SBHxDB20L32D – SFP Single Fibre CWDM High
SW-SF CWDM / 20dB / 3.1Gbps

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

SBHxDB20L32D is a high performance transceiver module for up to 3.072Gbps bidirectional data links over one single mode fibre within one single CWDM channel, which is split into two sub bands called CWDM High and CWDM Low.

The power budget is minimum 20.5dB end of life (EOL). The transmitter is a cooled CWDM High DFB laser, the receiver is a PIN photodiode operating in the CWDM Low sub band. Consequently, a module with a CWDM Low transmitter and a CWDM High receiver is required at the opposite side of the link. The recommended counterpart is SBHxUB20L32D

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
- Supports data rates up to 3.072Gbps
- Single LC connector
- Cooled CWDM DFB transmitter
- Power budget >20.5dB
- Operating temperature range -40°C to 85°C
- Power consumption <1.8W
- Digital Diagnostics Monitoring (DDM)

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

3. Applications

- Radio Base Station internal interface (CPRI/OBSAI)

4. Optical Interface

P/N	Wavelength [nm]	Output Optical Power[1] [dBm]	Optical Receiver Sensitivity[2] [dBm]	Transmitter Dispersion Penalty [dB]	Optical Receiver Overload[3] [dBm]	Power Budget[1] [dB]
SBHxDB20L32D	ITU CWDM High	-2.5 to 2	≤ -23	≤ 1.5	2	≥ 20.5

1. EOL, over operating temperature range
2. Measured with 3.072Gbps PRBS 2^7-1, ER=6dB, BER≤10^{-12} (dispersion penalty is specified over 20km SMF)
3. 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	-40		85	°C	
Relative Humidity	5		95	%	Non condensing
Power Supply Voltage	3.135		3.465	V	
Power Supply Current		280	550	mA	

5.2. Transmitter Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Average Output Power	-2.5		2	dBm	4
Centre Wavelength Range	1270		1610	nm	
Wavelength (CWDM High)	λ_T +2.0		λ_T +6.5	nm	5
Spectral Width (-20dB)			1	nm	
Extinction Ratio	6			dB	
Dispersion Penalty			1.5	dB	6

4. Output power coupled into a 9/125µm µm single mode fibre
5. λ_T according to the ITU-T G.694.2 CWDM grid, see ordering information for details

5.3. Receiver Optical Specifications					
Parameter	**Min**	**Typ**	**Max**	**Unit**	**Notes**
Receiver Sensitivity			-23	dBm	6
Receiver Overload	2			dBm	6
Receiver Operating Range (CWDM Low)	λ_T -6.5		λ_T -1.5	nm	5

6. Measured with 3.072Gbps PRBS 2^7-1, ER=6dB, BER≤10^{-12} (dispersion penalty is specified over 20km SMF)

6. Transceiver Electrical Pad Layout

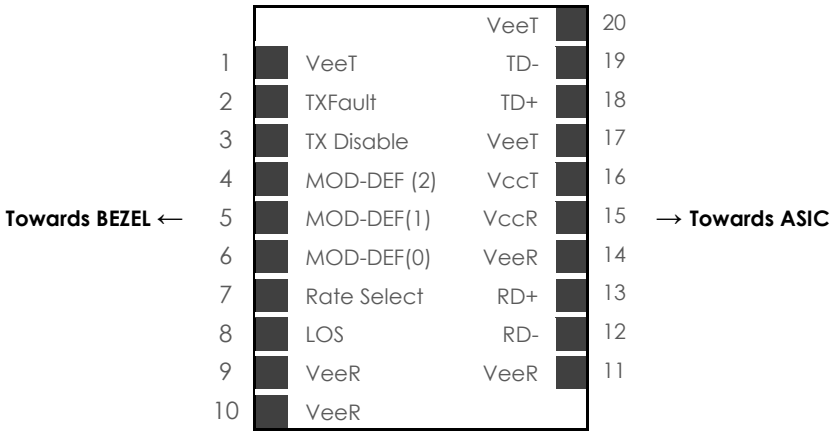

Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

SFP MSA (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 Used
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 (SFF-8472)

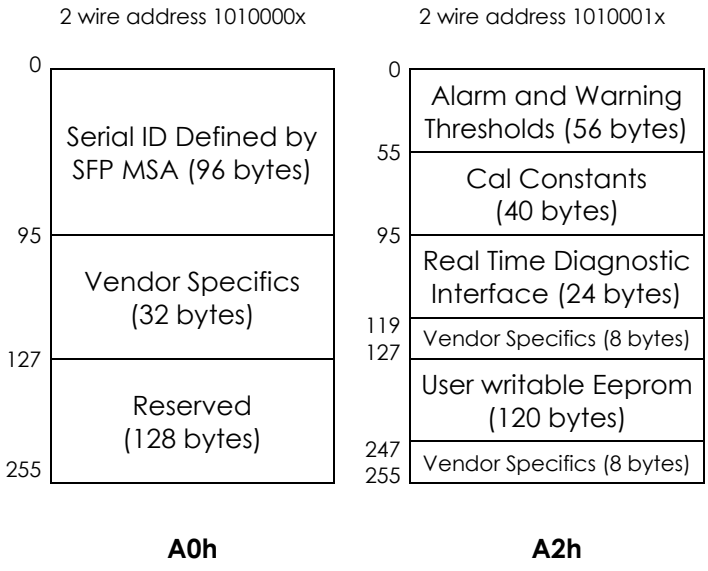

Figure 3. EEPROM of a SFP+

9. Ordering Information

Part Number	Description
SBHIDB20L32D	SFP CWDM Single Fibre, **Tx 1270nm,** High (CWDM DFB), **Rx 1270nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHJDB20L32D	SFP CWDM Single Fibre, **Tx 1290nm,** High (CWDM DFB), **Rx 1290nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHKDB20L32D	SFP CWDM Single Fibre, **Tx 1310nm,** High (CWDM DFB), **Rx 1310nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHLDB20L32D	SFP CWDM Single Fibre, **Tx 1330nm,** High (CWDM DFB), **Rx 1330nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHMDB20L32D	SFP CWDM Single Fibre, **Tx 1350nm,** High (CWDM DFB), **Rx 1350nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHNDB20L32D	SFP CWDM Single Fibre, **Tx 1370nm,** High (CWDM DFB), **Rx 1370nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHODB20L32D	SFP CWDM Single Fibre, **Tx 1390nm,** High (CWDM DFB), **Rx 1390nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHPDB20L32D	SFP CWDM Single Fibre, **Tx 1410nm,** High (CWDM DFB), **Rx 1410nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHQDB20L32D	SFP CWDM Single Fibre, **Tx 1430nm,** High (CWDM DFB), **Rx 1430nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHRDB20L32D	SFP CWDM Single Fibre, **Tx 1450nm,** High (CWDM DFB), **Rx 1450nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHADB20L32D	SFP CWDM Single Fibre, **Tx 1470nm,** High (CWDM DFB), **Rx 1470nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHBDB20L32D	SFP CWDM Single Fibre, **Tx 1490nm,** High (CWDM DFB), **Rx 1490nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHCDB20L32D	SFP CWDM Single Fibre, **Tx 1510nm,** High (CWDM DFB), **Rx 1510nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHDDB20L32D	SFP CWDM Single Fibre, **Tx 1530nm,** High (CWDM DFB), **Rx 1530nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHEDB20L32D	SFP CWDM Single Fibre, **Tx 1550nm,** High (CWDM DFB), **Rx 1550nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHFDB20L32D	SFP CWDM Single Fibre, **Tx 1570nm,** High (CWDM DFB), **Rx 1570nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHGDB20L32D	SFP CWDM Single Fibre, **Tx 1590nm,** High (CWDM DFB), **Rx 1590nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM
SBHHDB20L32D	SFP CWDM Single Fibre, **Tx 1610nm,** High (CWDM DFB), **Rx 1610nm,** Low (PIN), power budget 20.5dB, 3.1Gbps, LC connector, -40°C to 85°C, DDM

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