, 400G- LR4, Duplex LC, 10km Duplex SMF	425	400GAUI-8/CEI-56G-VSR- PAM4	10 km
QDD-400G-LR8-S	400G QSFP-DD Transceiver, 400GBASE-LR8, Duplex LC, 10km Duplex SMF	425	400GAUI-8/CEI-56G-VSR- PAM4	10 km
QDD-2X100-SR4-S	2x 100G QSFP-DD Transceiver, 2x 100GBASE-SR4, MPO-24 MMF, 100m OM4	2x100GE	2x 100G CAUI-4	100 m
QDD-2X100-CWDM4-S	2x 100G QSFP-DD Transceiver, 2x 100G-CWDM4, Dual Duplex CS connector SMF, 2km SMF	2X 100GE	2x 100G CAUI-4	2 km
QDD-2X100-LR4-S	2x 100G QSFP-DD Transceiver, 2x 100GBASE-LR4, Dual Duplex CS connector, 10km SMF	2X 100GE	2x 100G CAUI-4	10 km

Table 5. Optical specifications

Product	Description	Average Transmit Power per lane (dBm) min	Average Transmit Power per lane (dBm) max	Average Receive Power per lane (dBm) min[1]	Average Receive Power per lane (dBm) max	Maximum Supported Insertion Loss (IL) (dB)	Wavelength (nm)	Pre-FEC
QDD-400G-SR8-S	400G QSFP-DD Transceiver, MPO-16 APC MMF, 100m OM4 MMF, Can be used for 2X 200G-SR4 and 8x 50G-SR breakout	-6.5	4	-8.4	4	1.9	840-860	2.4x10-4
QDD-400G-SR4.2-BD	400G QSFP-DD Transceiver, MPO-12 UPC, 100m OM4 MMF, 400GBASE-SR4.2, Can be used for 4X breakout to QSFP-100G-SR1.2	-6.2	4	-8.2	4	1.9	855, 908	2.4x10-4
QDD-400G-DR4-S	400G QSFP-DD Transceiver, 400GBASE-DR4, MPO-12, 500m parallel SMF	-2.9	4	-5.9	4	3	1310	2.4x10-4
QDD-4X100G-FR-S	QSFP-DD Transceiver, 4X 100GBASE-FR1, MPO-12, 2km parallel SMF	-3.1	4	-7.1	4	4	1310	2.4x10-4

Product	Description	Average Transmit Power per lane (dBm) min	Average Transmit Power per lane (dBm) max	Average Receive Power per lane (dBm) min[1]	Average Receive Power per lane (dBm) max	Maximum Supported Insertion Loss (IL) (dB)	Wavelength (nm)	Pre-FEC
QDD-4X100G-LR-S	QSFP-DD Transceiver, 4X 100GBASE-LR1, MPO-12, 10km parallel SMF	-1.9	4.8	-8.2	4.8	6.3	1310	2.4x10-4
QDD-400G-FR4-S	400G QSFP-DD Transceiver, 400GBASE-FR4, Duplex LC, 2km Duplex SMF	-3.2	3.5	-7.3	3.5	4	1270, 1290, 1310, 1330	2.4x10-4
QDD-400G-LR4-S	400G QSFP-DD Transceiver, 400GBASE-LR4, Duplex LC, 10km Duplex SMF	-2.7	5.1	-9.0	5.1	6.3	1270, 1290, 1310, 1330	2.4x10-4
QDD-400G-LR8-S	400G QSFP-DD Transceiver, 400GBASE-LR8, Duplex LC, 10km Duplex SMF	-2.8	5.3	-9.1	5.3	6.3	1273, 1277, 1282, 1286, 1295, 1300, 1304, 1309	2.4x10-4
QDD-2X100-SR4-S	2x 100G QSFP-DD Transceiver, 2x 100GBASE-SR4, MPO-24 MMF, 100m OM4	-8.4	2.4	-10.3	2.4	1.9	840 to 860	
QDD-2X100-CWDM4-S	2x 100G QSFP-DD Transceiver, 2x 100G-CWDM4, Dual Duplex CS connector SMF, 2km SMF	-6.5	2.5	-11.5	2.5	5	1271, 1291, 1311, 1331	
QDD-2X100-LR4-S	2x 100G QSFP-DD Transceiver, 2x 100GBASE-LR4, Dual Duplex CS connector, 10km SMF	-4.3	4.5	-10.6	4.5	6.3	1295, 1300, 1304, 1309	

[1] Average receive power per lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance

Table 6.   Mechanical specifications

Module		Specification
Module dimension with pull tab		(H x W x D) 8.5 x 18.4 x 78.3/93.3 mm
Module weight (Max)	**Optical modules**	100 g
	QDD-400-CU0.5M	250 g
	QDD-400-CU1M	250 g
	QDD-400-CU2M	450 g
	QDD-400-CU2.5M	550 g
	QDD-400-CU3M	600 g
	QDD-400-AOC1M	160 g
	QDD-400-AOC2M	180 g
	QDD-400-AOC3M	190 g
	QDD-400-AOC5M	200 g
	QDD-400-AOC7M	230 g
	QDD-400-AOC10M	270 g
	QDD-400-AOC15M	320 g
	QDD-400-AOC20M	390 g
	QDD-400-AOC25M	430 g
	QDD-400-AOC30M	490 g
QDD-400G Module operation temperature		0 to 75° C
QDD-2X100 Module operation temperature		0 to 70° C
Active optical cable		0 to 70° C
Copper cable operation temperature		0 to 70° C
Storage temperature		−40 to 85° C

QSFP-DD Breakout Capability and Module Interoperation

Some of Cisco's QSFP-DD modules have the capability to be operated in breakout mode on specific platforms. This allow the QSFP-DD port to be configured as if it were two or four 100GE ports. This function provides users the ability to use the latest platforms with 400G ports with the latest features while still providing connectivity to existing 100G platforms that are already in the network. This eases the migration to 400GE on a port-by-port basis while providing very high density 100GE interfaces. These modules will interoperate with Cisco as well as 3rd party modules that comply with the same standards. Tables 7-10 provides brief overview of the various optical breakout options, compatibility and reach to 100GE modules. Module optical interoperability can also be verified with the Cisco Module Interoperability Matrix.

Table 7.   QSFP-DD SMF PAM4 Breakout Interoperation and Link Reach

Standard (PAM4)	400GBASE-DR4	100GBASE-DR1	100GBASE-FR1			100GBASE-LR1		100G-LR1-20[2]
Product ID	QDD-400G-DR4	QSFP-100G-DR-S	QDD-4X100G-FR-S	QSFP-100G-FR-S	CPAK-100G-FR	QDD-4X100G-LR-S	QSFP-100G-LR-S	QSFP-100G-ERL-S
QDD-400G-DR4-S (4x 100G Breakout)		500m SMF (3dB)	500m SMF (3dB)			500m SMF (3dB)		
QDD-4X100G-FR-S (4x 100G Breakout)		500m SMF (3dB)	2km SMF (4dB)			2km SMF (4dB)		
QDD-4X100G-LR-S (4x 100G Breakout)		500m SMF (3dB)	2km SMF (4dB)			10 km SMF (6.3dB)		

[2] 100G-LR-20 is a standard of the 100G Lambda MSA (www.100glambda.com)

[3] 100G-CWDM4 is compliant to the requirements from the CWDM4 Group MSA (CWDM4-MSA Group)

[4] QSFP-100G-SM-SR is compatible with 100G-CWDM4 except with 4.2dB link margin

Table 8. QSFP-DD SMF PAM4 Duplex Interoperation and Link Reach

Standard (PAM4)	400GBASE-FR4		400G-LR4	400GBASE-LR4-6[1]
Product ID	QDD-400G-FR4-S	QDD-2X400G-FR4	QDD-400G-LR4-S	
QDD-400G-FR4-S	2km (4dB)	2km (4dB)	2km (4dB)	2km (4dB)
QDD-400G-LR4-S	2km (4dB)	2km (4dB)	10km (6.3dB)	6km (6.3dB)

[1] 400GBASE-LR4-6 is the IEEE requirement is limited to 6km reach, the QDD-400G-LR4 module is 100% compatible with this requirement, but has a reach of 10km.

Table 9. QSFP-DD MMF PAM4 Duplex Interoperation and Link Reach

Standard (PAM4)		50GBASE-SR		200GBASE-SR4	
Product ID	QSFP-100G-SR1.2	SFP-50G-SR	SFP-50G-SL	QSFP-200G-SR4-S	QSFP-200G-SL4-S
QDD-400G-SR4.2-BD (4x 100G Breakout)	70m (OM3) 100m (OM4) 150m (OM5) (1.9dB)				
QDD-400G-SR8-S (2x 200GE & 8x 50G Breakout)		70m (OM3) 100m (OM4) 100m (OM5) (1.9dB)	20m (OM3) 30m (OM4) 30m (OM5) (1.6dB)	70m (OM3) 100m (OM4) 100m (OM5) (1.9dB)	20m (OM3) 30m (OM4) 30m (OM5) (1.6dB)

Table 10. QSFP-DD 2x100G NRZ Interoperation and Link Reach

Standard (NRZ)	100GBASE-SR4		100G-CWDM4[3]		100G-CWDM4	100GBASE-LR4			
Product ID	QSFP-100G-SR4-S	CPAK-100G-SR4	QSFP-100G-CWDM4-S	CPAK-100G-CWDM4	QSFP-100G-SM-SR4[4]	QSFP-100G-LR4-S	CPAK-100G-LR4	CPAK-100GE-LR4	CFP-100G-LR4
QDD-2X100-SR4-S (2x 100G Breakout)	70m (OM3) 100m (OM4) (1.9dB)								
QDD-2X100-CWDM4-S			2km SMF (5dB)		2km SMF (4.2dB)				
QDD-2X100-LR4-S						10km SMF (6.3 dB)			

Table 11. Ordering information

Part ID	Product description
QDD-400-CU0.5M	400G QSFP-DD Transceiver, Passive Copper Cable, 0.5 meter
QDD-400-CU1M	400G QSFP-DD Transceiver, Passive Copper Cable, 1 meter
QDD-400-CU2M	400G QSFP-DD Transceiver, Passive Copper Cable, 2 meters
QDD-400-CU2.5M	400G QSFP-DD Transceiver, Passive Copper Cable, 2.5 meters
QDD-400-CU3M	400G QSFP-DD Transceiver, Passive Copper Cable, 3 meters
QDD-400-AOC1M	400G QSFP-DD Transceiver, Active Optical Cable, 1 meter
QDD-400-AOC2M	400G QSFP-DD Transceiver, Active Optical Cable, 2 meters
QDD-400-AOC3M	400G QSFP-DD Transceiver, Active Optical Cable, 3 meters
QDD-400-AOC5M	400G QSFP-DD Transceiver, Active Optical Cable, 5 meters
QDD-400-AOC7M	400G QSFP-DD Transceiver, Active Optical Cable, 7 meters
QDD-400-AOC10M	400G QSFP-DD Transceiver, Active Optical Cable, 10 meters
QDD-400-AOC15M	400G QSFP-DD Transceiver, Active Optical Cable, 15 meters
QDD-400-AOC20M	400G QSFP-DD Transceiver, Active Optical Cable, 20 meters
QDD-400-AOC25M	400G QSFP-DD Transceiver, Active Optical Cable, 25 meters
QDD-400-AOC30M	400G QSFP-DD Transceiver, Active Optical Cable, 30 meters

Part ID	Product description
QDD-400G-SR8-S	400G QSFP-DD Transceiver, 400GBASE-SR8, MPO16 APC MMF 100m
QDD-400G-SR4.2-BD	400G QSFP-DD Transceiver, 400GBASE-SR4.2, MPO-12 MMF, 100m
QDD-400G-DR4-S	400G QSFP-DD Transceiver, 400GBASE-DR4, MPO-12, 500m parallel SMF
QDD-4X100G-FR-S	QSFP-DD Transceiver, 4x 100GBASE-FR1, MPO-12, 2km parallel SMF
QDD-4X100G-LR-S	QSFP-DD Transceiver, 4x 100GBASE-LR1, MPO-12, 10km parallel SMF
QDD-400G-FR4-S	400G QSFP-DD Transceiver, 400G-FR4, Duplex LC, 2km Duplex SMF
QDD-400G-LR4-S	400G QSFP-DD Transceiver, 400G-LR4, Duplex LC, 10km Duplex SMF
QDD-400G-LR8-S	400G QSFP-DD Transceiver, 400GBASE-LR8, 10km Duplex SMF, 10km
QDD-2X100-SR4-S	2x100G QSFP-DD Transceiver, 2X 100GBASE-SR4, MPO-24 MMF, 100m OM4
QDD-2X100-CWDM4-S	2X 100G QSFP-DD Transceiver, 2X 100G-CWDM4, Dual Duplex CS, 2km SMF
QDD-2X100-LR4-S	2x 100G QSFP-DD Transceiver, 2x 100GBASE-LR4, Dual Duplex CS, 10km SMF

Regulatory and standards compliance

Standards

- OIF CEI-56G-VSR-PAM4
- QSFP-DD MSA hardware Rev 4.1, QSFP-DD hardware specification for QSFP double-density 8X pluggable transceiver
- 400G-FR4 MSA: 100G Lambda MSA Group
- 400G-LR4 MSA: 100G Lambda MSA Group
- 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
- Common Management Specification (CMIS) Rev 4.0
- IEEE Std 802.3™-2018 IEEE Standard for Ethernet
- IEEE 802.3ba CL88
- IEEE 802.3bs 400GAUI-8 Annex 120E
- IEEE 802.3cd CL136
- IEEE 802.3cu CL140

Safety

- Laser Class 1 21CFR-1040 LN#50

- Laser Class 1 IEC60825-1

- Cable jacket can be certified to UL or CSA jacketed appliance wiring material, rated VW-1 or FT-1.

- All cables must be type CM, CMG, CMP, or CMR. If cable is type CL2 (USA type of cable), it must also be type LVT or ELC (Canadian type of cable).

- Compliance with North American (FCC/ICES), European (CENELEC), Japanese (VCCI), and Telcordia NEBS standards

- GR-1089 EMC and Electrical Safety - Generic Criteria for Network Telecommunications Equipment

- EMI compliance on FCC Part 15 (30 MHz – 40 GHz) and CISPR32/CISPR22 (30-6000 MHz)

- RFI compliance on EN/IEC 61000-4-3 and GR-1089-CORE (10k to 10 GHz)

- ESD compliance on EN/IEC 61000-4-2 and GR-1089

- Certification to IEC/EN 60825-1 +A2

- RoHS 6 compliance

Table 12. Laser class for QSFP-DD modules

Part ID	Laser Class
QDD-400G-SR8-S	1
QDD-400G-SR4.2-BD	1
QDD-400G-DR4-S	1
QDD-4X100G-FR-S	1
QDD-4X100G-LR-S	1
QDD-400G-FR4-S	1
QDD-400G-LR4-S	1
QDD-400G-LR8-S	1
QDD-2X100-SR4-S	1
QDD-2X100-CWDM4-S	1
QDD-2X100-LR4-S	1

Product sustainability

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

Table 13.   Cisco environmental sustainability information

Sustainability Topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
Power	QSFP-DD Port cabling specifications	Table 3

Warranty

Standard warranty: 5 years

Expedited replacement available via a Cisco SMARTnet® Service support contract

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments.

Document history

New or Revised Topic	Described In	Date
Initial Release		Jan 4, 2020
Addition QDD-400G-DR4-S; QDD-400G-FR4-S, QDD-2X100-SR4-S; QDD-2X100-CWDM4-S	Table 2	May 15, 2020
Addition of QDD-400G-LR8-S	Table 2	Oct 15, 2020
Addition of QDD-400-AOCxM; QDD-4X100G-FR-S; QDD-4X100G-LR-S; QDD-2X100-LR4-S	Table 2	July 15, 2021
Addition of QDD-400G-LR4-S and QSFP-DD Breakout Interoperation and Link Reach Table	Table 2, 7	Nov 1, 2021
Addition of QDD-400G-SR8-S, QDD-400G-SR4.2-BD, editorial to AOC and table 7	Various	Feb 10, 2023

Contact Us

Phone: +852-51736677

Skype: wendycisco

WhatsAPP: +852-51736677

E-mail: wendy@donewin.com.hk