

Cisco 25GBASE SFP28 Modules

Product Overview

The Cisco® 25GBASE SFP28 (Small Form-Factor Pluggable) portfolio offers customers a wide variety of high-density and low-power 25 Gigabit Ethernet connectivity options for data center and high-performance computing networks applications. The 25G Modules are based on SFP28 form factor.



25G Direct Attached Cables (DAC)



25G Active Optical Cables (AOC)



25G Short Reach (SR) Module



10/25G Cisco Short Reach (CSR) Module



10/25G Long Reach (LR) Module

Features and Benefits of Cisco 25G Modules

- Interoperable with other IEEE-compliant 25G interfaces where applicable
- Certified and tested on Cisco SFP28 ports for superior performance, quality, and reliability
- High-speed electrical interface compliant to IEEE 802.3by

Table 1. Cisco 25G Portfolio

| Product | Descriptions |
|------------------------|---|
| Cisco SFP-H25G-CU1M | 25GBASE-CR1 Copper Cable 1-meter |
| Cisco SFP-H25G-CU2M | 25GBASE-CR1 Copper Cable 2-meter |
| Cisco SFP-H25G-CU3M | 25GBASE-CR1 Copper Cable 3-meter |
| Cisco SFP-H25G-CU5M | 25GBASE-CR1 Copper Cable 5-meter |
| Cisco SFP-25G-AOC1M | 25GBASE-AOC Active Optical Cable 1-meter |
| Cisco SFP-25G-AOC2M | 25GBASE-AOC Active Optical Cable 2-meter |
| Cisco SFP-25G-AOC3M | 25GBASE-AOC Active Optical Cable 3-meter |
| Cisco SFP-25G-AOC5M | 25GBASE-AOC Active Optical Cable 5-meter |
| Cisco SFP-25G-AOC7M | 25GBASE-AOC Active Optical Cable 7-meter |
| Cisco SFP-25G-AOC10M | 25GBASE-AOC Active Optical Cable 10-meter |
| Cisco SFP-25G-SR-S | 25GBASE-SR SFP28 Module for MMF |
| Cisco SFP-10/25G-CSR-S | 10/25GBASE-CSR SFP28 Module for MMF |
| Cisco SFP-10/25G-LR-S | 10/25GBASE-LR SFP28 Module for SMF |

Cisco SFP-25G Copper Cables

Cisco SFP28 to SFP28 copper direct-attach 25GBASE-CR1 cables are suitable for very short links and offer a highly cost-effective way to establish a 25-Gigabit link between SFP28 ports of Cisco switches within racks and across adjacent racks. Cisco offers passive copper cables in lengths of x=1, 2, 3, and 5 meters.

1m and 2m cables do not require FEC on the host port; 3m cables require BASE-R FEC on the host port; 5m cables require RS-FEC.

Cisco SFP-25G Active Optical Cables

Cisco SFP28 to SFP28 Active Optical Cables are direct-attach fiber assemblies with SFP connectors. They are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. Cisco offers Active Optical Cables in lengths of 1, 2, 3, 5, 7, and 10 meters.

AOC cable require BASE-R FEC on the host ports.

Cisco SFP-25G-SR-S

The Cisco 25GBASE-SR Module supports a link length of 70/100m on OM3/4 MMF.

This module requires RS-FEC on the host ports.

Cisco SFP-10/25G-CSR-S

The Cisco 10/25GBASE-CSR Module supports a link length of up to 300/400m over OM3/4 at 10G, and up to 300/400m over OM3/4 at 25G^{*}.

This module requires RS-FEC on the host port for full reach operation at 25G. Using BASE-R FEC the module can support 70/100m over OM3/4 and with-out FEC it can support 30/50m over OM3/4 at 25G^{*}. For 10G operation FEC is not required.

^{*}Depends upon fiber quality.

Cisco SFP-10/25G-LR-S

The Cisco 10/25GBASE-LR Module supports a link length of 10 kilometers on standard Single-Mode Fiber (SMF) G.652 at both 10G and 25G.

This module requires RS-FEC on the host ports for operation at 25G.

Technical Specifications

Platform Support

Cisco 25G transceivers are supported on Cisco switches. For more details, refer to the document "[Cisco 25 Gigabit Ethernet Transceiver Modules Compatibility Matrix](#)".

Connectors and Cabling

Refer to Table 2 for cabling specifications for each 25G product.

Table 2. 25G Port Cabling Specifications

| Cisco SFP-25G | Cable Type | Cable Distance | Power Consumption (W) | Pull Tab Color |
|---------------------|-------------------------------------|----------------|-----------------------|----------------|
| Cisco SFP-H25G-CU1M | Direct-attach copper cable assembly | 1m | 1 | Beige |
| Cisco SFP-H25G-CU2M | | 2m | | Brown |
| Cisco SFP-H25G-CU3M | | 3m | | Orange |
| Cisco SFP-H25G-CU5M | | 5m | | Gray |
| Cisco SFP-25G-AOC1M | Active Optical Cable assembly | 1m | 1 | Beige |
| Cisco SFP-25G-AOC2M | | 2m | | Brown |
| Cisco SFP-25G-AOC3M | | 3m | | Orange |
| Cisco SFP-25G-AOC5M | | 5m | | Gray |

| Cisco SFP-25G | Cable Type | Cable Distance | Power Consumption (W) | Pull Tab Color |
|------------------------|------------|---------------------|-----------------------|----------------|
| Cisco SFP-25G-AOC7M | | 7m | | Blue |
| Cisco SFP-25G-AOC10M | | 10m | | Red |
| Cisco SFP-25G-SR-S | | 70/100m (OM3/OM4) | 1.5 | Beige |
| Cisco SFP-10/25G-CSR-S | | 300/400m (OM3/OM4)* | 1.5 | Peach |
| Cisco SFP-10/25G-LR-S | | 10km | 1.5 | Blue |

* Depending upon fiber quality.

Table 3. SFP28 Port Cabling Specifications

| Cisco SFP-25G | Wavelength (nm) | Cable Type | Core Size (Microns) | Modal Bandwidth | Cable Distance |
|-----------------------|-----------------|------------|---------------------|-----------------|----------------|
| Cisco SFP-25G-SR-S | 850 | MMF | 50.0 | 2000 (OM3) | 70m |
| | | | | 4700 (OM4) | 100m |
| Cisco SFP-10/25G-SR-S | 850 | MMF | 50.0 | 2000 (OM3) | 300m* |
| | | | | 4700 (OM4) | 400m* |
| Cisco SFP-10/25G-LR-S | 1310 | SMF | G.652 | - | 10km |

Table 4. Optical Transmit and Receive Specifications

| Product | Type | Transmit Power (dBm)* | | Receive Power (dBm)* | | Transmit and Receive Wavelength (nm) |
|------------------------|----------------------|-----------------------|---------|----------------------|---------|--------------------------------------|
| | | Maximum | Minimum | Maximum | Minimum | |
| Cisco SFP-25G-SR-S | 25GBASE-SR 850nm MMF | +2.4 | -8.4 | +2.4 | -10.3 | 840 to 860 |
| | 10G | +2.4 | -7.3 | +2.4 | -9.9 | |
| Cisco SFP-10/25G-CSR-S | 25G | +2.4 | -6 | +2.4 | -8.7 | 840 to 860 |
| | 10G | +0.5 | -8.2 | +0.5 | -14.4 | |
| Cisco SFP-10/25G-LR-S | 25G | +2.0 | -7 | +2 | -13.3 | 1295 to 1325 |

* Transmitter and receiver power is in average, unless specified.

**The launch power shall be the lesser of the class 1 safety limit or the maximum receive power. Class 1 laser requirements are defined by IEC 60825-1: 2001.

Connectors: Dual LC/PC connector (**SFP-25G-SR-S**, **SFP-10/25G-CSR-S** and **SFP-10/25G-LR-S**).

Note: Only connections with patch cords with PC or UPC connectors are supported. Patch cords with APC connectors are not supported. All cables and cable assemblies used must be compliant with the standards specified in the standards section.

Environmental Conditions

Operating temperature range:

- Commercial temperature range: 0 to 70°C (32 to 158°F)
- Storage temperature range: -40 to 85°C (-40 to 185°F)

Warranty

- Standard warranty: 1 year

Ordering Information

Table 5 provides the ordering information for Cisco 25G cables and transceivers.

Table 5. Ordering Information

| Description | Product Number |
|--|------------------|
| Cisco 25GBASE-CR1 SFP28 Passive Copper Cable, 1-meter | SFP-H25G-CU1M |
| Cisco 25GBASE-CR1 SFP28 Passive Copper Cable, 2-meter | SFP-H25G-CU2M |
| Cisco 25GBASE-CR1 SFP28 Passive Copper Cable, 3-meter | SFP-H25G-CU3M |
| Cisco 25GBASE-CR1 SFP28 Passive Copper Cable, 5-meter | SFP-H25G-CU5M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 1-meter | SFP-25G-AOC1M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 2-meter | SFP-25G-AOC2M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 3-meter | SFP-25G-AOC3M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 5-meter | SFP-25G-AOC5M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 7-meter | SFP-25G-AOC7M |
| Cisco 25GBASE-AOC SFP28 Active Optical Cable, 10-meter | SFP-25G-AOC10M |
| Cisco 25GBASE-SR SFP28 Module for MMF | SFP-25G-SR-S |
| Cisco 10/25GBASE-CSR SFP28 Module for MMF | SFP-10/25G-CSR-S |
| Cisco 10/25GBASE-LR SFP28 Module for SMF | SFP-10/25G-LR-S |

Regulatory and Standards Compliance

Standards:

- SFF-8402: SFP+ 28 Gb/s 1x Pluggable Transceiver Solution (SFP28) - Rev 1.0 March 30, 2014
- SFF-8472: Diagnostic Monitoring Interface for Optical Transceivers - Rev 12 August 29, 2014
- IEEE 802.3™-2015 IEEE Standard for Ethernet
- IEEE P802.3by™ D3.0, 29th March 2016
- IEEE P802.3cc™, 12th July 2017
- RoHS 6

Safety:

- Laser Class 1 21CFR-1040 LN#50 7/2001
- Laser Class 1 IEC60825-1
- Cable jacket of SFP copper modules is UL E116441 Compliant
- SFP copper cables are ELV Compliant

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Additional Information

For more information about Cisco 25GBASE SFP28 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.




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