

## CSFP-1G-BX20-53

1000Base Compact SFP  
Tx 1550nm / Rx 1310nm  
20km Reach

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## Features

- Support 1.25Gbps data links
- Hot-Pluggable LC connector
- Up to 20km on 9/125µm SMF
- 1550nm DFB laser transmitter
- 2x Bi-directional transceivers in 1x SFP metallic casing
- Single 3.3V power supply
- Monitoring Interface Compliant with SFF-8472
- Commercial Operating temperature : 0°C to 70°C
- Industrial Operating temperature : -40°C to 85°C
- Built-in digital diagnostic functions
- RoHS-6 compliant (lead-free)



## Applications

- Gigabit Ethernet (1000BASE-BX)
- Fibre Channel
- Point to Point FTTH Application
- Other optical transmission systems

Part number	Product description
CSFP-1G-BX-BX20-53	1000Base SMF CSFP TX1550/RX1310 20km 0°C to 70°C LC Simplex DDM Option2
CSFP-1G-BX-BX20-53-I	1000Base SMF CSFP TX1550/RX1310 20km -40°C to 85°C LC Simplex DDM Option2

# PIN Description

PIN	Symbol	Name - Description	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault. Not supported.	2
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	3
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	2
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	2
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	2
7	Rate Select	No connection required	
8	RX_LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VEER	Receiver Ground (Common with Transmitter Ground)	
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	5
16	VCCT	Transmitter Power Supply	5
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

## Notes:

1. Circuit ground is internally isolated from chassis ground.
2. T<sub>FAULT</sub> is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to V<sub>cc</sub> + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on T<sub>DIS</sub> >2.0V or open, enabled on T<sub>DIS</sub> <0.8V.
4. LOS is open collector output. Should be pulled up with 4.7k – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
5. Internally connected

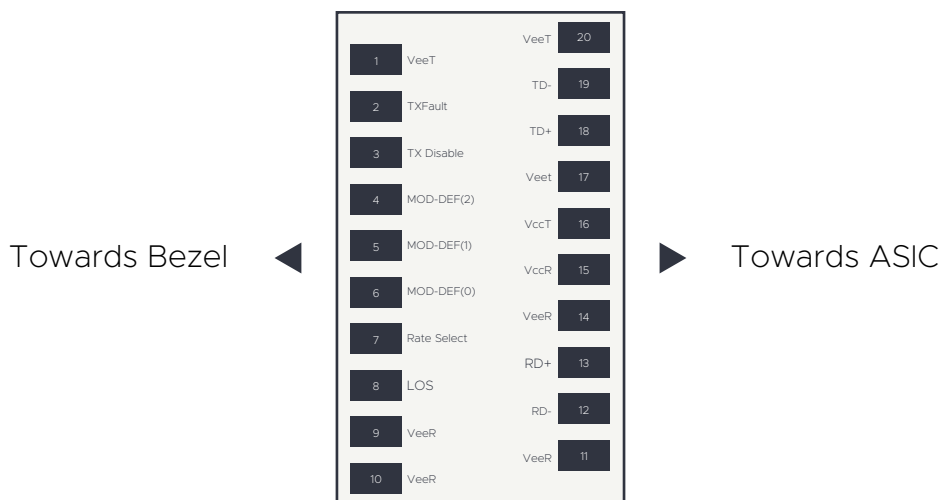


Figure 1. Diagram of host board connector block pin numbers and names

## Absolute Maximum Ratings

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		4.0	V	
Storage Temperature	T <sub>S</sub>	-40		85	°C	
Relative Humidity	RH	0		85	%	1

Notes:

1. Non-condensing

## Recommended Operating Environment

Parameter	Symbol	Min	Typical	Max	Unit
Case operating Com. Temp.	T <sub>c</sub>	0	-	+70	°C
Case operating Ind. Temp.	T <sub>i</sub>	-40	-	+85	°C
Supply Voltage	Vcc	3.135	3.30	3.465	V
Supply Current	I <sub>cc</sub>	-	-	450	mA
Maximum Power	P <sub>max</sub>	-	-	1.5	W

## Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
<b>Transmitter</b>						
Input differential impedance	R <sub>in</sub>	90	100	110	-	-
Single ended data input swing	V <sub>in PP</sub>	200	-	1200	mV p-p	-
Transmit Disable Voltage	V <sub>D</sub>	V <sub>cc</sub> -1.3	-	V <sub>cc</sub>	V	1
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>ee</sub>	-	V <sub>ee</sub> + 0.8	V	-
Transmit Disable Assert Time	T <sub>dessert</sub>	-	-	10	μs	-
<b>Receiver</b>						
Single ended data output swing	V <sub>out,pp</sub>	300	-	1000	mV p-p	2
LOS Fault	V <sub>losfault</sub>	V <sub>cc</sub> -0.5	-	V <sub>CC_host</sub>	V	4
LOS Normal	V <sub>los norm</sub>	V <sub>ee</sub>	-	V <sub>ee</sub> +0.5	V	4
Power Supply Rejection	PSR	100	-	-	V	5

Note:

1. Open circuit
2. Into 100 ohm differential termination
3. LOS is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected
4. All transceiver specifications are compliant with a power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the power supply filtering network of the Small Form-factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA)

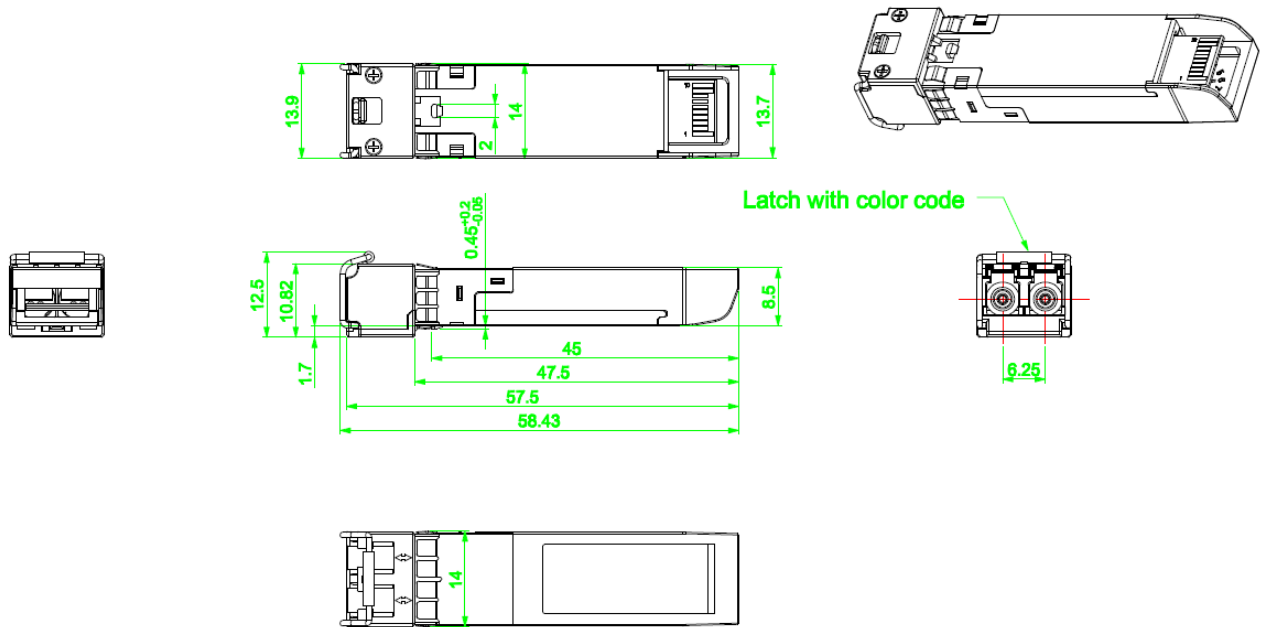
# Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
<b>Transmitter</b>						
Data Rate	B	155	-	1250	Mb/s	-
Center Wavelength	$\lambda_c$	1530	1550	1570	nm	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Optical Output Power	Pout	-9	-	-3	dBm	1
Extinction Ratio	ER	8.2	-	-	dB	-
Optical Rise/Fall Time	Tr/Tf	-	-	260	ps	2
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	-
<b>Receiver</b>						
Optical Input Wavelength	$\lambda_c$	1290	1310	1330	nm	-
Receiver Overload	Pmax	-3	-	-	dBm	-
Receiver Sensitivity	Sen	-	-	-23	dBm	3
RX_LOS Assert	LOS <sub>A</sub>	-35	-	-24	dBm	-
RX_LOS De-assert	LOS <sub>D</sub>	-	-	-24	dBm	-
RX_LOS Hysteresis	LOS <sub>H</sub>	0.5	-	-	dB	-

Note:

1. Measured with 9/125 $\mu$ m single-mode fiber
2. Filtered, measured with a PRBS 2<sup>7</sup>-1 test pattern @1.25Gbps
3. Measured with ER =9 dB, 2<sup>7</sup>-1 PRBS data pattern, BER <1E-12.

# Mechanical Specifications



## Revision history

Revision	Date	Author	Description
V1.1	25-11-2022	JGN	Initial Document

Note : Nexgen A/S reserves the right to change this document without notice.