SBD53010FExx – SFP Single Fibre Downstream

Tx 1550nm & Rx 1310nm / 10km / Fast 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

SBD53010FExx is a high performance SFP transceiver module for Fast Ethernet data links over one single mode fibre. The maximum reach is 10km, with 14dB end of life (EOL) power budget. The transmitter is a 1550nm Fabry-Pérot (FP) laser, the receiver is a 1310nm PIN photodiode. Consequently, a module with a 1310nm transmitter and a 1550nm receiver is required at the opposite side of the link. The recommended counterpart is SBU35010FExx.

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 [INF-8074]
- Hot pluggable SFP footprint
- Serial ID functionality supported according to [SFF-8472]
- Class 1 laser safety standard IEC 60825 compliant
- Single LC or SC connector
- 1550nm FP transmitter, 1310nm PIN receiver
- 10km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -40°C to 85°C
- Low power dissipation (<1W)
- Digital diagnostics monitoring (DDM)

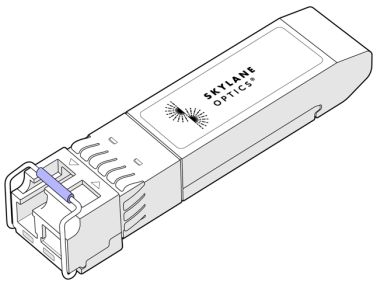

Figure 1. SFP Single Fiber
(non-binding illustration)

3. Applications

- Fast Ethernet

4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power[2] [dBm]	Optical Receiver Sensitivity[3] [dBm]	Optical Receiver Overload[4] [dBm]	Power Budget[2] [dB]
SBD53010FExx	Tx 1550 nm Rx 1310 nm	-15 to -8	≤ -29	-8	≥ 14

1. Distance is estimated assuming typical optical losses after decent quality fiber deployment; Only optical budget value is guaranteed.
2. EOL, over operating temperature range, together with SBU35010FExx
3. Measured with 125Mbps PRBS 223-1, ER=9dB, BER≤10-10
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	SBD53010FE0x, SBD53010FE3x
	-40		85	°C	SBD53010FE2x, SBD53010FE5x
Relative Humidity			95	%	Non condensing
Power Supply Voltage	3.15	3.3	3.45	V	
Power Supply Current			300	mA	

5.2. Transmitter Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Average Output Power	-15		-8	dBm	5
Centre Wavelength	1500	1550	1600	nm	
Spectral Width (RMS)			4	nm	
Optical Extinction Ratio	8.2			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			-29	dBm	6
Receiver Overload	-8			dBm	6
Wavelength of Operation	1260	1310	1360	nm	

6. Measured with 1.25Gbps PRBS 2^7-1, ER=9dB, BER≤10^{-12}

6. Transceiver Electrical Pad Layout

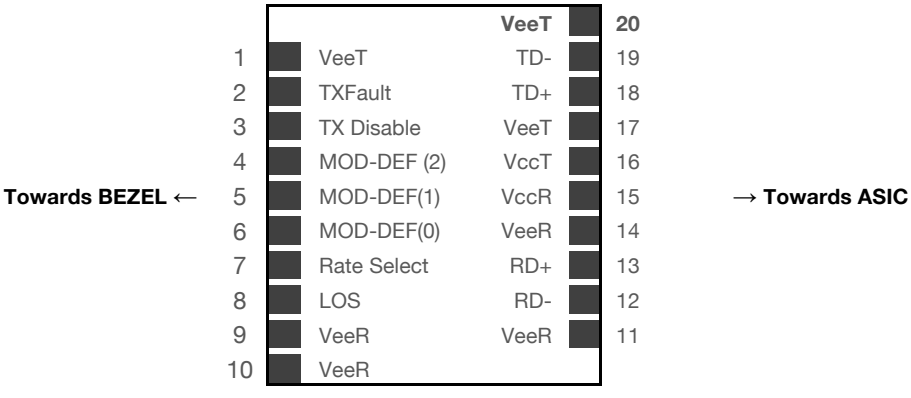

Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

MSA compliant (INF-8074i)

Pin Number	Name	Function
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication
3	TX_ Disable	Transmitter Disable
4	MOD-DEF2	2-Wire Serial Interface Data
5	MOD-DEF1	2-Wire Serial Interface Clock
6	MOD-DEF0	Grounded in Module
7	Rate Select	Not Connected
8	LOS	Loss of Signal
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted Received Data Out
13	RD+	Received Data Out
14	VeeR	Receiver Ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmit Data In
19	TD-	Inverted Transmit Data In
20	VeeT	Transmitter Ground

8. EEPROM

SFP MSA (INF-8074 & SFF-8472)

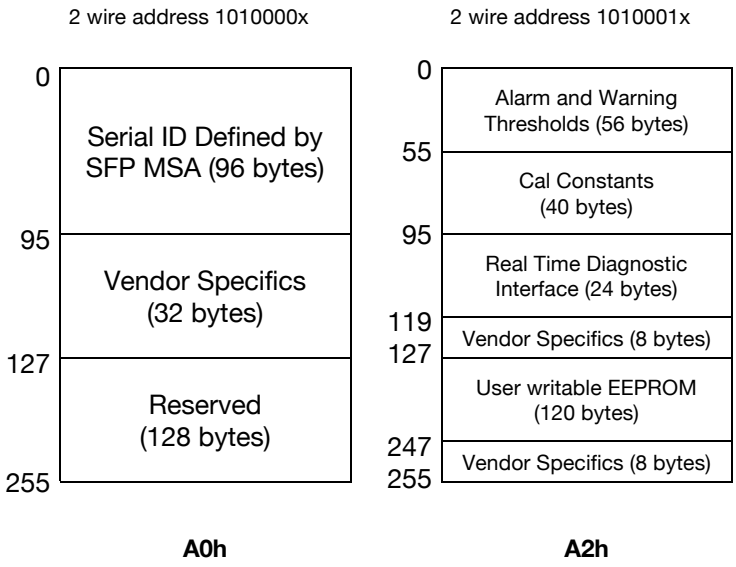

Figure 3. EEPROM of a an SFP

9. Ordering Information

Part Number	Description
SBD53010FE00	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **LC connector, 0°C to 70°C**
SBD53010FE0D	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **LC connector, 0°C to 70°C, DDM**
SBD53010FE20	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **LC connector, -40°C to 85°C**
SBD53010FE2D	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **LC connector, -40°C to 85°C, DDM**
SBD53010FE30	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **SC connector, 0°C to 70°C**
SBD53010FE3D	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **SC connector, 0°C to 70°C, DDM**
SBD53010FE50	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **SC connector, -40°C to 85°C**
SBD53010FE5D	SFP single fibre downstream, Tx 1550nm (FP) , Rx 1310nm (PIN), maximum distance 10km, power budget 14dB, Fast Ethernet, **SC 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