SPB43010100D – SFP+ Single Fibre

Tx 1490 Rx 1310nm / 10km / 10× 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

SPB43010100D is a high-performance transceiver module for up to 10.3Gbps data links over a single mode fibre. The maximum reach[1] is 10km, with 8dB end of life (EOL) power budget. The transmitter is a 1490nm Distributed Feedback (DFB) laser, the receiver is a 1310nm PIN photodiode. Consequently, a module with a 1310nm transmitter and a 1490nm receiver is required at the opposite side of the link. The recommended counterpart is SPB34010100D.

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

2. Features

- SFP+ Multi-Source Agreement compliant (SFF-8431)
- Hot pluggable SFP+ footprint
- Management interface specification as per SFF-8431 and SFF-8472
- Supports data rates between 1 and 11.3Gbps
- Single LC Connector
- 1490nm DFB Transmitter
- 1310nm PIN Receiver
- Up to 10km Point-to-Point Transmission on Single Mode Fibre
- Operating temperature range 0°C to 70°C
- Power Dissipation < 1.4W
- Digital Diagnostics Monitoring (DDM)
- Single +3.3V Power Supply

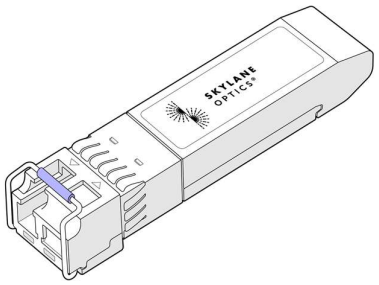

Figure 1. SFP+ Single Fibre
(non-binding illustration)

3. Applications

- 10× Gigabit Ethernet
- Gigabit Ethernet
- CPRI 10.138/9.83/7.373/6.144/4.915/3.072/2.4576/1.228Gbps
- OBSAI 6.144/3.072/1.536Gbps

4. Optical Interface

P/N	Wavelength [nm]	Optical Output Power[2] [dBm]	Receiver Sensitivity[3] [dBm]	Transmitter and Dispersion Penalty [dB]	Receiver Overload[4] [dBm]	Power Budget[2] [dB]
SPB43010100D	Tx 1490 Rx 1310	-6 to 1	≤ -14	NA	0.5	≥ 8

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 with 10.3125Gbps, ER=3.5dB, PRBS 2^{31}-1, BER≤10^{-12}
4. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers before ensuring that proper optical attenuation is used

5. Technical Parameters

5.1. Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit	Notes
Storage temperature	-40		85	℃	
Operating Case Temperature	0		70	℃	
Relative Humidity	5		95	%	Non-Condensing
Power Supply Voltage	3.15	3.3	3.45	V	
Power Supply Current			430	mA	
Power Dissipation			1.4	W	

5.2. Transmitter Optical Specifications

Parameter	Min	Typ	Max	Unit	Notes
Average Output Power	-6		1	dBm	5
Centre Wavelength	1480		1500	nm	
Spectral Width (-20dB)			1	nm	
Extinction Ratio	3.5			dB	

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

5.3. Receiver Optical Specifications

Parameter	Min	Typ	Max	Unit	Notes
Receiver Sensitivity			-14	dBm	6
Receiver Overload	0.5			dBm	6
Operating Wavelength	1260		1360	nm	

6. Measured with 10.3125Gbps, ER=3.5dB, PRBS 2^{31}-1, BER≤10^{-12}

6. Transceiver Electrical Pad Layout

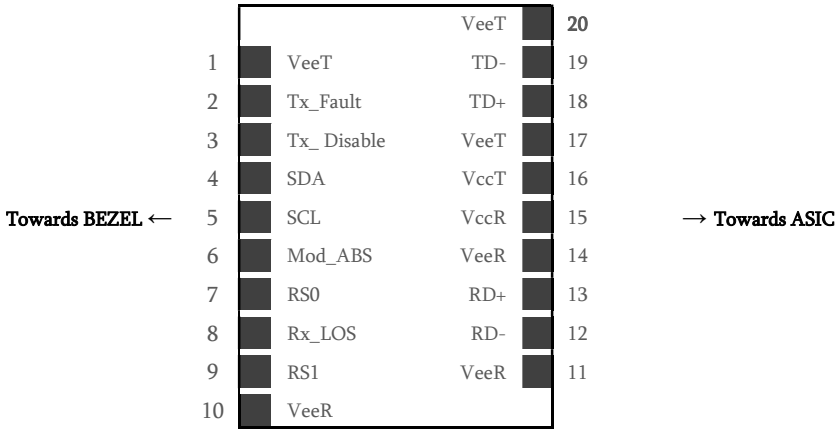

Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

Pin Number	Name	Function	Notes
1	VeeT	Module Transmitter Ground	
2	Tx_Fault	Module Transmitter Fault	
3	Tx_ Disable	Transmitter Disable	
4	SDA	2-Wire Serial Interface Data	
5	SCL	2-Wire Serial Interface Clock	
6	Mod_ABS	Module Absent	
7	RS0	Not Used	
8	Rx_LOS	Receiver Loss of Signal	
9	RS1	Not Used	
10	VeeR	Module Receiver Ground	
11	VeeR	Module Receiver Ground	
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	VeeR	Module Receiver Ground	
15	VccR	Module Receiver 3.3V Supply	
16	VccT	Module Transmitter 3.3V Supply	
17	VeeT	Module Transmitter Ground	
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	VeeT	Module Transmitter Ground	

8. EEPROM

SFP MSA (SFF-8472)

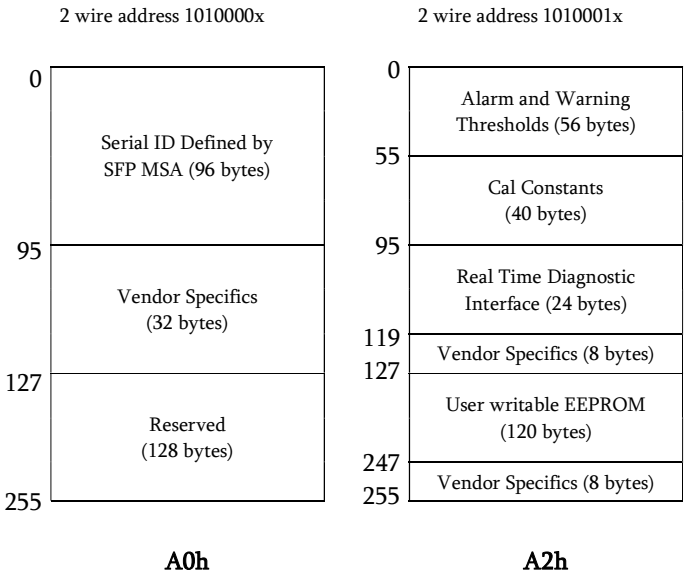

Figure 3. SFP+ Memory Map

9. Ordering Information

Part Number	Description
SPB43010100D	SFP+ Single Fibre, Tx 1490nm (DFB), Rx 1310nm (PIN), maximum distance 10km on SMF, power budget 8dB, 10× Gigabit Ethernet, LC connector, 0°C to 70°C, DDM

10. Document Revision Information

Revision	Description
A	Initial release
B	Some key optical parameters updated to reflect current hardware

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