SPP85P10160C – SFP+ Dual Fibre

850nm / 100m / 16x Fiber Channel / CDR

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

SPP85P10160C is a high performance transceiver module for up to 16× Fiber Channel data links over an OM3 multi-mode fibre pair. The maximum reach[1] is 100 m (OM3). The transmitter is an 850 nm VCSEL laser, the receiver is 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 (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
- 850 nm VCSEL transmitter
- 100 m point-to-point transmission on OM3 multi-mode fibre
- Built-in dual CDR (bypass at 8.5/4.25Gbps)
- Operating temperature range 0°C to 70°C
- Low power dissipation (≤ 1W)
- Digital diagnostics monitoring (DDM)

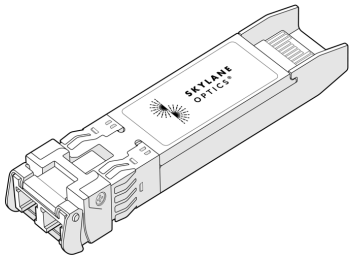

Figure 1. SFP+ Dual Fiber
(non-binding illustration)

3. Applications

- 16× Fiber Channel
- 8× Fiber Channel
- 4× Fiber Channel

4. Optical Interface

P/N	Wavelength [nm]	Protocol	Optical Output Power[1] [dBm]	Stressed Receiver Sensitivity[2] (OMA) [dBm]	Receiver Overload[3] [dBm]	Link Length[1,4] [m]
SPP85P10160C	850	16GFC 8GFC 4GFC	-6 to -1.2	≤ -7.7	0	≤ 100

1. EOL, over operating temperature range
2. Measured at 14.025Gbps, PRBS 231-1, BER≤10-12
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 FC-PI-5

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		95	%	Non condensing
Power Supply Voltage	3.135	3.3	3.465	V	
Power Supply Current			300	mA	

5.2. Transmitter Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Average Output Power	-6		-1.2	dBm	5,6
Launched OMA	-4.8			dBm	5,7
	-5.2				5,8
	-6.1				5,9
Centre Wavelength	840		860	nm	
Spectral Width (RMS)			0.59	nm	
Extinction Ratio	2			dB	
Vertical Eye Closure Penalty (VECP)			2.56	dB	8

5. Output power coupled into a 50/125 µm multi-mode fibre
6. At 14.025Gbps

5.3. Receiver Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Operating Wavelength	840		860	nm	
Average Receive Power			0	dBm	
Stressed Receiver Sensitivity (OMA)			-7.7	dBm	7
			-8.2		8
			-8.6		9

7. Measured at 14.025Gbps, PRBS 2^{31}-1, BER≤10^{-12}
8. Measured at 8.5Gbps, PRBS 2^{7}-1, BER≤10^{-12}
9. Measured at 4.25Gbps, PRBS 2^{7}-1, BER≤10^{-12}

6. Transceiver Electrical Pad Layout

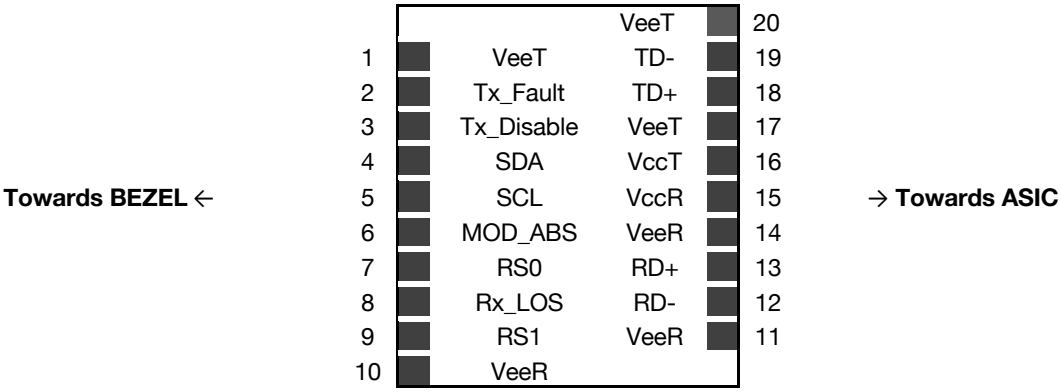

Figure 2. Transceiver Electrical Pad Layout

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. CDR Operation

The built-in dual CDR will automatically lock to the signal when the data rate is 14.025Gbps. The CDR will be bypassed automatically if the data rate is 8.5 or 4.25Gbps.

Applying a signal to the RS0 (#7) and RS1 (#9) pins will not affect the operation of the CDR.

9. EEPROM

SFP+ MSA [SFF-8472]

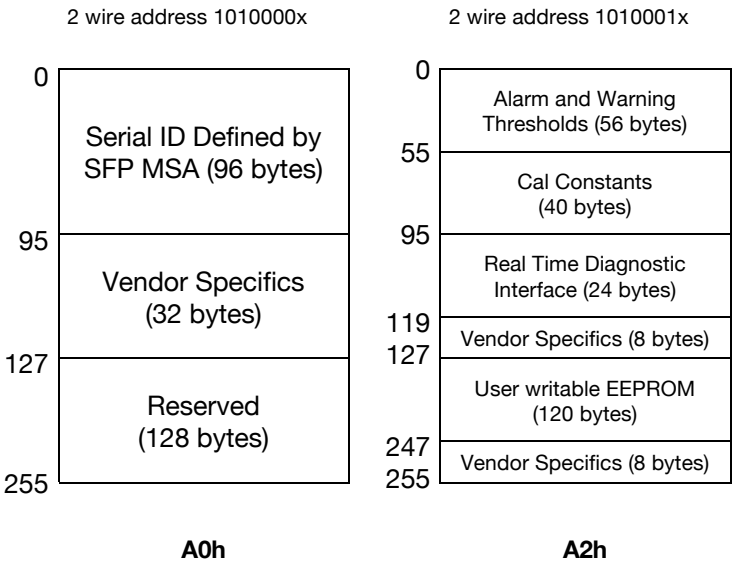

Figure 3. EEPROM of a SFP+

10. Ordering Information

Part Number	Description
SPP85P10160C	SFP+ Dual Fibre, Tx 850 nm (VCSEL) , Rx (PIN), maximum distance 100 m on OM3 MMF, 16× Fiber Channel, LC connector, 0°C to 70°C, DDM

11. 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