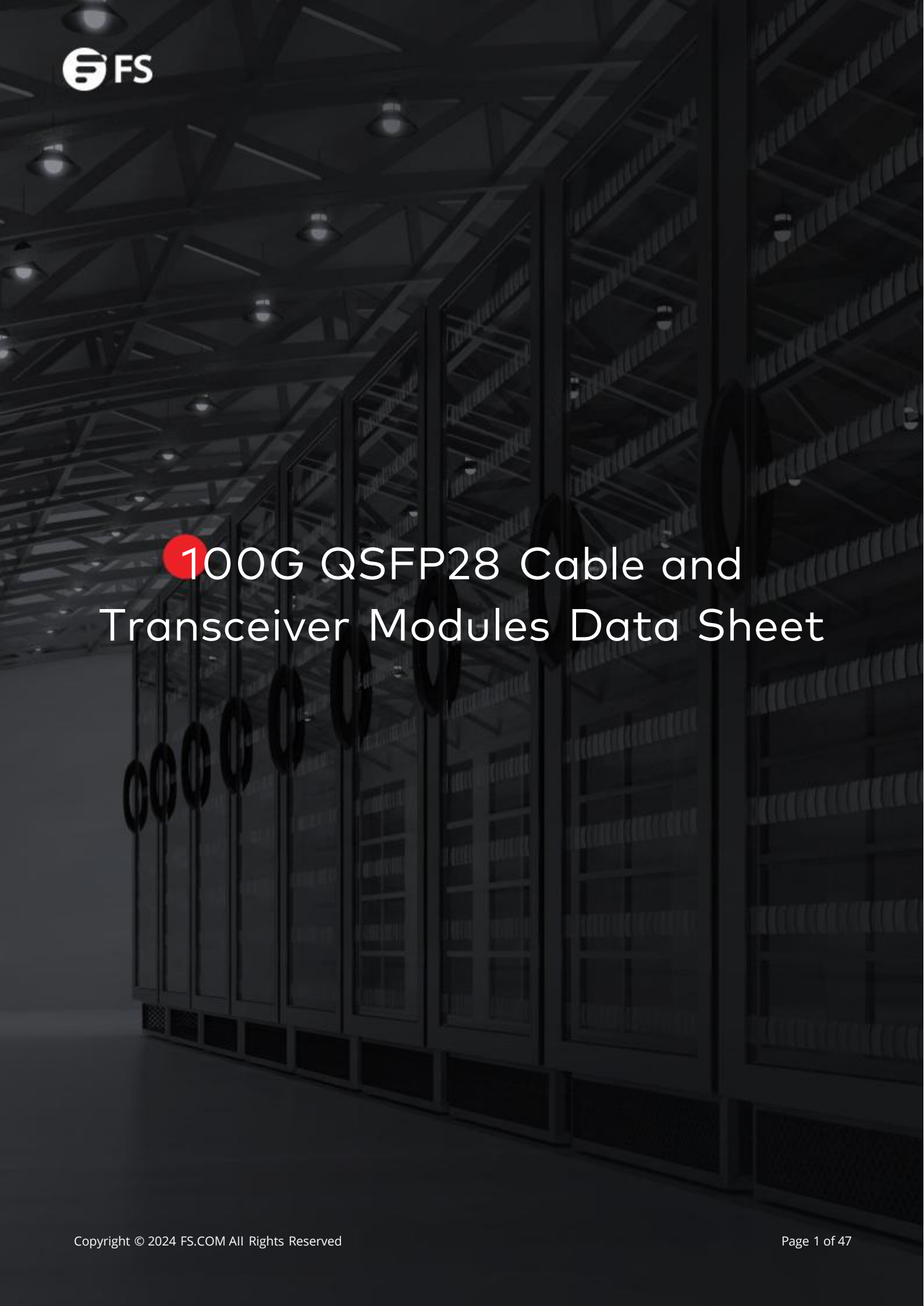
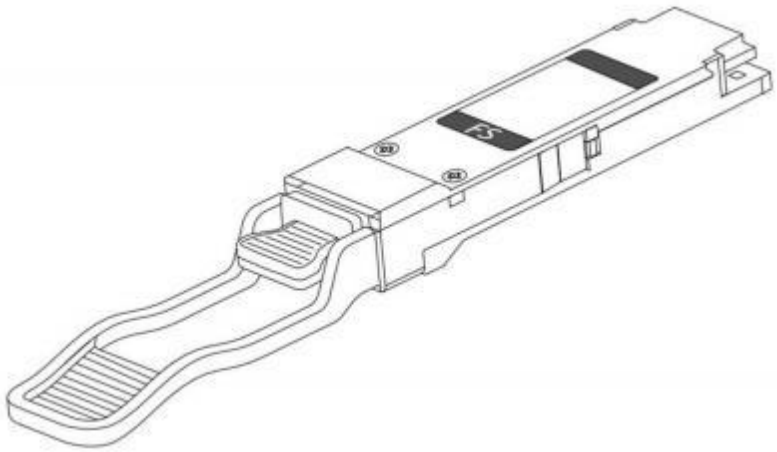


100G QSFP28 Cable and Transceiver Modules Data Sheet

Contents

Product overview

The FS® 100GBASE Quad Small Form-Factor Pluggable (QSFP28) portfolio offers customers a wide variety of high-density and low-power 100 Gigabit Ethernet connectivity options for data center, high-performance computing networks, enterprise core and distribution layers, and service provider applications. The QSFP28-100G modules are our latest generation of 100G transceiver modules solution based on a QSFP28 form factor. (See Figure 1).



- QSFP-LR4-100G
- QSFP-SR4-100G
- OSFP-IR4-100G
- QSFP-PSM4-100G

Figure 1.

QSFP28-100G Optical modules

Features and benefits

- Hot-swappable input/output device that plugs into a 100G Gigabit Ethernet QSFP28 port
- Interoperable with other IEEE-compliant 100GBASE interfaces where applicable
- Certified and tested on Cisco, Arista, Juniper, Brocade QSFP28-100G ports for superior performance, quality, and reliability. For more details, refer to the FS Assured Program for Transceivers
- High-speed electrical interface compliant to IEEE 802.3bm

Table 1 describes the QSFP28-100G portfolio.

Table 1. QSFP28-100G portfolio

Product	Description	Connector type
QSFP-SR4-100G	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF	MTP/MPO-12 (12fibers)
QSFP-PSM4-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 500m over SMF	MTP/MPO-12 (12fibers)
QSFP-DR-100G	100GBASE DR QSFP28 Transceiver, LC, 500m over SMF	Duplex LC

Product	Description	Connector type
QSFP-FR-100G	100GBASE FR QSFP28 Transceiver, LC, 2km over SMF	Duplex LC
OSFP-IR4-100G	100GBASE CWDM4 QSFP28 Transceiver, LC, 2km over SMF	Duplex LC
QSFP-LR-100G	100GBASE LR QSFP28 Transceiver, LC, 10km over SMF	Duplex LC
QSFP-LR4-100G	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF	Duplex LC
QSFP-LR4-100G-I	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF, I-Temp	Duplex LC
QSFP-ERL-100G	100GBASE ERL QSFP28 Transceiver, LC, 25km over SMF	Duplex LC
QSFP-ER4L-100G	100GBASE ER4 QSFP28 Transceiver, LC, 40km over SMF	Duplex LC
QSFP-ZR4-100G	100GBASE ZR4 QSFP28 Transceiver, LC, 80km over SMF	Duplex LC
QSFP-ESR4-100G	100GBASE ESR4 QSFP28 Transceiver, MTP/MPO, 300m over MMF	MTP/MPO-12 (12 fibers)
QSFP-BX20-100G	100G BX20 QSFP28 Transceiver, Simplex LC, 20km over SMF	Duplex LC
QSFP-BIDI-100G	100G-SR SWDM4 BiDi QSFP28 Transceiver, LC, 100m OM4 MMF	Duplex LC
QSFP-SR4-100G-I	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF, I-Temp	MTP/MPO-12 (12 fibers)
QSFP-4W10-100G	100GBASE 4WDM-10 QSFP28 Transceiver LC, 10km over SMF	Duplex LC
QSFP-4W40-100G-E	100GBASE ER4L Transceiver, 40km over SMF, duplex, LC, E-Temp	Duplex LC
QSFP-4W20-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 20km over SMF, I-Temp	Duplex LC
QSFP-4W40-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 40km over SMF, I-Temp	Duplex LC
DW2-QSFP100G80-xxxx	100GBASE DWDM QSFP28 Transceiver, CS, 80km over SMF	Duplex CS
QSFP-PLR4L-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 2km over SMF	MTP/MPO-12 (12 fibers)
QSFP-LR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 10km over SMF	Duplex LC
QSFP-ELR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 20km over SMF	Duplex LC
QSFP-ER4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 40km over SMF	Duplex LC
QSFP-SR4-100GE (IB)	100GBASE SR4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 100m over MMF	MTP/MPO-12 (12 fibers)

Product	Description	Connector type
QSFP-PSM4-100G (IB)	100GBASE PSM4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 500m over SMF	MTP/MPO-12 (12 fibers)
OSFP-IR4-100GE (IB)	100GBASE IR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 2km over SMF	Duplex LC
QSFP-LR4-100GE (IB)	100GBASE IR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 10km over SMF	Duplex LC
QSFP-CWDM4-100G-I	100GBASE IR4 QSFP28 Transceiver, Duplex LC, 2km over SMF	Duplex LC
QSFP-ZR4-100G-I	100GBASE ZR4 QSFP28 Transceiver, Duplex LC, 80km over SMF	Duplex LC
QSFP-SR4-100GM	100GBASE SR4 and 112GBASE OTU4 QSFP28 Transceiver, MPO-12, 100m over MMF	MTP/MPO-12 (12 fibers)
QSFP-ER-100G	100GBASE ER QSFP28 Transceiver, Duplex LC, 40km over SMF	Duplex LC
QSFP-LR-100G-27	100GBASE-LR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 10km over SMF	Duplex LC
QSFP-LR-100G-29	100GBASE-LR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 10km over SMF	Duplex LC
QSFP-LR-100G-33	100GBASE-LR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 10km over SMF	Duplex LC
QSFP-FR-100G-27	100GBASE-FR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 2km over SMF	Duplex LC
QSFP-FR-100G-29	100GBASE-FR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 2km over SMF	Duplex LC
QSFP-FR-100G-33	100GBASE-FR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 2km over SMF	Duplex LC
QSFP-BX10-100G	100G BX10 QSFP28 Transceiver, Simplex LC, 10km over SMF	Simplex LC
QSFP-BX30-100G	100G BX30 QSFP28 Transceiver, Simplex LC, 30km over SMF	Simplex LC
QSFP-eER4-100G	100GBASE ER4 QSFP28 Transceiver, Duplex LC, 60km over SMF	Duplex LC
QSFP-MBIDI-100G	40/100GBASE QSFP28 Transceiver, Duplex LC, 100m over MMF	Duplex LC
QSFP-PLR4-100G	100GBASE PLR4 QSFP28 Transceiver, MTP/MPO, 10km over SMF	MTP/MPO-12 (12fibers)
QSFP-LX4-100G	100GBASE LX4 QSFP28 Transceiver, Duplex LC, 2km over SMF and 100m over OM3 MMF	Duplex LC

Product	Description	Connector type
QSFP-100G-PCxxx (0.5M, 1M, 1.5M, 2M, 2.5M, 3M, 5M)	100GBASE Passive Copper Cable	-
QSFP-100G-ACxxx (1M, 3M, 5M, 7M, 9M)	100GBASE Active Copper Cable	-
QSFP-100G-2QPCxxx (0.5M, 1M, 2M, 3M, 4M, 5M)	100GBASE QSFP28 to 2x50G QSFP28 Passive Copper Cable	-
QSFP-100G-4SPCxxx (0.5M, 1M, 1.5M, 2M, 2.5M, 3M, 3.5M, 5M)	100GBASE QSFP28 to 4x25G SFP28 Passive Copper Cable	-
QSFP-100G-4SACxxx (1M, 3M, 5M, 7M, 9M)	100GBASE QSFP28 to 4x25G SFP28 Active Copper Cable	-
QSFP-100G-AOxxx (0.5M, 1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M)	100GBASE QSFP28 Active Optical Cable	-
QSFP-100G-2QAOxxx (1M, 3M, 5M, 7M, 10M, 20M, 30M, 50M, 70M, 100M)	100GBASE QSFP28 to 2x50G QSFP28 Active Optical Cable	-
QSFP-100G-4SAOxxx (1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M, 50M)	100GBASE QSFP28 to 4x25G SFP28 Active Optical Cable	-
QSFP-100G-PCxxx (IB) (0.5M, 1M, 1.5M, 2M, 3M)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR	-
QSFP-100G-AOxxx(IB) (1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 30M, 50M, 100M)	100GBASE QSFP28 Active Optical Cable for InfiniBand EDR	-
QSFP-100G-2QACxxx (1M, 2M, 3M, 5M, 7M, 9M)	100GBASE QSFP28 to 2x50G QSFP28 Active Copper Cable	-
SFP-100G-PCxxx (0.5M, 1M, 1.5M, 2M, 2.5M)	100GBASE SFP112 Passive Copper Cable	-
QSFP-100G-4LCAOxxx (1M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M, 50M, 70M)	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable	-
SDD-100G-AOxxx (1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M, 50M, 70M, 100M)	100GBASESFP-DD Active OpticalCable	-

QSFP-SR4-100G

The QSFP-SR4-100G Module supports link lengths of up to 70m (100m) over OM3 (OM4) Multimode Fiber with MTP/ MPO connectors. It primarily enables high-bandwidth 100G optical links over 12-fiber parallel fiber terminated with MTP/MPO multifiber connectors. QSFP-SR4-100G supports 100GBase Ethernet rate.

QSFP-PSM4-100G

TheQSFP-PSM4-100G Module supports link lengths of up to 500 meters over SMF with MTP/ MPO connectors. The 100 Gigabit Ethernet signal is carried over 12-fiber parallel fiber terminated with MTP/MPO multifiber connectors.

QSFP-DR-100G

The QSFP-DR-100G Module supports link lengths of up to 500m over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using onboard PAM4 modulation and FEC. QSFP-DR-100G interoperates with 400G transceivers that comply with IEEE 400GBASE-DR4, such as QDD-DR4-400G-Si, via fiber break-out cables.

QSFP-FR-100G

The QSFP-FR-100G Module supports link lengths of up to 2km over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using onboard PAM4 modulation and FEC. QSFP-FR-100G can also be used in applications meant for IEEE 100GBASE-DR, such as interoperability with IEEE 400GBASE-DR4, such as QSFP28DD-XDR4-400G, via fiber break-out cables.

OSFP-IR4-100G

The OSFP-IR4-100GModule supports link lengths of up to 2km over a standard pair of G.652 Single-Mode Fiber (SMF) 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.

QSFP-LR-100G

The QSFP-LR-100G Module supports link lengths of up to 10km over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using onboard PAM4 modulation and FEC.

QSFP-LR4-100G

The QSFP-LR4-100GModule supports link lengths of up to 10km over a standard pair of G.652 single-mode fiber with duplex LC connectors. It complies with the IEEE 100GBASE-LR4 specification, which does not employ the use of FEC QSFP-LR4-100Gsupports 100GBase Ethernet rate.

QSFP-LR4-100G-I

The QSFP-LR4-100G-I industrial temperature Module supports link lengths of up to 10km over a standard pair of G.652 single-mode fiber with duplex LC connectors. It complies with the IEEE 100GBASE-LR4 specification, which does not employ the use of FEC. QSFP28-100G-LR4-I supports 100GBase Ethernet rate within an industrial temperature range.

QSFP-ER4L-100G

The QSFP-ER4L-100G supports link lengths of up to 40km 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. Full 40km reach requires the use of FEC on the host platform. Without FEC, the reach is 30km.

QSFP-ZR4-100G

The QSFP28-100G-ZR4-S Module is designed for use in 100GBASE Ethernet throughput up to 80km over single mode fiber (SMF) using a wavelength of 1310nm via duplex LC connectors. Taking BOX+FPC+PCBA separate design, it has great reliability, airtightness and heat dissipation performance. This transceiver is compliant with IEEE 802.3ba 100GBASE-LR4 and IEEE 802.3bm CAUI-4 standard.

QSFP-ESR4-100G

The QSFP-ESR4-100G Module is designed for use in 100GBASE Ethernet throughput up to 200m over OM3 MMF or 300m over OM4 MMF using a wavelength of 850nm via a MTP/MPO-12 connector. This transceiver is compliant with IEEE 802.3bm 100GBASE-SR4 and CAUI-4 standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters.

QSFP-BX20-100G

The QSFP-BX20-100G Module supports link lengths of up to 20km over a standard G.652 single-mode fibers with simplex LC connectors. Full 20km reach requires the use of FEC on the host platform. It uses single-fibre bi-directional technology to transmit different wavelengths over a single fiber. Multiplexing and demultiplexing of the eight wavelengths are managed within the device. The QSFP-BX20-100G supports 100GBase Ethernet rates.

QSFP-BIDI-100G

The QSFP-BIDI-100G Module supports link lengths of up to 75m (100m/150m) over OM3 (OM4/OM5) Multimode Fiber with duplex LC connectors. It complies with the QSFP28 MSA and IEEE 802.3bm CAUI-4 electrical interface. QSFP-BIDI-100G supports 100GBase Ethernet rate.

QSFP-SR4-100G-I

The QSFP-SR4-100G-I QSFP28 Module supports link lengths of up to 70m (100m) over OM3 (OM4) Multimode Fiber with MTP/ MPO connectors. It primarily enables high-bandwidth 100G optical links over 12-fiber parallel fiber terminated with MTP/MPO multifiber connectors. QSFP-SR4-100G-I supports 100GBase Ethernet rate within an industrial temperature range.

QSFP-4W10-100G

The QSFP-4W10-100G Module supports link lengths of up to 10km over a standard pair of G.652 Single-Mode Fiber(SMF) with duplexLC connectors.The 100 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelength sare managed within the device.

QSFP-4W40-100G-E

The QSFP-4W40-100G-E supports link lengths of up to 40km 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. Full 40km reach requires the use of FEC on the host platform. Without FEC, the reach is 30km. QSFP-4W40-100G-E complies with the 100GBASE-ER4 standard within an Extended Temperature range.

QSFP-4W20-100G-I

The 100GBASE-4WDM-20 QSFP28 transceiver supports up to 20km link lengths over LC duplex SMF fiber. This transceiver is compliant with SFF-8431, SFF-8432 and IEEE 802.3ae standards. Digital diagnostics monitoring is available via a 2-wire serial interface, as specified in SFF-8472. Featuring an operating temperature range of -40。C to 85。C, this industrial fiber optic transceiver can work in harsh industrial environments.

QSFP-4W40-100G-I

The QSFP-4W40-100G-I Module supports up to 40km link lengths over LC duplex SMF fiber. This transceiver is compliant with SFF-8661, SFF-8636 and IEEE 802.3-2018 standards. Digital diagnostics monitoring is available via a 4-wire serial interface, as specified in SFF-8472. Featuring an operating temperature range of -40。C to 85。C, this industrial fiber optic transceiver can work in harsh industrial environments.

DW2-QSFP100G80-xxxx

The DW2-QSFP100G80-xxxx transceiver supports to multiple 100G links up to 80km using TDCM and EDFA over single-mode fiber (SMF) via an CS connector. PAM4 modulation technology allows for DWDM connectivity in a QSFP28 form factor on the 100G ITU DWDM wavelength grid. This transceiver is compliant with IEEE 802.3bm, QSFP28 MSA, SFF-8636 and SFF-8024 standards. this transceiver is ideal for DCI, 100G Ethernet Metro-Access over DWDM, Campus and Enterprise Links, etc.

QSFP-PLR4L-100G

The QSFP-PLR4L-100G Module is designed for use in 100GBASE Ethernet throughput up to 2km over single mode fiber (SMF) using a wavelength of 1310nm via a MTP/MPO-12 connector. This transceiver is compliant with IEEE 802.3bm 100G-PSM4 MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters.

QSFP-LR4-100GM

The QSFP-LR4-100GMModule supports link lengths of up to 10km over a standard pair of G.652 single-mode fiber with duplex LC connectors. It complies with the IEEE 100GBASE-LR4 specification, which does not employ the use of FEC. QSFP-LR4-100GMsupports 100G Ethernet and 112G OTU4 Dual Rate.

QSFP-ELR4-100GM

The QSFP-ELR4-100GMModule supports link lengths of up to 20km over a standard pair of G.652 single-mode fiber with duplex LC connectors. Full 20km reach requires the use of FEC on the host platform. It complies with the 100G LR1-20 standard and interoperates with other transceivers meeting that standard up to 20km.QSFP-ELR4-100GMsupport 100G Ethernet and 112G OTU4 Dual Rate.

QSFP-ER4-100GM

The QSFP-ER4-100GMModule supports link lengths of up to 40km 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. Full 40km reach requires the use of FEC on the host platform. Without FEC, the reach is 30km. It complies with the 100GBASE-ER4 standard and supports 100G Ethernet and 112G OTU4 Dual Rate.

QSFP-SR4-100G(IB)

The QSFP-SR4-100G(IB) Module is designed for use in 100Gb/s EDR InfiniBand systems through put up to70m over OM3 or 100m over OM4 multimode fiber (MMF) using a wavelength of 850nm via a MTP/MPO-12 connector. This transceiver is compliant with SFF-8636, IEEE Std802.3bm and 100G Ethernet standard. Digital diagnostics functions allow access to real-time operating parameters.

QSFP-PSM4-100G (IB)

TheQSFP-PSM4-100G (IB) Module is designed for use in 100Gb/s EDR InfiniBand systems throughput up to 500m single mode fiber(SMF) using a wavelength of 1310nm via an MTP/MPO-12 connector. This transceiver is compliant with SFF-8636, 100G PSM4 MSA standards. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as InfiniBand, data centers, high-performance computing networks, enterprise core and distribution layer applications.

OSFP-IR4-100GE (IB)

The OSFP-IR4-100GE (IB) Module is designed for use in 100Gb/s EDR InfiniBand systems throughput up to 2km over single mode fiber (SMF) with duplex LC connectors. This transceiver is compliant with SFF-8636, SFF-8665 and CWDM4 MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters.

QSFP-LR4-100GE (IB)

The QSFP-LR4-100GE(IB) Module is designed for use in 100Gb/s EDR InfiniBand systems throughput up to 10km single mode fiber (SMF) using a wavelength of 1310nm via a duplex LC connector. This transceiver is compliant with SFF-8661, SFF-8636, IEEE802.3 100GBASE-LR4 standards. Digital diagnostics functions are also available via the I2C interface, asspecified by the QSFP28 MSA, to allow accesstoreal-time operating parameters.

QSFP-ERL-100G

The QSFP-ERL-100G Module supports link lengths of up to 25km over SMF with duplex LC connectors.The 100G ERL QSFP28 Transceiver is designed to transmit and receive serial optical data links up to 106.25Gbps data rate by PAM4 modulation format over single-mode fiber. It is a small-form- factor hot pluggable transceiver module integrated with the high performance cooled EML laser and high sensitivity APD receiver.

QSFP-CWDM4-100G-I

The QSFP-CWDM4-100G-I Module supports link lengths of up to 2km over a single mode fiber (SMF) with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths. This transceiver is compliant to QSFP28 MSA, CWDM4 MSA and applicable portions of IEEE802.3bm. Digital diagnostics functions are also available via the 2-wire management interface, as specified in SFF-8636. Featuring an operating temperature range of -40。C to 85。C, this industrial fiber optic transceiver can work in harsh industrial environments.

QSFP-ZR4-100G-I

The QSFP-ZR4-100G-I Module is designed for use in 100GBASE Ethernet throughput up to 80km over single mode fiber (SMF) using a wavelength of 1310nm via duplex LC connectors. Taking BOX+FPC+PCBA separate design, it has great reliability, airtightness and heat dissipation performance. This transceiver is compliant with IEEE 802.3ba 100GBASE-ZR4 standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as telecom, service provider applications and also 5G wireless network, suitable for both outdoor and indoor deployments.

QSFP-SR4-100GM

The QSFP-SR4-100GMModule is designed for use in 100GBASE Ethernet and 4x 28G OTN client interfaces throughput up to 70m over OM3 multimode fiber (MMF) or 100m over OM4 multimode fiber (MMF) using a wavelength of 850nm via MPO12 connectors. This transceiver is compliant to IEEE 802.3 100GBASE-SR4 and 112G Fibre Channel. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as 100G Ethernet, telecom, service provider applications and 5G wireless network.

QSFP-ER-100G

The QSFP-ER-100G Module is designed for use in100GBASE Ethernet throughput up to 40km mover single mode fiber (SMF) using a wavelength of 1310nm via duplex LC connectors. The transceiver include sagear box chip to convert the 4x 25G NRZ electrical signals to a 1x 100G PAM4 optical signal. Digital diagnostics functions are also available via the I2C interface, asspecified by the QSFP28 MSA, toal low accesstoreal-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as DataCenter, 100GEthernet.

QSFP-LR-100G-27

The 100GBASE-LR Single Lambda QSFP28 Optical Transceiver Module is designed for use in 100GBASE Ethernet throughput up to10km over single mode fiber(SMF) using a wavelength of 1270nm via duplex LC connectors. T his transceiver iscompliant with QSFP28 MSA, IEEE802.3cd and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, asspecified by the QSFP28 MSA, to allow accesstoreal-time ope rating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in v arious applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-LR-100G-29

The 100GBASE-LR Single Lambda QSFP28 Optical Transceiver Module is designed for use in 100GBASE Ethernet throughput upto 10km over single mode fiber (SMF) using a wavelength of 1270nm via duplex LC connectors. This transceiver is compliant with QSFP28 MSA, IEEE 802.3cd and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-LR-100G-33

The 100GBASE-LR Single Lambda QSFP28 Optical Transceiver Module is designed for use in 100GBASE Ethernet throughput upto 10km over single mode fiber (SMF) using a wavelength of 1270nm via duplex LC connectors. This transceiver is compliant with QSFP28 MSA, IEEE 802.3cd and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-FR-100G-27

The QSFP-FR-100G-27 Module is designed for use in 100GBASE Ethernet throughput up to 2km over single mode fiber (SMF) using a wavelength of 1270nm via duplex LC connectors. This transceiver is compliant with QSFP28 MSA, IEEE 802.3cu and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-FR-100G-29

The QSFP-FR-100G-29 Module is designed for use in 100GBASE Ethernet throughput up to 2km over single mode fiber (SMF) using a wavelength of 1290nm via duplex LC connectors. This transceiver is compliant with QSFP28 MSA, IEEE 802.3cu and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-FR-100G-33

The QSFP-FR-100G-33 Module is designed for use in 100GBASE Ethernet throughput up to 2km over single mode fiber (SMF) using a wavelength of 1330nm via duplex LC connectors. This transceiver is compliant with QSFP28 MSA, IEEE 802.3cu and 100G Lambda MSA standard. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as Data Center, 100G Ethernet, 400G to 100G breakout applications.

QSFP-BX10-100G

The QSFP-BX10-100G Module provides 100GBase-BX throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1271nm-TX/1331nm-RX or 1331nm-TX/1271nm-RX via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complimenting wavelengths. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as 100G Ethernet, data center, and storage area networks applications.

QSFP-BX30-100G

The QSFP-BX30-100G Module provides 100GBase-BX throughput up to 30km over single-mode fiber (SMF) using a wavelength of 1304.58nm-TX/1309.14nm-RX or 1309.14nm-TX/1304.58nm-RX via an LC connector. The bidirectional unit must be used with another transceiver or network appliance of complimenting wavelengths. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install hot swappable transceiver is suitable to be used in various applications, such as 100G Ethernet, data center, and storage area networks applications.

QSFP-eER4-100G

The QSFP-eER4-100G Module is designed for 80km optical communication applications. This module contains 4-lane optical transmitter, 4-lane optical receiver and module management block including 2 wire serial inter-face. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as 100G telecom connections, data centers, high-performance computing networks,enterprise core and distribution layer applications.

QSFP-MBIDI-100G

The QSFP-MBIDI-100G Module is designed for use in 40/100G Ethernet throughput up to 150m over OM5 multimode fiber (MMF) using a wavelength of 850nm via Duplex LC connectors. This transceiver is compliant with the QSFP28 MSA, SWDM MSA and IEEE802.3bm CAUI-4 electrical interface. Digital diagnostics functions are also available via the I2C interface, as specified by the QSFP28 MSA, to allow access to real-time operating parameters. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as 40/100G Ethernet, telecom, service provider applications and 5G wireless network.

QSFP-PLR4-100G

The 100GBASE-PLR4 optical transceiver module supports link lengths of up to 10km over single-mode fiber (SMF) with MTP/MPO-12 connector. This transceiver is compliant with SFF-8636 and QSFP28 MSA standards. The built-in digital diagnostics monitoring (DDM) allows access to real-time operating parameters. It is suitable for 100G ethernet and data center interconnect applications.

QSFP-LX4-100G

The 100GBASE-LX4 module supports link lengths of up to 2km over SMF and 100m on OM3 MMF with Duplex LC connector. This transceiver is a fully integrated 4 x 25.78Gbit/s optical transceiver module that consists of 1270nm\ 1290nm\ 1310nm\ 1330nm wavelength cooled DFB LDs, Driver ICs, PIN photo-diodes, and clock and data recovery (CDR) ICs with 25Gbit/s electrical interfaces. The built-in digital diagnostics monitoring (DDM) allows access to real-time operating parameters. It is suitable for 100G ethernet with MMF and SMF and data center interconnect applications.

QSFP-100G-PCxxx

QSFP-100G-PCxxx copper direct-attach 100GBASE cables (Figure 2) are suitable for very short links and offer a cost-effective way to establish a 100-Gigabit link between QSFP28-100G ports of switches within racks and across adjacent racks. FS currently offers passive copper cables in lengths of x= 0.5,1,1.5,2,2.5,3, and 5 meters.

Figure 2.
QSFP-100G-PCxxx cables

QSFP-100G-ACxxx

QSFP-100G-ACxxxcopper direct-attach 100GBASE cables (Figure 3)

are suitable for very short links and offer a cost-
effective way to establish a 100-Gigabit link between QSFP28-100G ports of switches within racks and across adjacent racks. FS currently offers passive copper cables in lengths of x= 1, 3, 5, 7, and 9 meters.

Figure 3.
QSFP-100G-
ACxxxcables

QSFP-100G-2QPCxxx

QSFP28–100G to two QSFP28-50G copper direct-attach breakout cables (Figure 4) are suitable for very short links and offer a cost-effective way to connect within racks and across adjacent racks. These breakout cables connect to a 100G QSFP28 port of a switch on one end and to two 50G QSFP28 ports of a switch/server on the other end.FS currently offers passive copper cables in lengths of x= 0.5, 1, 2, 3, 4, and 5 meters.

Figure 4.
QSFP-100G-2QPCxxxcables

QSFP-100G-4SPCxxx

QSFP28-100G to four SFP-25G copper direct-attach breakout cables (Figure 3) are suitable for very short links and offer a cost-effective way to connect within racks and across adjacent racks. These breakout cables connect to a 100G QSFP28 port of a switch on one end and to four 25G SFP ports of a switch/server on the other end. FS currently offers passive cables in lengths of x= 0.5,1,1.5,2,2.5,3,3.5, and 5 meters.

Figure 5.
QSFP-100G-4SPCxxxcables

QSFP-100G-4SACxxx

QSFP28-100G to four SFP-25G copper direct-attach breakout cables (Figure 6) are suitable for very short links and offer a cost-effective way to connect within racks and across adjacent racks. These breakout cables connect to a 100G QSFP28 port of a switch on one end and to four 25G SFP ports of a switch/server on the other end. FS currently offers passive cables in lengths of x= 1, 3, 5, 7, and 9 meters.

Figure 6.
QSFP-100G-4SACxxxcables

QSFP-100G-AOxxx

QSFP28-100G to QSFP28-100G AOC cables (Figure 7) 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. FS currently offers active optical cables in lengths of x=0.5,1, 2, 3, 5, 7, 10, 15, 20, 25, and 30 meters.

Figure 7.
QSFP-100G-AOxxxcables

QSFP-100G-2QAOxxx

QSFP28-100G to two QSFP28-50G AOC cables (Figure 8) 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. FS currently offers active optical cables in lengths of x=1, 3, 5, 7, 10, 20, 30, 50, 70 and 100 meters.

Figure 8.
QSFP-100G-2QAOxxxcables

QSFP-100G-4SAOxxx

QSFP28-100G to four SFP-25G AOC cables (Figure 9) 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. FS currently offers active optical cables in lengths of x=1, 2, 3, 5, 7, 10, 15, 20, 25, 30 and 50 meters.

Figure 9.
QSFP-100G-4SAOxxxcables

QSFP-100G-PCxxx (IB)

QSFP-100G-PCxxx (IB) copper direct-attach 100GBASE cables (Figure 9) are suitable for very short links and offer a cost-effective way to establish a 100-Gigabit link between QSFP28-100G ports of switches within racks and across adjacent racks. FS currently offers passive copper cables in lengths of x= 0.5, 1, 1.5, 2 and 3 meters.

Figure 9.
QSFP-100G-PCxxx (IB) cables

QSFP-100G-AOxxx(IB)

QSFP28-100G to QSFP28-100G AOC cables (Figure 10) 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. FS currently offers active optical cables in lengths of x=1, 2, 3, 5, 7, 10, 15, 20, 30, 50 and 100 meters.

Figure 10.
QSFP-100G-AOxxx (IB) cables

QSFP-100G-2QACxxx

QSFP28–100G to two QSFP28-50G copper direct-attach breakout cables (Figure 11) are suitable for very short links and offer a cost-effective way to connect within racks and across adjacent racks. These breakout cables connect to a 100G QSFP28 port of a switch on one end and to two 50G QSFP28 ports of a switch/server on the other end. FS currently offers passive copper cables in lengths of x= 1, 2, 3, 5, 7 and 9 meters.

Figure 11.
QSFP-100G-2QACxxxcables

SFP-100G-PCxxx

The SFP112 to SFP112 Direct Attach Cable (Figure 12) operates over passive copper, which requires no additional power to ensure quality connectivity. This cable is compliant with CMIS Rev5.0 and SFF-8024 standards. It provides a cost-effective way to establish a 100-Gigabit link between SFP12-100G ports of switches within racks and across adjacent racks. FS currently offers passive copper cables in lengths of x= 0.5, 1, 1.5, 2 and 2.5meters.

Figure 12.
SFP-100G-PCxxx cables

QSFP-100G-4LCAOxxx

100G QSFP28 to 4 duplex LC Breakout Active Optical Cable (Figure 13) operates over Multi-Mode Fiber (MMF). This breakout cable is compliant with SFF-8436, SFF-8431 and QSFP MSA standards.

It provides a connection of a 100G QSFP28 port on one end and to four duplex LC connectors on the other end and is suitable for quick and simple connections within racks and across adjacent racks.

FS currently offers passive copper cables in lengths of x= 1, 3, 5, 7, 10, 15, 20, 25, 30, 50 , and 70 meters.

Figure 13.

QSFP-100G-4LCAOxxxcables

SDD-100G-AOxxx

100G SFP-DD Active Optical Cable (Figure 14) operates over OM4 Multi-Mode Fiber (MMF). This AOC cable is compliant with SFP-DD MSA and RoHS standards. It provides a cost-efficient solution as compared to using discrete optical transceivers and optical patch cables and is suitable for 100Gbps connections within racks and across adjacent racks. FS currently offers passive copper cables in lengths of x= 1, 3, 5, 7, 10, 15, 20, 25, 30, 50 , and 70 meters.

Figure 14.

SDD-100G-AOxxx cables

Product Specifications

Table 2 shows the key electrical characteristics for the 100G QSFP28 modules.

Table 2. Electrical specifications

Product	Description	Nominal datarate (Gbs)	High-speed electrical	Link meter
QSFP-SR4-100G	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF	103.125Gbps	100G CAUI-4	100m
QSFP-PSM4-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 500m over SMF	103.125Gbps	100G CAUI-4	500m
QSFP-DR-100G	100GBASE DR QSFP28 Transceiver, LC, 500m over SMF	103.125Gbps	100G CAUI-4	500m
QSFP-FR-100G	100GBASE FR QSFP28 Transceiver, LC, 2km over SMF	103.125Gbps	100G CAUI-4	2km
OSFP-IR4-100G	100GBASE CWDM4 QSFP28 Transceiver, LC, 2km over SMF	103.125Gbps	100G CAUI-4	2km
QSFP-LR-100G	100GBASE LR QSFP28 Transceiver, LC, 10km over SMF	103.125Gbps	100G CAUI-4	10km
QSFP-LR4-100G	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF	103.125Gbps	100G CAUI-4	10km
QSFP-LR4-100G-I	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF, I-Temp	103.125Gbps	100G CAUI-4	10km
QSFP-ERL-100G	100GBASE ERL QSFP28 Transceiver, LC, 25km over SMF	106.25Gbps	100G CAUI-4	25km
QSFP-ER4L-100G	100GBASE ER4 QSFP28 Transceiver, LC, 40km over SMF	103.125Gbps	100G CAUI-4	40km
QSFP-ZR4-100G	100GBASE ZR4 QSFP28 Transceiver, LC, 80km over SMF	103.125Gbps	100G CAUI-4	80km
QSFP-ESR4-100G	100GBASE ESR4 QSFP28 Transceiver, MTP/MPO, 300m over MMF	103.125Gbps	100G CAUI-4	300m
QSFP-BX20-100G	100G BX20 QSFP28 Transceiver, Simplex LC, 20km over SMF	103.125Gbps	100G CAUI-4	20km
QSFP-BIDI-100G	100G-SR SWDM4 BiDi QSFP28 Transceiver, LC, 100m OM4 MMF	103.125Gbps	100G CAUI-4	100m
QSFP-SR4-100G-I	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF, I-Temp	103.125Gbps	100G CAUI-4	100m

Product	Description	Nominal datarate (Gbs)	High-speed electrical	Link meter
QSFP-4W10-100G	100GBASE 4WDM-10 QSFP28 Transceiver LC, 10km over SMF	103.125Gbps	100G CAUI-4	10km
QSFP-4W40-100G-E	100GBASE ER4L Transceiver, 40km over SMF, duplex, LC, E-Temp	103.125Gbps	100G CAUI-4	40km
QSFP-4W20-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 20km over SMF, I-Temp	103.125Gbps	100G CAUI-4	20km
QSFP-4W40-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 40km over SMF, I-Temp	103.125Gbps	100G CAUI-4	20km
DW2-QSFP100G80-xxxx	100GBASE DWDM QSFP28 Transceiver, CS, 80km over SMF	103.125Gbps	100G CAUI-4	80km
QSFP-PLR4L-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 2km over SMF	103.125Gbps	100G CAUI-4	2km
QSFP-LR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 10km over SMF	Dual rate 103.125Gbps and 112Gbps	100G CAUI-4	10km
QSFP-ELR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 20km over SMF	Dual rate 103.125Gbps and 112Gbps	100G CAUI-4	20km
QSFP-ER4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 40km over SMF	Dual rate 103.125Gbps and 112Gbps	100G CAUI-4	40km
QSFP-SR4-100G (IB)	100GBASE SR4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 100m over MMF	103.125Gbps	100G CAUI-4	100m
QSFP-PSM4-100G (IB)	100GBASE PSM4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 500m over SMF	103.125Gbps	100G CAUI-4	500m
OSFP-IR4-100GE (IB)	100GBASE IR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 2km over SMF	103.125Gbps	100G CAUI-4	2km
QSFP-LR4-100GE (IB)	100GBASE LR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 10km over SMF	103.125Gbps	100G CAUI-4	10km
QSFP-CWDM4-100G-I	100GBASE IR4 QSFP28 Transceiver, Duplex LC, 2km over SMF	103.1Gbps	100G CAUI-4	2km
QSFP-ZR4-100G-I	100GBASE ZR4 QSFP28 Transceiver, Duplex QSFP-ZR4-100G-I LC, 80km over SMF	103.1Gbps	100G CAUI-4	80km
QSFP-SR4-100GM	100GBASE SR4 and 112GBASE OTU4 QSFP28 Transceiver, MPO-12, 100m over MMF	Dual Rate 103.1Gbps and 112Gbps	100G CAUI-4	100m

Product	Description	Nominal datarate (Gbs)	High-speed electrical	Link meter
QSFP-ER-100G	100GBASE ER QSFP28 Transceiver, Duplex LC, 40km over SMF	100Gbps	100G CAUI-4	40km
QSFP-LR-100G-27	100GBASE-LR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 10km over SMF	106.25Gbps	100G CAUI-4	10km
QSFP-LR-100G-29	100GBASE-LR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 10km over SMF	106.25Gbps	100G CAUI-4	10km
QSFP-LR-100G-33	100GBASE-LR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 10km over SMF	106.25Gbps	100G CAUI-4	10km
QSFP-FR-100G-27	100GBASE FR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 2km over SMF	100Gbps	100G CAUI-4	2km
QSFP-FR-100G-29	100GBASE FR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 2km over SMF	100Gbps	100G CAUI-4	2km
QSFP-FR-100G-33	100GBASE FR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 2km over SMF	100Gbps	100G CAUI-4	2km
QSFP-BX10-100G	100G BX10 QSFP28 Transceiver, Simplex LC, 10km over SMF	106.25Gbps	100G CAUI-4	10km
QSFP-BX30-100G	100G BX30 QSFP28 Transceiver, Simplex LC, 30km over SMF	106.25Gbps	100G CAUI-4	30km
QSFP-eER4-100G	100GBASE ER4 QSFP28 Transceiver, Duplex LC, 60km over SMF	103.125Gbps	100G CAUI-4	60km
QSFP-MBIDI-100G	40/100GBASE QSFP28 Transceiver, Duplex LC, 100m over MMF	100Gbps	100G CAUI-4	100m
QSFP-PLR4-100G	100GBASE PLR4 QSFP28 Transceiver, MTP/MPO, 10km over SMF	103.125Gbps	100G CAUI-4	10km
QSFP-LX4-100G	100GBASE LX4 QSFP28 Transceiver, Duplex LC, 2km over SMF and 100m over OM3 MMF	100Gbps	100G CAUI-4	2km/100m

Product	Description	Nominal datarate (Gbs)	High-speed electrical	Link meter
QSFP-100G-PCxx (0.5M, 1M, 1.5M, 2M, 2.5M, 3M, 5M)	100GBASE Passive Copper Cable	100Gbps	-	0.5, 1, 1.5, 2, 2.5, 3,5
QSFP-100G-ACxxx (1M, 3M, 5M, 7M, 9M)	100GBASE Active Copper Cable	100Gbps	-	1, 3, 5, 7, 9
QSFP-100G-2QPCxxx (0.5M, 1M, 2M, 3M, 4M, 5M)	100GBASE QSFP28 to 2xQSFP2850G Passive Copper Splitter Cables	100Gbps	-	0.5, 1, 2, 3, 4, 5
QSFP-100G-4SPCxxx (0.5M, 1M, 1.5M, 2M, 2.5M, 3M, 3.5M, 5M)	100GBASE QSFP28 to 4xSFP25G Passive Copper Splitter Cables	100Gbps	-	0.5, 1, 1.5, 2, 2.5, 3,5
QSFP-100G-4SACxxx (1M, 3M, 5M, 7M, 9M)	100GBASE QSFP28 to 4xSFP25G Active Copper Splitter Cables	100Gbps	-	1, 3, 5, 7, 9
QSFP-100G-AOxxx (0.5M, 1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M)	100GBASE QSFP28 Active Optical Cables	100Gbps	100G CAUI-4	0.5, 1, 2, 3, 5, 7, 10, 15, 20, 25, 30
QSFP-100G-2QAOxxx (1M, 3M, 5M, 7M, 10M, 20M, 30M, 50M, 70M, 100M)	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables	100Gbps	100G CAUI-4	1, 3, 5, 7, 10, 20, 30, 50, 70, 100
QSFP-100G-4SAOxxx (1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M, 50M)	100GBASE QSFP28 to 4x25G SFP28 Active Optical Cable	100Gbps	100G CAUI-4	1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 50
QSFP-100G-PCxxx (IB) (0.5M, 1M, 1.5M, 2M, 3M)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR	100Gbps	100G CAUI-4	0.5, 1, 1.5, 2, 2.5, 3
QSFP-100G-AOxxx(IB) (1M, 2M, 3M, 5M, 7M, 10M, 15M, 20M, 30M, 50M, 100M)	100GBASE QSFP28 Active Optical Cable for InfiniBand EDR	100Gbps	100G CAUI-4	1, 2, 3, 5, 7, 10, 15, 20, 30, 50, 100
QSFP-100G-2QACxxx (1M, 2M, 3M, 5M, 7M, 9M)	100GBASE QSFP28 to 2x50G QSFP28 Active Copper Cable	100Gbps	-	1, 2, 3, 5, 7, 9
SFP-100G-PCxxx (0.5M, 1M, 1.5M, 2M, 2.5M)	100GBASE SFP112 Passive Copper Cable	100Gbps	-	0.5, 1, 1.5, 2, 2.5
QSFP-100G-4LCAOxxx (1M, 3M, 5M, 7M, 10M, 15M, 20M, 25M, 30M, 50M, 70M)	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable	100Gbps	-	1, 3, 5, 7, 10, 15,20, 25, 30, 50, 70
SDD-100G-AOxxx (1M,2M,3M,5M,7M,10M, 15M,20M,25M, 30M,50M, 70M)	100GBASEQSFP-DD ActiveOpticalCable	100Gbps	-	1,2,3,5,7,10,15, 20,25,30,50,70

Table 3 shows the key optical characteristics for the 100G QSFP28 modules.

Table 3. Optical specifications

Product	Description	Transmit Power (dBm) per lane		Receive Power (dBm) per lane		Transmit and Receive Wavelength (nm)
		Minimum	Maximum	Minimum	Maximum	
QSFP-SR4-100G	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF	-8.4	2.4	-10.3	4.5	850
QSFP-PSM4-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 500m over SMF	-9.4	2	-12.66	2	1310
QSFP-DR-100G	100GBASE DR QSFP28 Transceiver, LC, 500m over SMF	-2.9	4	-5.9	4	1310
QSFP-FR-100G	100GBASE FR QSFP28 Transceiver, LC, 2km over SMF	-2.4	4	-6.4	4.5	1310
OSFP-IR4-100G	100GBASE CWDM4 QSFP28 Transceiver, LC, 2km over SMF	-6.5	2.5	-11.5	2.5	1310
QSFP-LR-100G	100GBASE LR QSFP28 Transceiver, LC, 10km over SMF	-1.4	4.5	-7.7	4.5	1310
QSFP-LR4-100G	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF	-4.3	4.5	-10.6	4.5	1310
QSFP-LR4-100G-I	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF, I-Temp	-4.3	4.5	-10.6	4.5	1310

Product	Description	Transmit Power (dBm) per lane		Receive Power (dBm) per lane		Transmit and Receive Wavelength (nm)
		Minimum	Maximum	Minimum	Maximum	
QSFP-ERL-100G	100GBASE ERL QSFP28 Transceiver, LC, 25km over SMF	0	5.6	-13.5	-2.6	1310
QSFP-ER4L-100G	100GBASE ER4 QSFP28 Transceiver, LC, 40km over SMF	-2.9	4.5	-20.9	-4.9	1310
QSFP-ZR4-100G	100GBASE ZR4 QSFP28 Transceiver, LC, 80km over SMF	2	6.5	-28	2	1310
QSFP-ESR4-100G	100GBASE ESR4 QSFP28 Transceiver, MTP/MPO, 300m over MMF	-8.4	2.4	-10.3	2.4	850
QSFP-BX20-100G	100G BX20 Transceiver, Simplex LC, 20km over SMF	-4.3	4.5	-14.5	4.5	1280 (Tx) 1310 (Rx)
QSFP-BIDI-100G	100G-SR SWDM4 BiDi QSFP28 Transceiver, LC, 100m OM4 MMF	-5.5	3	-9.5	3.4	850
QSFP-SR4-100G-I	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF, I-Temp	-8.4	2.4	-10.3	2.4	850
QSFP-4W10-100G	100GBASE 4WDM-10 QSFP28 Transceiver, LC, 10km over SMF	-6.5	2.5	-13	2.5	1310
QSFP-4W40-100G-E	100GBASE ER4L Transceiver, LC, 40km over SMF, duplex, E-Temp	-2.5	6.5	-20.5	-3.5	1310
QSFP-4W20-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 20km over SMF, I-Temp	-4.3	4.5	-14.5	4.5	1310
QSFP-4W40-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 40km over SMF, I-Temp	-2.5	6.5	-20.5	-3.5	1310
DW2-QSFP100G80-xxxx	100GBASE DWDM QSFP28 Transceiver, CS, 80km over SMF	-1	4	-13	6	1529.55 to 1567.13

Product	Description	Transmit Power (dBm) per lane		Receive Power (dBm) per lane		Transmit and Receive Wavelength (nm)
		Minimum	Maximum	Minimum	Maximum	
QSFP-PLR4L-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 2km over SMF	-9.4	2	-12.66	2	1310
QSFP-LR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 10km over SMF	-4.3（100G）-0.6（112G）	4.5（112G）4（112G）	-8.6（100G）-8.4（112G）	4.5	1310
QSFP-ELR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 20km over SMF	-1.0（100G）0（112G）	4.5（112G）4（112G）	-9.5（100G）-9.0（112G）	4.5	1310
QSFP-ER4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 40km over SMF	-2.5（100G）-1（112G）	2.9（112G）3.3（112G）	-15（100G）-19（112G）	2.9	1310
QSFP-SR4-100G(IB)	100GBASE SR4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 100m over MMF	-8.4	2.4	-10.3	4.5	850
QSFP-PSM4-100G(IB)	100GBASE PSM4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 500m over SMF	-9.4	2	-12.66	2	1310
OSFP-IR4-100GE (IB)	100GBASE IR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 2km over SMF	-6.5	2.5	-11.5	2.5	1310
QSFP-LR4-100GE (IB)	100GBASE LR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 10km over SMF	-4.3	4.5	-10.6	4.5	1310
QSFP-CWDM4-100G-I	100GBASE IR4 QSFP28 Transceiver, Duplex LC, 2km over SMF	-6.5	2.5	-11.5	2.5	1310
QSFP-ZR4-100G-I	100GBASE ZR4 QSFP28 Transceiver, Duplex LC, 80km over SMF	2.0	6.5	-28	-5	1310
QSFP-SR4-100GM	100GBASE SR4 and 112GBASE OTU4 QSFP28 Transceiver, MPO-12, 100m over MMF	-8.4	2.4	-10.3	2.4	850

Product	Description	Transmit Power (dBm) per lane		Receive Power (dBm) per lane		Transmit and Receive Wavelength (nm)
		Minimum	Maximum	Minimum	Maximum	
QSFP-ER-100G	100GBASE ER QSFP28 Transceiver, Duplex LC, 40km over SMF	1.7	7.1	-16	-3.4	1310
QSFP-LR-100G-27	100GBASE-LR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 10km over SMF	-1.9	4.8	-8.2	4.8	1270
QSFP-LR-100G-29	100GBASE-LR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 10km over SMF	-1.9	4.8	-8.2	4.8	1290
QSFP-LR-100G-33	100GBASE-LR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 10km over SMF	-1.9	4.8	-8.2	4.8	1330
QSFP-FR-100G-27	100GBASE FR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 2km over SMF	-3.1	4	-7.1	4	1270
QSFP-FR-100G-29	100GBASE FR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 2km over SMF	-3.1	4	-7.1	4	1290
QSFP-FR-100G-33	100GBASE FR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 2km over SMF	-3.1	4	-7.1	4	1330
QSFP-BX10-100G	100GBASE BX10 QSFP28 Transceiver, Simplex LC, 10km over SMF	-1.9	4.8	-8.2	4.8	1271 (TX) 1331 (RX) / 1331 (TX) 1271 (RX)
QSFP-BX30-100G	100GBASE BX30 QSFP28 Transceiver, Simplex LC, 30km over SMF	0	5.6	-14.7	3.4	1304.58(TX) 1309.14 (RX) /1309.14(TX) 1304.58(RX)
QSFP-eER4-100G	100GBASE ER4 QSFP28 Transceiver, Duplex LC, 60km over SMF	1	6	-30	-7	1310
QSFP-MBIDI-100G	40/100GBASE QSFP28 Transceiver, Duplex LC, 100m over MMF	40G: -7.5 100G: -7.5	40G: 3 100G: 2	40G: 2.4 100G: 3.4	40G: 3.8 100G: 4.4	850
QSFP-PLR4-100G	100GBASE PLR4 QSFP28 Transceiver, MTP/MPO, 10km over SMF	-6	2	-12	2.5	1310
QSFP-LX4-100G	100GBASE LX4 QSFP28 Transceiver, Duplex LC, 2km over SMF and 100m over OM3 MMF	-3	4.5	-13.7	2.5	1271, 1291, 1311, 1331

Table 4 shows the mechanical characteristics for the 100G QSFP28 cables.

Table 4. Mechanical specifications

Parameter	Product	Weight
Module dimension with pull tab	(H x W x D) 8.5 x 18.35 x 123.41 mm	
Module weight (Max)	Optical cables	72 g
	QSFP-100G-PC005	311 g
	QSFP-100G-PC01	311 g
	QSFP-100G-PC015	233 g
	QSFP-100G-PC02	260 g
	QSFP-100G-PC025	280 g
	QSFP-100G-PC03	311 g
	QSFP-100G-PC05	520 g
	QSFP-100G-AC01	208 g
	QSFP-100G-AC03	280 g
	QSFP-100G-AC05	544 g
	QSFP-100G-AC7	624 g
	QSFP-100G-AC09	960 g
	QSFP-100G-2QPC005	160 g
	QSFP-100G-2QPC01	192 g
	QSFP-100G-2QPC02	224 g
	QSFP-100G-2QPC03	256 g
	QSFP-100G-2QPC04	288 g
	QSFP-100G-2QPC05	320 g
	QSFP-100G-4SPC005	344 g
	QSFP-100G-4SPC01	344 g

Parameter	Product	Weight
Module weight (Max)	QSFP-100G-4SPC015	416 g
	QSFP-100G-4SPC02	416 g
	QSFP-100G-4SPC025	528 g
	QSFP-100G-4SPC03	528 g
	QSFP-100G-4SPC035	528 g
	QSFP-100G-4SPC05	960 g
	QSFP-100G-4SAC01	467 g
	QSFP-100G-4SAC03	480 g
	QSFP-100G-4SAC05	492 g
	QSFP-100G-4SAC07	505 g
	QSFP-100G-4SAC09	518 g
	QSFP-100G-AO005	120 g
	QSFP-100G-AO01	120 g
	QSFP-100G-AO02	240 g
	QSFP-100G-AO03	280 g
	QSFP-100G-AO05	480 g
	QSFP-100G-AO07	720 g
	QSFP-100G-AO10	960 g
	QSFP-100G-AO15	1120 g
	QSFP-100G-AO20	1280 g
	QSFP-100G-AO25	1520 g
	QSFP-100G-AO30	1760 g
	QSFP-100G-2QAO01	373 g

Parameter	Product	Weight
Module weight (Max)	QSFP-100G-2QAO03	453 g
	QSFP-100G-2QAO05	613 g
	QSFP-100G-2QAO07	773 g
	QSFP-100G-2QAO10	1013 g
	QSFP-100G-2QAO20	1813 g
	QSFP-100G-2QAO30	2453 g
	QSFP-100G-2QAO50	3093 g
	QSFP-100G-2QAO70	3733 g
	QSFP-100G-2QAO100	4773 g
	QSFP-100G-4SAO01	160 g
	QSFP-100G-4SAO02	200 g
	QSFP-100G-4SAO03	240 g
	QSFP-100G-4SAO05	280 g
	QSFP-100G-4SAO07	400 g
	QSFP-100G-4SAO10	560 g
	QSFP-100G-4SAO15	840 g
	QSFP-100G-4SAO20	1120 g
	QSFP-100G-4SAO25	1400 g
	QSFP-100G-4SAO30	1680 g
	QSFP-100G-4SAO50	2800 g
	QSFP-100G-PC005E (IB)	248 g
	QSFP-100G-PC01E (IB)	304 g
	QSFP-100G-PC015E (IB)	360 g
	QSFP-100G-PC02E (IB)	472 g

Parameter	Product	Weight
Module weight (Max)	QSFP-100G-PC03E (IB)	528 g
	QSFP-100G-AO01 (IB)	120 g
	QSFP-100G-AO02 (IB)	240 g
	QSFP-100G-AO03 (IB)	280 g
	QSFP-100G-AO05 (IB)	480 g
	QSFP-100G-AO07 (IB)	720 g
	QSFP-100G-AO10 (IB)	960 g
	QSFP-100G-AO15 (IB)	1120 g
	QSFP-100G-AO20 (IB)	1280 g
	QSFP-100G-AO30 (IB)	1760 g
	QSFP-100G-AO50 (IB)	1920 g
	QSFP-100G-AO100 (IB)	2080 g
	QSFP-100G-2QAC01	245g
	QSFP-100G-2QAC02	339g
	QSFP-100G-2QAC03	433g
	QSFP-100G-2QAC05	706g
	QSFP-100G-2QAC07	1302g
	QSFP-100G-2QAC09	1648g
	SFP-100G-PC005	56.6 g
	SFP-100G-PC01	76.6g
	SFP-100G-PC015	96.7g
	SFP-100G-PC02	116.7g
	SFP-100G-PC025	136.7g

Parameter	Product	Weight
Module weight (Max)	QSFP-100G-4LCAO01	104 g
	QSFP-100G-4LCAO03	124 g
	QSFP-100G-4LCAO05	140 g
	QSFP-100G-4LCAO07	150 g
	QSFP-100G-4LCAO10	165 g
	QSFP-100G-4LCAO15	190 g
	QSFP-100G-4LCAO20	215 g
	QSFP-100G-4LCAO25	240 g
	QSFP-100G-4LCAO30	265 g
	QSFP-100G-4LCAO50	365 g
	QSFP-100G-4LCAO70	465 g
	SDD-100G-AO01	70 g
	SDD-100G-AO02	83 g
	SDD-100G-AO03	96 g
	SDD-100G-AO05	127 g
	SDD-100G-AO07	155 g
	SDD-100G-AO10	197 g
	SDD-100G-AO15	267 g
	SDD-100G-AO20	317 g
	SDD-100G-AO25	382 g
	SDD-100G-AO30	477 g
	SDD-100G-AO50	707 g
	SDD-100G-AO70	967 g

Q28-100G module operation temperature	0 to 85。C
Active optical cable	0 to 85。C
Copper cable operation temperature	0 to 85。C
Storage temperature	-40 to 85。C

Warranty

- Standard warranty: 5 years
- For more information for FS Returns & Refunds policy, visit https://www.fs.com/policies/warranty.html or https://www.fs.com/policies/day_return_policy.html

Ordering information

Table 5 provides the ordering information for QSFP28 100G modules and related cables.

Table 5. Ordering information

Part number	Description
QSFP28 optics modules	
QSFP-SR4-100G	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF
QSFP-PSM4-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 500m over SMF
QSFP-DR-100G	100GBASE DR QSFP28 Transceiver, LC, 500m over SMF
QSFP-FR-100G	100GBASE FR QSFP28 Transceiver, LC, 2km over SMF
QSFP-IR4-100G	100GBASE CWDM4 QSFP28 Transceiver, LC, 2km over SMF
QSFP-LR-100G	100GBASE LR QSFP28 Transceiver, LC, 10km over SMF
QSFP-LR4-100G	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF
QSFP-LR4-100G-I	100GBASE LR4 QSFP28 Transceiver, LC, 10km over SMF, I-Temp
QSFP-ERL-100G	100GBASE ERL QSFP28 Transceiver, LC, 25km over SMF
QSFP-ER4L-100G	100GBASE ER4 QSFP28 Transceiver, LC, 40km over SMF
QSFP-ZR4-100G	100GBASE ZR4 QSFP28 Transceiver, LC, 80km over SMF
QSFP-ESR4-100G	100GBASE ESR4 QSFP28 Transceiver, MTP/MPO, 300m over MMF

Part number	Description
QSFP28 optics modules	
QSFP-BX20-100G	100G BX20 QSFP28 Transceiver, Simplex LC, 20km over SMF
QSFP-BIDI-100G	100G-SR SWDM4 BiDi QSFP28 Transceiver, LC, 100m OM4 MMF
QSFP-SR4-100G-I	100GBASE SR4 QSFP28 Transceiver, MTP/MPO, 100m over OM4 MMF, I-Temp
QSFP-4W10-100G	100GBASE 4WDM-10 QSFP28 Transceiver, LC, 10km over SMF
QSFP-4W40-100G-E	100GBASE ER4L Transceiver, LC, 40km over SMF, duplex, E-Temp
QSFP-4W20-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 20km over SMF, I-Temp
QSFP-4W40-100G-I	100GBASE 4WDM QSFP28 Transceiver, LC, 40km over SMF, I-Temp
DW2-QSFP100G80-xxxx	100GBASE DWDM QSFP28 Transceiver, CS, 80km over SMF
QSFP-PLR4L-100G	100GBASE PSM4 QSFP28 Transceiver, MTP/MPO, 2km over SMF
QSFP-LR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 10km over SMF
QSFP-ELR4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 20km over SMF
QSFP-ER4-100GM	100GBASE LR4 and 112GBASE OTU4 QSFP28 Transceiver, LC, 40km over SMF
QSFP-SR4-100G(IB)	100GBASE SR4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 100m over MMF
QSFP-PSM4-100G(IB)	100GBASE PSM4 QSFP28 Transceiver for InfiniBand EDR, MTP/MPO, 500m over SMF
OSFP-IR4-100GE (IB)	100GBASE IR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 2km over SMF
QSFP-LR4-100GE (IB)	100GBASE LR4 QSFP28 Transceiver for InfiniBand EDR, Duplex LC, 10km over SMF
QSFP-CWDM4-100G-I	100GBASE IR4 QSFP28 Transceiver, Duplex LC, 2km over SMF
QSFP-ZR4-100G-I	100GBASE ZR4 QSFP28 Transceiver, Duplex LC, 80km over SMF
QSFP-SR4-100GM	100GBASE SR4 and 112GBASE OTU4 QSFP28 Transceiver, MPO-12, 100m over MMF
QSFP-ER-100G	100GBASE ER QSFP28 Transceiver, Duplex LC, 40km over SMF
QSFP-LR-100G-27	100GBASE-LR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 10km over SMF

Part number	Description
QSFP28 optics modules	
QSFP-LR-100G-29	100GBASE-LR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 10km over SMF
QSFP-LR-100G-33	100GBASE-LR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 10km over SMF
QSFP-FR-100G-27	100GBASE-FR Single Lambda 1270nm QSFP28 Transceiver, Duplex LC, 2km over SMF
QSFP-FR-100G-29	100GBASE-FR Single Lambda 1290nm QSFP28 Transceiver, Duplex LC, 2km over SMF
QSFP-FR-100G-33	100GBASE-FR Single Lambda 1330nm QSFP28 Transceiver, Duplex LC, 2km over SMF
QSFP-BX10-100G	100G BX10 QSFP28 Transceiver, Simplex LC, 10km over SMF
QSFP-BX30-100G	100G BX30 QSFP28 Transceiver, Simplex LC, 30km over SMF
QSFP-eER4-100G	100GBASE ER4 QSFP28 Transceiver, Duplex LC, 60km over SMF
QSFP-MBIDI-100G	40/100GBASE QSFP28 Transceiver, Duplex LC, 100m over MMF
QSFP-PLR4-100G	100GBASE-PLR4 QSFP28 Transceiver, MTP/MPO, 10km over SMF
QSFP-LX4-100G	100GBASE LX4 QSFP28 Transceiver, Duplex LC, 2km over SMF and 100m over OM3 MMF

Part number	Description
QSFP28 direct-attach copper cables	
QSFP-100G-PC005	100GBASE QSFP28 Passive Copper Cable, 0.5-meter
QSFP-100G-PC01	100GBASE QSFP28 Passive Copper Cable, 1-meter
QSFP-100G-PC015	100GBASE QSFP28 Passive Copper Cable, 1.5-meter
QSFP-100G-PC02	100GBASE QSFP28 Passive Copper Cable, 2-meter
QSFP-100G-PC025	100GBASE QSFP28 Passive Copper Cable, 2.5-meter
QSFP-100G-PC03	100GBASE QSFP28 Passive Copper Cable, 3-meter
QSFP-100G-PC05	100GBASE QSFP28 Passive Copper Cable, 5-meter
QSFP-100G-AC01	100GBASE QSFP28 Active Copper Cable, 1-meter
QSFP-100G-AC03	100GBASE QSFP28 Active Copper Cable, 3-meter
QSFP-100G-AC05	100GBASE QSFP28 Active Copper Cable, 5-meter
QSFP-100G-AC07	100GBASE QSFP28 Active Copper Cable, 7-meter
QSFP-100G-AC09	100GBASE QSFP28 Active Copper Cable, 9-meter
QSFP-100G-2QPC005	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 0.5-meter
QSFP-100G-2QPC01	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 1-meter
QSFP-100G-2QPC02	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 2-meter
QSFP-100G-2QPC03	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 3-meter
QSFP-100G-2QPC04	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 4-meter
QSFP-100G-2QPC05	100GBASE QSFP28 to 2xQSFP28 50G Passive Copper Cables, 5-meter
QSFP-100G-4SPC005	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 0.5-meter
QSFP-100G-4SPC01	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 1-meter
QSFP-100G-4SPC015	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 1.5-meter
QSFP-100G-4SPC02	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 2-meter

Part number	Description
QSFP28 direct-attach copper cables	
QSFP-100G-4SPC025	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 2.5-meter
QSFP-100G-4SPC03	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 3-meter
QSFP-100G-4SPC035	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 3.5-meter
QSFP-100G-4SPC05	100G QSFP28 to 4xSFP25G Passive Copper Splitter Cable, 5-meter
QSFP-100G-4SAC01	100G QSFP28 to 4xSFP25G Active Copper Splitter Cable, 1-meter
QSFP-100G-4SAC03	100G QSFP28 to 4xSFP25G Active Copper Splitter Cable, 3-meter
QSFP-100G-4SAC05	100G QSFP28 to 4xSFP25G Active Copper Splitter Cable, 5-meter
QSFP-100G-4SAC07	100G QSFP28 to 4xSFP25G Active Copper Splitter Cable, 7-meter
QSFP-100G-4SAC09	100G QSFP28 to 4xSFP25G Active Copper Splitter Cable, 9-meter
QSFP-100G-PC005(IB)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR, 0.5-meter
QSFP-100G-PC01(IB)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR, 1-meter
QSFP-100G-PC015(IB)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR, 1.5-meter
QSFP-100G-PC02(IB)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR, 2-meter
QSFP-100G-PC03(IB)	100GBASE QSFP28 Passive Copper Cable for InfiniBand EDR, 3-meter
QSFP-100G-2QAC01	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 1-meter
QSFP-100G-2QAC02	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 2-meter
QSFP-100G-2QAC03	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 2-meter
QSFP-100G-2QAC05	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 5-meter
QSFP-100G-2QAC07	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 7-meter
QSFP-100G-2QAC09	100GBASE QSFP28 to 2xQSFP28 50G Active Optical Cable, 9-meter

Part number	Description
QSFP28 active optical cables	
QSFP-100G-AO005	100G QSFP28 Active Optical Cable, 0.5-meter
QSFP-100G-AO01	100G QSFP28 Active Optical Cable, 1-meter
QSFP-100G-AO02	100G QSFP28 Active Optical Cable, 2-meter
QSFP-100G-AO03	100G QSFP28 Active Optical Cable, 3-meter
QSFP-100G-AO05	100G QSFP28 Active Optical Cable, 5-meter
QSFP-100G-AO07	100G QSFP28 Active Optical Cable, 7-meter
QSFP-100G-AO10	100G QSFP28 Active Optical Cable, 10-meter
QSFP-100G-AO15	100G QSFP28 Active Optical Cable, 15-meter
QSFP-100G-AO20	100G QSFP28 Active Optical Cable,20-meter
QSFP-100G-AO25	100G QSFP28 Active Optical Cable,25-meter
QSFP-100G-AO30	100G QSFP28 Active Optical Cable,30-meter
QSFP-100G-2QAO01	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 1-meter
QSFP-100G-2QAO03	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 3-meter
QSFP-100G-2QAO05	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 5-meter
QSFP-100G-2QAO07	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 7-meter
QSFP-100G-2QAO10	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 10-meter
QSFP-100G-2QAO20	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 20-meter
QSFP-100G-2QAO30	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 30-meter
QSFP-100G-2QAO50	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 50-meter
QSFP-100G-2QAO70	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 70-meter
QSFP-100G-2QAO100	100GBASE QSFP28 to 2xQSFP2850G Active Optical Cables, 100-meter
QSFP-100G-4SAO01	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 1-meter
QSFP-100G-4SAO02	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 2-meter

Part number	Description
QSFP28 active optical cables	
QSFP-100G-4SAO03	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 3-meter
QSFP-100G-4SAO05	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 5-meter
QSFP-100G-4SAO07	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 7-meter
QSFP-100G-4SAO10	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 10-meter
QSFP-100G-4SAO15	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 15-meter
QSFP-100G-4SAO20	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 20-meter
QSFP-100G-4SAO25	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 25-meter
QSFP-100G-4SAO30	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 30-meter
QSFP-100G-4SAO50	100GBASE QSFP28 to 4xSFP25G Active Optical Cables, 50-meter
QSFP-100G-AO01 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 1-meter
QSFP-100G-AO02 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 2-meter
QSFP-100G-AO03 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 3-meter
QSFP-100G-AO05 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 5-meter
QSFP-100G-AO07 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 7-meter
QSFP-100G-AO10 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 10-meter
QSFP-100G-AO15 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 15-meter
QSFP-100G-AO20 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 20-meter
QSFP-100G-AO30 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 30-meter
QSFP-100G-AO50 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 50-meter
QSFP-100G-AO100 (IB)	100G QSFP28 Active Optical Cable for InfiniBand EDR, 100-meter
SFP-100G-PC005	100G SFP112 Passive Direct Attach Copper Twinax Cable, 0.5-meter
SFP-100G-PC01	100G SFP112 Passive Direct Attach Copper Twinax Cable, 1-meter
SFP-100G-PC015	100G SFP112 Passive Direct Attach Copper Twinax Cable, 1.5-meter
SFP-100G-PC02	100G SFP112 Passive Direct Attach Copper Twinax Cable, 2-meter
SFP-100G-PC025	100G SFP112 Passive Direct Attach Copper Twinax Cable, 2.5-meter

Part number	Description
QSFP28 active optical cables	
QSFP-100G-4LCAO01	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 1-meter
QSFP-100G-4LCAO03	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 3-meter
QSFP-100G-4LCAO05	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 5-meter
QSFP-100G-4LCAO07	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 7-meter
QSFP-100G-4LCAO10	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 10-meter
QSFP-100G-4LCAO15	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 15-meter
QSFP-100G-4LCAO20	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 20-meter
QSFP-100G-4LCAO25	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 25-meter
QSFP-100G-4LCAO30	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 30-meter
QSFP-100G-4LCAO50	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 50-meter
QSFP-100G-4LCAO70	100G QSFP28 to 4 Duplex LC Breakout Active Optical Cable, 70-meter
SDD-100G-AO01	100G SFP-DD Active Optical Cable, 1 -meter
SDD-100G-AO02	100G SFP-DD Active Optical Cable, 2 -meter
SDD-100G-AO03	100G SFP-DD Active Optical Cable, 3 -meter
SDD-100G-AO05	100G SFP-DD Active Optical Cable, 5 -meter
SDD-100G-AO07	100G SFP-DD Active Optical Cable, 7 -meter
SDD-100G-AO10	100G SFP-DD Active Optical Cable, 10-meter
SDD-100G-AO15	100G SFP-DD Active Optical Cable, 15 -meter
SDD-100G-AO20	100G SFP-DD Active Optical Cable, 20-meter
SDD-100G-AO25	100G SFP-DD Active Optical Cable, 25 -meter
SDD-100G-AO30	100G SFP-DD Active Optical Cable, 30-meter
SDD-100G-AO50	100G SFP-DD Active Optical Cable, 50-meter
SDD-100G-AO70	100G SFP-DD Active Optical Cable, 70-meter

Regulatory and standards compliance

Standards

- SFF-8665: QSFP28+ 28 Gb/s 4X Pluggable Transceiver Solution (QSFP28)
- SFF-8636: Common Management Interface
- 802.3™-2012 IEEE Standard for Ethernet
- IEEE 802.3ba Amendment of IEEE Std 802.3
- IEEE 802.3bm Amendment of IEEE Std 802.3
- 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 Equipmet
- 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, IEC 60825-2 and Comply with 21 CFR 1040.10 and 1040.11

Table 6. Laser class for the QSFP28-100G optical modules

Product	Laser class
QSFP-SR4-100G	1
QSFP-PSM4-100G	1
QSFP-DR-100G	1
QSFP-FR-100G	1
OSFP-IR4-100G	1
QSFP-LR-100G	1
QSFP-LR4-100G	1
QSFP-LR4-100G-I	1
QSFP-ERL-100G	1
QSFP-ER4L-100G	1
QSFP-ZR4-100G	1

Product	Laser class
QSFP-ESR4-100G	1
QSFP-BX20-100G	1
QSFP-BIDI-100G	1
QSFP-SR4-100G-I	1
QSFP-4W10-100G	1
QSFP-4W40-100G-E	1
QSFP-4W20-100G-I	1
DW2-QSFP100G80-xxxx	1
QSFP-PLR4L-100G	1
QSFP-LR4-100GM	1
QSFP-ELR4-100GM	1
QSFP-ER4-100GM	1
QSFP-SR4-100G(IB)	1
QSFP-PSM4-100G(IB)	1
OSFP-IR4-100GE (IB)	1
QSFP-LR4-100GE (IB)	1
QSFP-CWDM4-100G-I	1
QSFP-ZR4-100G-I	1
QSFP-SR4-100GM	1
QSFP-ER-100G	1
QSFP-LR-100G-27	1
QSFP-LR-100G-29	1
QSFP-LR-100G-33	1
QSFP-FR-100G-27	1

Product	Laser class
QSFP-FR-100G-29	1
QSFP-FR-100G-33	1
QSFP-BX10-100G	1
QSFP-eER4-100G	1
QSFP-MBIDI-100G	1
QSFP-PLR4-100G	1
QSFP-LX4-100G	1

Additional information

For more information about 100GBASE QSFP28 optics and copper modules, contact your account manager or visit https://www.fs.com/c/fiber-optic-transceivers-9

Document history

New or revised topic	Described in	Date
100GBASE QSFP28-100G Modules Data Sheet	Updated all	13/2/2022
100GBASE QSFP28-100G Modules Data Sheet	Updated all	19/3/2023
100GBASE QSFP28-100G Modules Data Sheet	Add SFP-100G-PCxxxDAC	28/3/2023
100GBASE QSFP28-100G Modules Data Sheet	Add SDD-100G-AOxxxAOC	3/5/2023

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