

SFDxx160GE0D – SFP Dual Fibre DWDM

ITU DWDM / 160km / Gigabit Ethernet

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

1. Overview

SFDxx160GE0D is a high performance transceiver module for Gigabit Ethernet data links over a single mode fibre pair. The maximum reach is 160km, with 40dB end of life (EOL) power budget. The transmitter is a cooled DWDM DFB laser, the receiver is an APD photodiode.

This transceiver module is compliant with the Small Form-factor Pluggable (SFP) Multisource Agreement (MSA) and hot pluggable. Always contact Skylane Optics' commercial agents for compatibility with different equipment platforms.

2. Features

- SFP Multi-Source Agreement compliant (INF-8074)
- Hot pluggable SFP footprint
- Serial ID functionality supported according to (SFF-8472)
- Class 1 laser safety standard IEC 60825 compliant
- Dual LC connector
- DWDM DFB transmitter
- APD receiver
- 160km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C
- Power dissipation <1.5W
- Digital diagnostics monitoring (DDM)

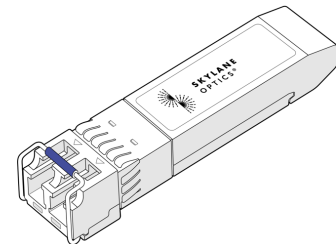


Figure 1. SFP Dual Fibre (non-binding illustration)

3. Applications

- Gigabit Ethernet
- 1x Fibre Channel

4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power ² [dBm]	Optical Receiver Sensitivity ³ [dBm]	Optical Receiver Overload ⁴ [dBm]	Power Budget ² [dB]
SFDxx160GE0D	ITU DWDM	4 to 7	≤ -36	-10	≥ 40

1. Distance is estimated assuming typical optical losses after decent quality fibre deployment; Only optical budget value is guaranteed.

2. EOL, over operating temperature range

3. Measured at 1.25Gbps, PRBS 27-1, ER=9dB, BER_≤ 1x10⁻¹²

4. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers (optical loop back) before ensuring that proper optical attenuation is used.

5. Technical Parameters

5.1. Recommended Operating Conditions

Parameter	Min	Typ	Max	Units	Notes
Storage temperature	-40		85	°C	
Operating Case Temperature	0		70	°C	
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage	3.15	3.3	3.45	V	
Power Supply Current			450	mA	

5.2. Transmitter Optical Specifications

Parameter	Min	Typ	Max	Units	Notes
Average Output Power	4		7	dBm	5
Centre Wavelength Range	1528.77		1565.50	nm	
Wavelength	$\lambda_T - 100$	λ_T	$\lambda_T + 100$	pm	6
Spectral Width			0.3	nm	
Extinction Ratio	8.2			dB	

5. Output power coupled into a 9/125 μm single-mode fibre

6. λ_T according to the ITU-T DWDM 100GHz grid, see ordering information for details

5.3. Receiver Optical Specifications

Parameter	Min	Typ	Max	Units	Notes
Receiver Sensitivity			-36	dBm	7
Receiver Overload	-10			dBm	7
Receiver Operating Range	1528		1566	nm	

7. Measured at 1.25Gbps, PRBS 2⁷-1, ER=9dB, BER_s 1x10⁻¹²

6. Transceiver Electrical Pad Layout

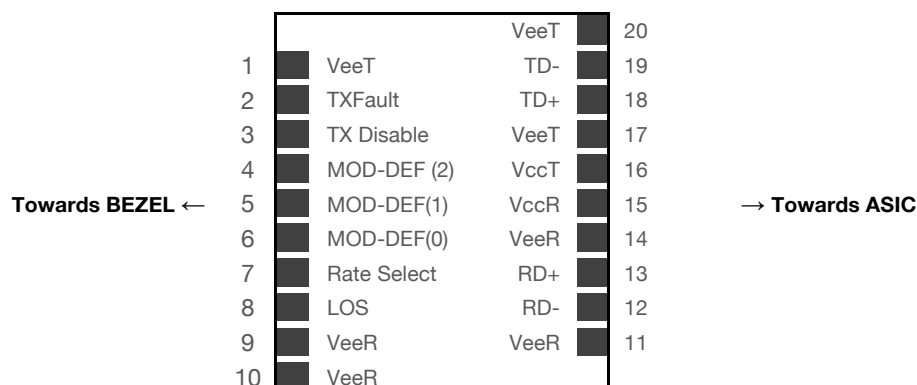


Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

(INF-8074i)

Pin Number	Name	Function
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication
3	TX_Disable	Transmitter Disable
4	MOD-DEF2	2-Wire Serial Interface Data
5	MOD-DEF1	2-Wire Serial Interface Clock
6	MOD-DEF0	Grounded in Module
7	Rate Select	Not Connected
8	LOS	Loss of Signal
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted Received Data Out
13	RD+	Received Data Out
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit Data In
19	TD-	Inverted Transmit Data In
20	VeeT	Transmitter Ground

8. EEPROM

(SFF-8472)

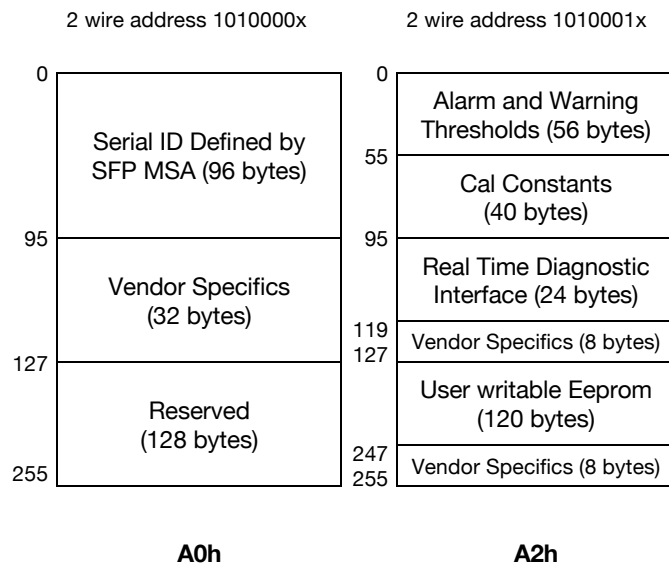


Figure 3. EEPROM of a an SFP



SFD48160GE0D	SFP dual fibre DWDM, Tx 1538.98nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD49160GE0D	SFP dual fibre DWDM, Tx 1538.19nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD50160GE0D	SFP dual fibre DWDM, Tx 1537.4nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD51160GE0D	SFP dual fibre DWDM, Tx 1536.61nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD52160GE0D	SFP dual fibre DWDM, Tx 1535.82nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD53160GE0D	SFP dual fibre DWDM, Tx 1535.04nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD54160GE0D	SFP dual fibre DWDM, Tx 1534.25nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD55160GE0D	SFP dual fibre DWDM, Tx 1533.47nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD56160GE0D	SFP dual fibre DWDM, Tx 1532.68nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD57160GE0D	SFP dual fibre DWDM, Tx 1531.9nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD58160GE0D	SFP dual fibre DWDM, Tx 1531.12nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD59160GE0D	SFP dual fibre DWDM, Tx 1530.33nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD60160GE0D	SFP dual fibre DWDM, Tx 1529.55nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM
SFD61160GE0D	SFP dual fibre DWDM, Tx 1528.77nm (DWDM DFB), Rx (APD), maximum distance 160km, power budget 40dB, Gigabit Ethernet, LC connector, 0°C to 70°C, DDM

10. Document Revision Information

Revision	Description
A	Initial release

Skylane Optics supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:
support@skylaneoptics.com

**Beyond
Quality**

**Reliable
Alliance**

**Performing
Smartly**