SPxTU080100D – SFP+ Dual Fiber DWDM Tunable

DWDM Tunable 50GHz / 80 km / 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

SPxTU080100D is a high performance C-band tunable transceiver module for 9.95 Gbps to 11.3 Gbps data links over a single mode fibre pair. The maximum reach is 80km[1] for a 23dB end of life (EOL) power budget. The transmitter is a cooled C-band tunable transmitter (ILMZ), the receiver is an APD photodiode.

This transceiver module is compliant with the Small Form-factor Pluggable (SFP+) Multisource Agreement (MSA) and hot pluggable. Skylane transceivers have passed all Telcordia GR-468-CORE and GR-63-CORE requirements to ensure standards are met. Always contact Skylane Optics® commercial agents for compatibility with different equipment plat**forms.**

2. Features

- Electrical interface specification as per SFF-8431, rev. 4.1
- Tunable SFP+ Memory Map compliant to SFF-8690, rev. 1.4
- Hot pluggable SFP+ footprint
- Management interface specification as per SFF-8431 and SFF-8472
- Supports Data Rates between 9.95Gbps and 11.3Gbps
- Dual LC connector
- C-band tunable (DWDM 50GHz) Laser
- Optional support for Auto-Lambda functionality
- 80km point-to-point transmission on single mode fibre
- Rx DTV optimization functionality
- Operating temperature range 0°C to 70°C
- Power dissipation (≤ 1.7W)
- Digital Diagnostics Monitoring (DDM)

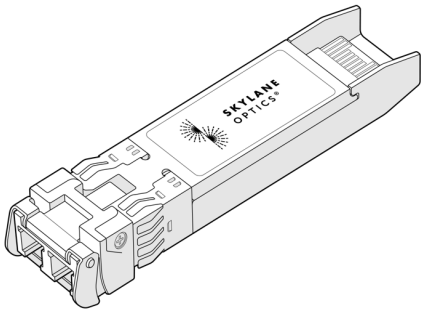

Figure 1. SFP+ Dual Fiber
(non-binding illustration)

3. Applications

- 10GBASE-ZR / ZW
- 10× Fiber Channel

4. Optical Interface

P/N	Wavelength [nm]	Optical Output Power[2] [dBm]	Receiver Sensitivity[3] [dBm]	Dispersion Penalty [dB]	Receiver Overload[4] [dBm]	Power Budget[2] [dB]
SPxTU080100D	ITU DWDM 50GHz	-1 to 3	≤ -24	≤ 4	-7	≥ 23

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 10.709Gbps PRBS 2^{31}-1, BER≤10^{-12}, OSNR>35dB
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**	**Unit**	**Notes**
Storage temperature	-40		85	°C	
Operating Case Temperature	0		70	°C	
Relative Humidity	5		85	%	Non condensing
Power Supply Voltage	3.135	3.3	3.465	V	
Power Supply Current			540	mA	5
Power Consumption			1.7	W	6

5. Max 640mA, T_{case} <10°C
6. Max 2W, T_{case} <10°C

5.2. Transmitter Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Data Rate	9.95		11.32	Gbps	
Average Output Power	-1		3	dBm	7
Centre Wavelength Range	1528.77		1566.72	nm	
Centre Wavelength	λ_T -20	λ_T	λ_T +20	pm	8
Frequency Range	191.35		196.10	THz	
Centre Frequency	ν_T -2.5	ν_T	ν_T +2.5	GHz	8
Spectral Width (-20dB)			500	pm	
Extinction Ratio	9			dB	
Dispersion Penalty			4	dB	9

7. Output power coupled into a 9/125 μm single-mode fibre
8. λ_T and ν_T according to ITU-T G.694.1 DWDM 50GHz grid

5.3. Receiver Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Receiver Sensitivity			-24	dBm	9
Receiver Overload	-7			dBm	9
Receiver Operating Range	1525		1575	nm	

9. Measured with 10.709Gbps PRBS 2^{31}-1, BER≤10^{-12}, OSNR>35dB

6. Transceiver Electrical Pad Layout

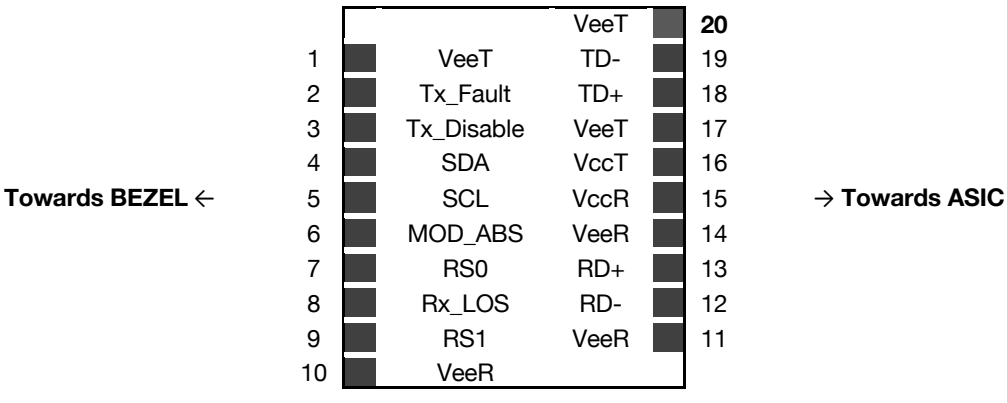

Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

SFP+ MSA (SFF-8431)

Pin Number	Name	Function
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)

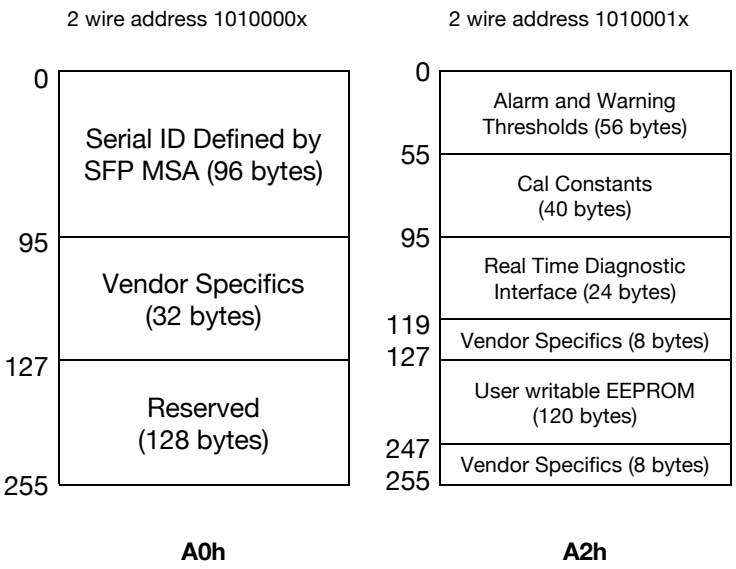

Figure 3. EEPROM of a SFP+

9. Ordering Information

Part Number	Description
SPDTU080100D	SFP+ DWDM dual fibre, Tx (C-band tunable), Rx (APD), 80km, power budget 23dB, 9.95 Gbps up to 11.3 Gbps, LC connector, 1.7W, 0°C to 70°C, DDM
SPATU080100D	SFP+ DWDM dual fibre, Tx (C-band tunable), Rx (APD), 80km, power budget 23dB, 9.95 Gbps up to 11.3 Gbps, LC connector, 1.7W, 0°C to 70°C, DDM, Auto-Lambda functionality

10. Document Revision Information

Revision	Description
A	Initial release
B	Some key parameters updated to reflect new HW. Variant with auto-lambda functionality added

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