

S2B170402RxF – SFP28 Single Fibre

Tx 1310nm Rx 1270nm / 40km* / 25GbE & 10GbE

* Link attenuation needs to be less than the worst case specified for IEC 60793-2-50 type B1.1, type B1.3, or type B6 single-mode fiber

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

S2B170402RxF is a high-performance transceiver module for up to 25 Gigabit Ethernet data links over a single mode fibre. The maximum reach is 40km. The transmitter is a 1310nm Distributed Feedback (DFB) laser, the receiver is a 1270nm Avalanche Photodiode (APD). Consequently, a module with a 1270nm transmitter and a 1310nm receiver is required at the opposite side of the link. The recommended counterpart is S2B710402RxF.

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
- Serial ID functionality supported according to SFF-8472
- 25.781Gbps Serial Electrical Interface (CEI-28G-VSR)
- Single LC Connector
- 1310nm DFB Transmitter
- 1270nm APD Receiver
- Up to 40km Point-to-Point Transmission on Single Mode Fibre
- Built-in dual CDR (bypass at lower data rates)
- Operating temperature range 0°C to 70°C, -20°C to 85°C or -40°C to 85°C
- Power Dissipation <1.8W
- Single +3.3V Power Supply

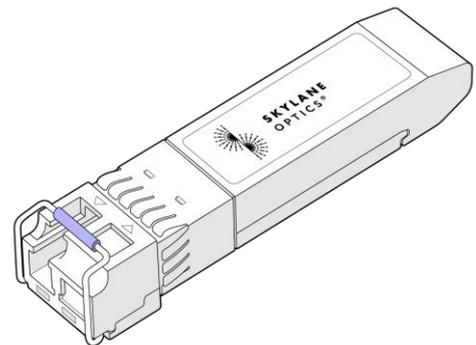


Figure 1. SFP28 Single Fibre (non-binding illustration)

3. Applications

- 25× Gigabit Ethernet
- eCPRI
- CPRI Option 10
- 10× Gigabit Ethernet

4. Optical Interface

P/N	Wavelength [nm]	Protocol	Optical Output Power ¹ [dBm]	Receiver Sensitivity ² (OMA) [dBm]	Optical Receiver Overload ³ [dBm]	Link Length ^{1,4} [km]
S2B170402RxF	Tx 1310 Rx 1270	25GBASE 10GBASE	-1 to 6	≤ -17	-4	≤ 40

1. EOL over operating temperature range
 2. Measured with 25.78Gbps, BER≤5×10⁻⁴, PRBS 2³¹-1
 3. 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
 4. Cabled optical fibre as per IEEE 802.3-2012

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	S2B170402R0F
	-20		85		S2B170402R1F
	-40		85		S2B170402R2F
Relative Humidity	5		85	%	Non-Condensing
Power Supply Voltage	3.135	3.3	3.465	V	
Power Supply Current			520	mA	
Power Dissipation			1.8	W	

5.2. Transmitter Optical Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Data Rate			25.78125	Gbps	5
Average Output Power	-1		6	dBm	6
Centre Wavelength	1300	1310	1320	nm	
Spectral Width (-20dB)			1	nm	
Transmitter and Dispersion Penalty (TDP)			2.7	dB	
Extinction Ratio	4			dB	

5. IEEE 802.3-2012

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

5.3. Receiver Optical Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Operating Wavelength	1260	1270	1280	nm	
Average Receive Power			-4	dBm	
Receiver Sensitivity (OMA)			-17	dBm	7

7. Measured with 25.78Gbps, BER≤5×10⁻⁵, PRBS 2³¹-1

6. Transceiver Electrical Pad Layout

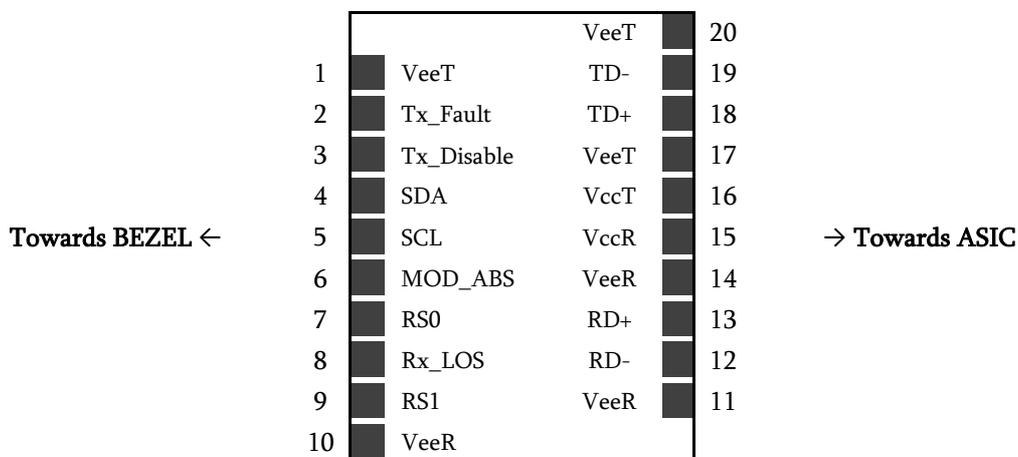


Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

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	Rate Select 0
8	Rx_LOS	Receiver Loss of Signal
9	RS1	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

8. CDR Operation

Logical OR of RS0 and A2h bit 110.3	Logical OR of RS1 and A2h bit 118.3	Rx Data Rate	Tx Data Rate
HIGH	HIGH	24.33G/25.78G	24.33G/25.78G
HIGH	LOW	24.33G/25.78G	9.95G/10.31G
LOW	HIGH	9.95G/10.31G	24.33G/25.78G
LOW	LOW	9.95G/10.31G	9.95G/10.31G

9. EEPROM

SFP+ MSA (SFF-8472)

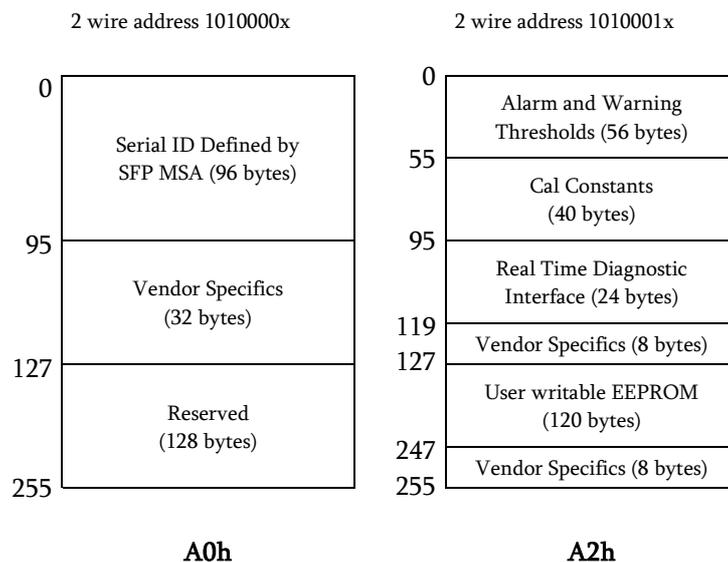


Figure 3. SFP28 Memory Map

10. Ordering Information

Part Number	Description
S2B170402R0F	SFP28 Single Fibre, Tx 1310nm (DFB), Rx 1270nm (PIN), maximum distance 40km on SMF, 10× / 25× Gigabit Ethernet, LC connector, 0°C to 70°C , DDM
S2B170402R1F	SFP28 Single Fibre, Tx 1310nm (DFB), Rx 1270nm (PIN), maximum distance 40km on SMF, 10× / 25× Gigabit Ethernet, LC connector, -20°C to 85°C , DDM
S2B170402R2F	SFP28 Single Fibre, Tx 1310nm (DFB), Rx 1270nm (PIN), maximum distance 40km on SMF, 10× / 25× Gigabit Ethernet, LC connector, -40°C to 85°C , DDM

11. Document Revision Information

Revision	Description
A	Initial release
B	Commercial and extended variants 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

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Quality**

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