

# SFDxx040PA0D – SFP Dual Fibre DWDM

## ITU DWDM / 40km / 2.67Gb Multirate

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

SFDxx040PA0D is a high performance transceiver module for 100 Mbps to 2.67 Gbps data links over a singlemode fiber pair. The maximum reach is 40km, for a 17dB end of life (EOL) power budget. The emitter is a DWDM DFB laser, the receiver a PIN 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
- Data Rate up to 2.67Gbps
- 40km point-to-point transmission on singlemode fibre
- Operating temperature range 0°C to 70°C
- Low power dissipation (<1.5W)
- Digital diagnostics monitoring (DDM)

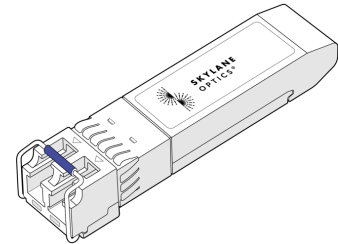


Figure 1. SFP Dual Fiber ITU DWDM (non-binding illustration)

## 3. Applications

- Storage, 2x Fibre channel, 1x Fibre channel
- Datacom Ethernet, Fast Ethernet, Gigabit Ethernet
- Telecom SONET/SDH, SONET OC-48/ SDH STM-16, SONET OC-12 / SDH STM-4, SONET OC-3/ SDH STM-1

## 4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power <sup>2</sup> [dBm]	Optical Receiver Sensitivity <sup>3</sup> [dBm]	Optical Receiver Overload <sup>4</sup> [dBm]	Power Budget <sup>2</sup> [dB]
SFDxx040PA0D	ITU DWDM	0 to 5	≤ -17	-3	≥ 17

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

2. EOL, over operating temperature range

3. Measured at OC-48

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	0		5	dBm	5
Center Wavelength	1528		1564	nm	
Optical Extinction Ratio ER	8.2			dB	
Spectral Width			0.3	nm	

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

### 5.3. General Specifications

Parameter	Min	Typ	Max	Unit	Notes
Data Rate	0.1		2.67	Gbps	

### 5.4. Receiver Optical Specifications

Parameter	Min	Typ	Max	Units	Notes
Sensitivity			-17	dBm	6
Receiver Overload	-3			dBm	
Wavelength of Operation	1528		1610	nm	

6. With BER better than or equal to  $1 \times 10^{-12}$ , measured in the center of the eye opening with  $2^7-1$  PRBS

## 6. Transceiver Electrical Pad Layout

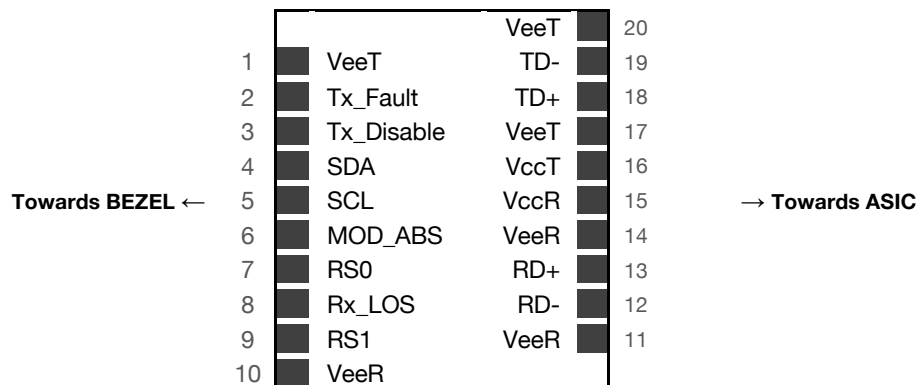


Figure 2. Transceiver Electrical Pad Layout

**7. Module Electrical Pin Definition**

Pin Number	Name	Function
1	VeeT	Transmitter Ground
2	TX_Fault	Transmitter Fault Indication
3	TX_Disable	Transmitter Disable
4	SDA	2-Wire Serial Interface Data (SDA)
5	SCL	2-Wire Serial Interface Clock (SCL)
6	MOD_ABS	Function Not available
7	RS0	Rate Select 0 grounded
8	Rx_LOS	Loss of signal
9	RS1	Rate select 1 grounded
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted received data output
13	RD+	Received data output
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit data input
19	TD-	Inverted transmit data input
20	VeeT	Transmitter Ground

**8. EEPROM**

SFP+ MSA [SFF-8431]

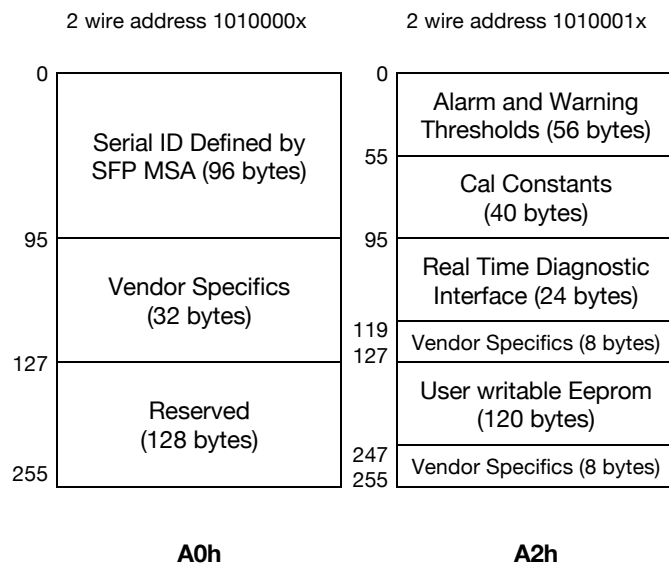


Figure 3. EEPROM of a an SFP





	power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD51040PA0D</b>	SFP dual fibre DWDM, Tx 1536.61nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD52040PA0D</b>	SFP dual fibre DWDM, Tx 1535.82nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD53040PA0D</b>	SFP dual fibre DWDM, Tx 1535.04nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD54040PA0D</b>	SFP dual fibre DWDM, Tx 1534.25nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD55040PA0D</b>	SFP dual fibre DWDM, Tx 1533.47nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD56040PA0D</b>	SFP dual fibre DWDM, Tx 1532.68nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD57040PA0D</b>	SFP dual fibre DWDM, Tx 1531.9nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD58040PA0D</b>	SFP dual fibre DWDM, Tx 1531.12nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD59040PA0D</b>	SFP dual fibre DWDM, Tx 1530.33nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD60040PA0D</b>	SFP dual fibre DWDM, Tx 1529.55nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, LC connector, 0°C to 70°C, DDM
<b>SFD61040PA0D</b>	SFP dual fibre DWDM, Tx 1528.77nm (DWDM DFB) , Rx (PIN), maximum distance 40km, power budget 17dB, OC-48 multirate, 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