Cisco Dense Wavelength-Division Multiplexing Small Form-Factor Pluggable Module Datasheet

Contents

The Cisco® Dense Wavelength-Division Multiplexing (DWDM) Small Form Factor Pluggable (SFP) module (Figure 1) allow enterprise companies and service providers to provide scalable and easy-to-deploy Gigabit Ethernet or Fibre Channel services in their networks.

Figure 1.
Cisco DWDM SFP Module

Main features of the Cisco DWDM SFP include:

- Support for International Telecommunication Union (ITU) 100-GHz wavelength grid
- Match for wavelength plan of Cisco 100-GHz ONS product family
- Fixed-wavelength SFP, with 40 different SFP models
- Hot-swappable input/output device that plugs into Gigabit Ethernet SFP ports or slots of a Cisco switch or router, linking the port with the network

Performance

- Supported protocols: Gigabit Ethernet, Fibre Channel 1 Gbps and 2 Gbps
- Optical link budget of 28 db

Platform Support

The Cisco DWDM SFP module is supported across a variety of Cisco switches, routers, and optical transport devices. For more details, see the document Cisco Gigabit Ethernet Transceiver Modules Compatibility Matrix.

Connectors and Cabling

- Equipment: standard SFP interface network: dual LC/PC connector

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 and power requirements

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

Dimensions

- Dimensions (H x W x D): 8.5 x 13.4 x 56.5 mm
- Cisco SFPs typically weigh less than 75 grams

Table 1 describes the electrical power interface details, and Table 2 describes optical parameters.

Table 1. Electrical power interface data

Parameter	Symbol	Minimum	Typical	Maximum	Units
Supply Current	I_s	-	200	300	mA
Surge Current	I_{Surge}	-	-	30	mA
Input Voltage	V_{cc}	3.1	3.3	3.5	V

Table 2. Optical parameters

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes and Conditions
Transmitter						
Spectral Width				0.2	nm	Full width, -20dB from maximum, with resolution bandwidth (RBW) = 0.01 nm
Transmitter Center Wavelength		x - 100	x	x + 100	pm	Refer to Table 4 for center wavelengths
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter Extinction Ratio	OMI	8.2			dB	
Transmitter Optical Output Power	P_{out}	0		4.0	dBm	Average power coupled into single-mode fiber
Receiver						
Receiver Optical Input Wavelength		1530		1565	nm	
Receiver Damage Threshold				+5	dBm	

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes and Conditions
Power-Limited Performance at OSNR of 20 dB (1 GbE or 1-Gbps FC) or 21 dB (2 Gbps FC) at 0.1-nm RBW						
Optical Input Power	Pin	-28.0		-9.0	dBm	
Dispersion Power Penalty < 1 GbE and 1 Gbps FC				3	dB	-800/+3600 ps/nm
Dispersion Power Penalty > 2 Gbps FC				3	dB	-800/+2400 ps/nm
Noise-Limited Performance at OSNR of 19 dB 1 GbE or 1 Gbps FC) or 20 dB (2 Gbps FC) at 0.1-nm RBW						
Optical Input Power	P_{in}	-22.0		-9.0	dB	
Dispersion OSNR Penalty < 1 GbE and 1 Gbps FC				2	dB	-800/+3600 ps/nm
Dispersion OSNR Penalty > 2 Gbps FC				3		-800/+2400 ps/nm

Note:

a) Parameters are specified over temperature and at end of life unless otherwise noted.

b) OSNR is measured at 0.1nm resolution bandwidth.

c) Receiver performance is always specified for a BER < 10e-12.

Note: When shorter distances of single-mode fiber are used, it might be necessary to insert an optical attenuator in the link. At least 1 dB of attenuation is required to prevent damaging the optical receiver, and at least 9 dB of attenuation are required to avoid receiver overloading conditions.

Warranty

- Standard warranty: 1 year
- Expedited replacement available via a Cisco SMARTnet® Service support contract

Ordering information

Refer to Table 3 for details on ordering Cisco DWDM SFP modules.

Table 3. Cisco DWDM SFP product information

Product Number	Description	ITU Channel
DWDM-SFP-6141	1000BASE-DWDM 1561.42 nm SFP (100-GHz ITU grid)	20
DWDM-SFP-6061=	1000BASE-DWDM 1560.61 nm SFP (100-GHz ITU grid)	21
DWDM-SFP-5979=	1000BASE-DWDM 1559.79 nm SFP (100-GHz ITU grid)	22
DWDM-SFP-5898=	1000BASE-DWDM 1558.98 nm SFP (100-GHz ITU grid)	23

Product Number	Description	ITU Channel
DWDM-SFP-5817=	1000BASE-DWDM 1558.17 nm SFP (100-GHz ITU grid)	24
DWDM-SFP-5736=	1000BASE-DWDM 1557.36 nm SFP (100-GHz ITU grid)	25
DWDM-SFP-5655=	1000BASE-DWDM 1556.55 nm SFP (100-GHz ITU grid)	26
DWDM-SFP-5575=	1000BASE-DWDM 1555.75 nm SFP (100-GHz ITU grid)	27
DWDM-SFP-5494=	1000BASE-DWDM 1554.94 nm SFP (100-GHz ITU grid)	28
DWDM-SFP-5413=	1000BASE-DWDM 1554.13 nm SFP (100-GHz ITU grid)	29
DWDM-SFP-5332=	1000BASE-DWDM 1553.33 nm SFP (100-GHz ITU grid)	30
DWDM-SFP-5252=	1000BASE-DWDM 1552.52 nm SFP (100-GHz ITU grid)	31
DWDM-SFP-5172=	1000BASE-DWDM 1551.72 nm SFP (100-GHz ITU grid)	32
DWDM-SFP-5092=	1000BASE-DWDM 1550.92 nm SFP (100-GHz ITU grid)	33
DWDM-SFP-5012=	1000BASE-DWDM 1550.12 nm SFP (100-GHz ITU grid)	34
DWDM-SFP-4931=	1000BASE-DWDM 1549.32 nm SFP (100-GHz ITU grid)	35
DWDM-SFP-4851=	1000BASE-DWDM 1548.51 nm SFP (100-GHz ITU grid)	36
DWDM-SFP-4772=	1000BASE-DWDM 1547.72 nm SFP (100-GHz ITU grid)	37
DWDM-SFP-4692=	1000BASE-DWDM 1546.92 nm SFP (100-GHz ITU grid)	38
DWDM-SFP-4612=	1000BASE-DWDM 1546.12 nm SFP (100-GHz ITU grid)	39
DWDM-SFP-4532=	1000BASE-DWDM 1545.32 nm SFP (100-GHz ITU grid)	40
DWDM-SFP-4453=	1000BASE-DWDM 1544.53 nm SFP (100-GHz ITU grid)	41
DWDM-SFP-4373=	1000BASE-DWDM 1543.73 nm SFP (100-GHz ITU grid)	42
DWDM-SFP-4294=	1000BASE-DWDM 1542.94 nm SFP (100-GHz ITU grid)	43
DWDM-SFP-4214=	1000BASE-DWDM 1542.14 nm SFP (100-GHz ITU grid)	44
DWDM-SFP-4134=	1000BASE-DWDM 1541.35 nm SFP (100-GHz ITU grid)	45
DWDM-SFP-4056=	1000BASE-DWDM 1540.56 nm SFP (100-GHz ITU grid)	46
DWDM-SFP-3977=	1000BASE-DWDM 1539.77 nm SFP (100-GHz ITU grid)	47
DWDM-SFP-3898=	1000BASE-DWDM 1538.98 nm SFP (100-GHz ITU grid)	48
DWDM-SFP-3819=	1000BASE-DWDM 1538.19 nm SFP (100-GHz ITU grid)	49
DWDM-SFP-3739=	1000BASE-DWDM 1537.40 nm SFP (100-GHz ITU grid)	50

Product Number	Description	ITU Channel
DWDM-SFP-3661=	1000BASE-DWDM 1536.61 nm SFP (100-GHz ITU grid)	51
DWDM-SFP-3582=	1000BASE-DWDM 1535.82 nm SFP (100-GHz ITU grid)	52
DWDM-SFP-3504=	1000BASE-DWDM 1535.04 nm SFP (100-GHz ITU grid)	53
DWDM-SFP-3425=	1000BASE-DWDM 1534.25 nm SFP (100-GHz ITU grid)	54
DWDM-SFP-3346=	1000BASE-DWDM 1533.47 nm SFP (100-GHz ITU grid)	55
DWDM-SFP-3268=	1000BASE-DWDM 1532.68 nm SFP (100-GHz ITU grid)	56
DWDM-SFP-3190=	1000BASE-DWDM 1531.90 nm SFP (100-GHz ITU grid)	57
DWDM-SFP-3112=	1000BASE-DWDM 1531.12 nm SFP (100-GHz ITU grid)	58
DWDM-SFP-3033=	1000BASE-DWDM 1530.33 nm SFP (100-GHz ITU grid)	59

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Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

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Regulatory and standards compliance

- Compatible with 1000BASE-X standard as specified in IEEE 802.3z
- GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable
- GR-326-CORE: Generic Requirements for Singlemode Optical Connectors and Jumper Assemblies
- GR-1435-CORE: Generic Requirements for Multi-Fiber Optical Connectors

Safety

- Laser Class I 21CFR1040 LN#50 7/2001
- Laser Class I IEC 60825-1