SBU35020DRxx – SFP Single Upstream Transceiver

Tx 1310nm & Rx 1550nm / 20km / Dual Rate

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

SBU35020DRxx is a high-performance transceiver module for Gigabit Ethernet and Fast Ethernet data links over one single mode fibre. The maximum reach[1] is 20km, with 14dB end of life (EOL) power budget. The transmitter is a 1310nm Fabry-Pérot (FP) laser, the receiver is a 1550nm PIN photodiode. Consequently, a module with a 1550nm transmitter and a 1310nm receiver is required at the opposite side of the link. The recommended counterpart is SBD53020DRxx.

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
- 1310nm FP transmitter, 1550nm PIN receiver
- 20km point-to-point transmission on single mode fibre
- Operating temperature range 0°C to 70°C or -40°C to 85°
- Low power dissipation (<1W)
- Digital Diagnostics Monitoring (DDM)

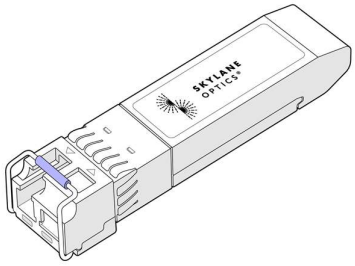


Figure 1. SFP Single Fiber
(non-binding illustration)

3. Applications

- Gigabit Ethernet
- Fast Ethernet
- 1x Fiber Channel

4. Optical Interface

P/N	Wavelength [nm]	Optical Output Power[2] [dBm]	Optical Receiver Sensitivity[3] [dBm]	Optical Receiver Overload[4] [dBm]	Power Budget[2] [dB]
SBU35020DRxx	Tx 1310 nm Rx 1550 nm	-8 to -3	≤ -22	-3	≥ 14

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 1.25Gbps PRBS 2^7-1, ER=9dB, BER≤10^{-12}
4. 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

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	SBU35020DR0D, SBU35020DR0B, SBU35020DR3D, SBU35020DR3B
	-40		85		SBU35020DR2D, SBU35020DR2B, SBU35020DR5D, SBU35020DR5B
Relative Humidity	5		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	-8		-3	dBm	5
Centre Wavelength	1260	1310	1360	nm	
Spectral Width (-20dB)			3.5	nm	
Extinction Ratio	6	9		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			-22	dBm	6
Receiver Overload	-3			dBm	6
Operating Wavelength	1480	1550	1580	nm	

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

6. Transceiver Electrical Pad Layout

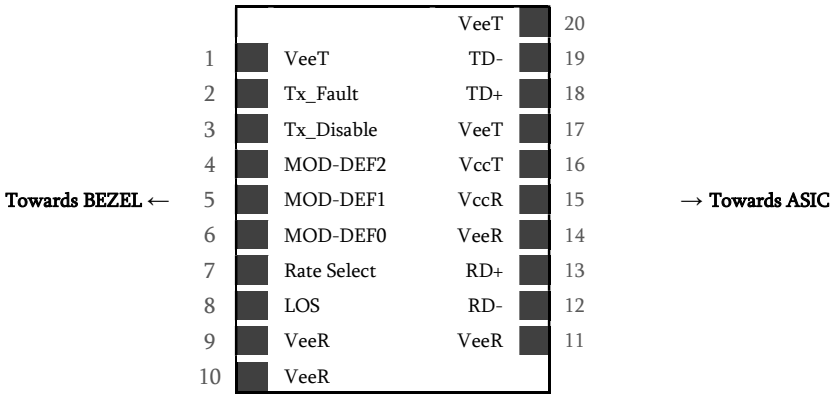


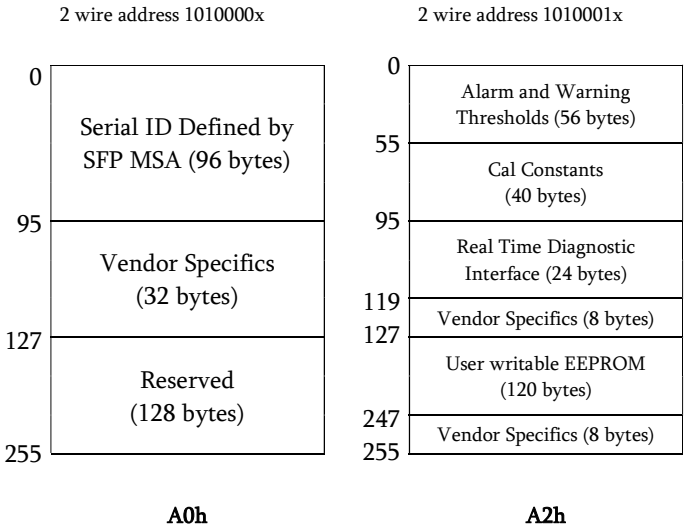
Figure 2. Transceiver Electrical Pad Layout

7. Module Electrical Pin Definition

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-8074 & SFF-8472)



9. Ordering Information

Part Number	Description
SBU35020DR0D	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **LC connector, 0°C to 70°C**, DDM
SBU35020DR0B	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **LC connector, Gen B, 0°C to 70°C**, DDM
SBU35020DR2D	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 8dB, Dual Rate, **LC connector, -40°C to 85°C**, DDM
SBU35020DR2B	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 8dB, Dual Rate, **LC connector, Gen B, -40°C to 85°C**, DDM
SBU35020DR3D	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **SC connector, 0°C to 70°C**, DDM
SBU35020DR3B	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **SC connector, Gen B, 0°C to 70°C**, DDM
SBU35020DR5D	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **SC connector, -40°C to 85°C**, DDM
SBU35020DR5B	SFP single fibre upstream, Tx 1310nm (FP), Rx 1550nm (PIN), maximum distance 20km, power budget 14dB, Dual Rate, **SC connector, Gen B, -40°C to 85°C**, DDM

10. Document Revision Information

Revision	Description
A	Initial release
B	Generation B variants added. Non-DDM variants removed

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:
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