SPP130101RxD – SFP+ Dual Fibre

1310nm / 10km / Multi Rate / 10Gbps

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

SPP130101RxD is a high performance multi rate transceiver module for 1 to 10Gbps data links over a single mode fibre pair. The maximum reach is 10km with 6.2dB end of life (EOL) power budget. The transmitter is a 1310nm DFB, the receiver is a PIN photodiode. Rate Select can be controlled by either HW input pins or via register bytes.

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 (SFF-8431)
- Hot pluggable SFP+ footprint
- Serial ID functionality supported according to (SFF-8472)
- Class 1 laser safety standard IEC 60825 compliant
- Dual LC connector
- 1310nm DFB transmitter
- 10km, point-to-point transmission on single mode fibre pair
- 1x Gigabit Ethernet
- 10x Gigabit Ethernet
- Operating temperature range 0°C to 70°C or -40°C to 85°C
- Low power dissipation (<1 W)
- Digital Diagnostics monitoring (DDM)

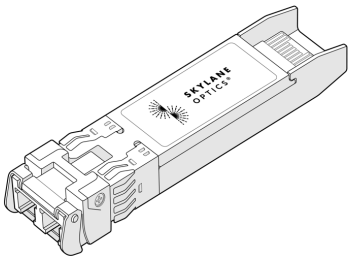

Figure 1. SFP+ Dual Fiber
(non-binding illustration)

3. Applications

- 1x Gigabit Ethernet
- 2x/4x/8x Fibre Channel
- 10x Gigabit Ethernet

4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power[2] [dBm]	Optical Receiver Sensitivity[3] [dBm]	Transmitter Dispersion Penalty [dB]	Optical Receiver Overload[4] [dBm]	Power Budget[2] [dB]
SPP130101RxD	1310nm	-8.2 to 0.5	≤ -14.4	3.2	0	≥ 6.2

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 PRBS 231-1, BER≤10-12
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**	**Unit**	**Notes**
Storage temperature	-40		85	°C	
Operating Case Temperature	0		70	°C	SPP130101R0D
	-40		85	°C	SPP130101R2D
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage	3.135		3.465	V	
Power Supply Current			300	mA	

5.2. Transmitter Optical Specification					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Average Output Power (RS1=HIGH)	-8.2		0.5	dBm	5
Average Output Power (RS1=LOW)	-9.5		-3	dBm	5
Wavelength	1260	1310	1355	nm	
Spectral Width			1	nm	
Extinction Ratio (RS1=HIGH)	3.5			dB	
Extinction Ratio (RS1=LOW)	9			dB	
Dispersion Penalty			3.2	dB	

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

5.3. Transmitter Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Receiver Sensitivity (RS0=HIGH)			-14.4	dBm	6
Receiver Sensitivity (RS0=LOW)			-19	dBm	
Receiver Overload	-1			dBm	
Receiver Operating Range	1260	1310	1355	nm	

6. Transceiver Electrical Pad Layout

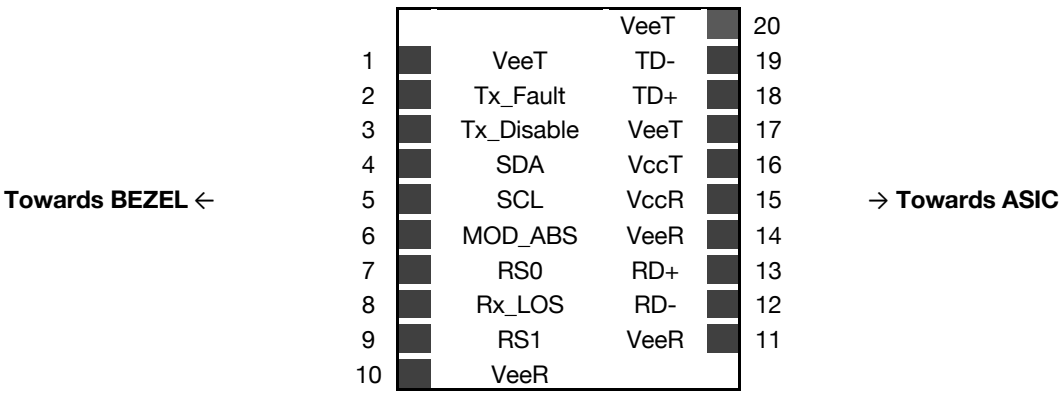

Figure 2. Transceiver Electrical Pad Layout

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[7]	Rate Select 0
8	Rx_LOS	Receiver Loss of Signal
9	RS1[8]	Rate select 1
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

6. Pin to be set HIGH for > 4,25Gbps operation. Pin to be set LOW for ≤ 4.25Gbps operation
7. Default value is HIGH. When pin is set LOW the Tx optical output power will be compliant to low data rate Fiber Channel specifications

8. EEPROM

SFP+ MSA [SFF-8431]

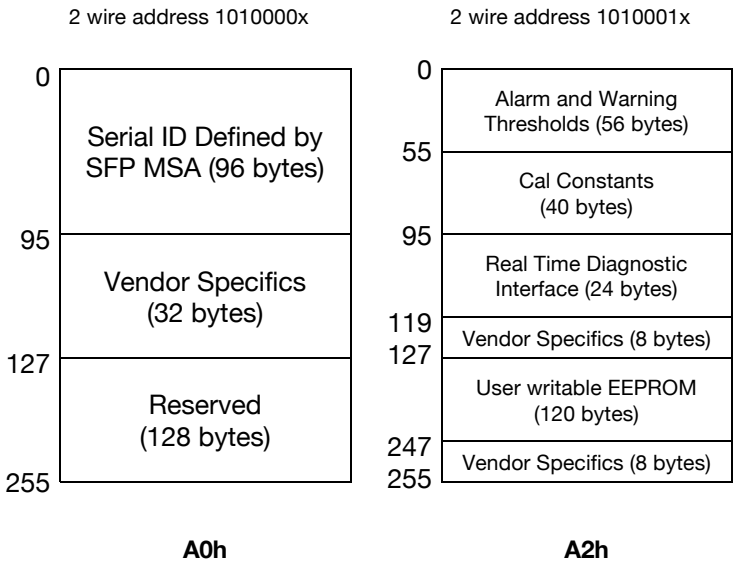

Figure 3. EEPROM of a SFP+

9. Ordering Information

Part Number	Description
SPP130101R0D	SFP+ Dual Fibre, Tx 1310nm (DFB), Rx (PIN), maximum distance 10km, power budget 6.2dB, multi rate 1-10Gbps, LC connector, **0°C to 70°C**, DDM
SPP130101R2D	SFP+ Dual Fibre, Tx 1310nm (DFB), Rx (PIN), maximum distance 10km, power budget 6.2dB, multi rate 1-10Gbps, LC connector, **-40°C to 85°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