

## SFP-1G-BX60-45\_54

1000Base SFP Bidirectional  
 1490nm (Upstream)  
 1550nm (Downstream)  
 60km Reach

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## Features

- Up to 1.25Gb/s data links
- Single LC connector
- Hot-pluggable SFP footprint
- 1490nm & 1550nm DFB laser transmitter
- RoHS compliant and Lead Free
- Up to 60km on 9/125um SMF
- Metal enclosure for lower EMI
- Single +3.3V power supply
- Power dissipation <1W (0~70°C)
- Power dissipation <1.2W (-40~85°C)
- Commercial and industrial operating temperature optional
- SFP MSA SFF-8074i Compliant



## Applications

- 1.25Gbps Ethernet
- 1.063Gbps Fiber Channel

Part number	Product description
SFP-1G-BX60-45	1000Base SMF SFP Bidi Tx1490nm/Rx1550nm 60km 0°C to 70°C LC Simplex DDM
SFP-1G-BX60-54	1000Base SMF SFP Bidi Tx1550nm/Rx1490nm 60km 0°C to 70°C LC Simplex DDM
SFP-1G-BX60-45-I	1000Base SMF SFP Bidi Tx1490nm/Rx1550nm 60km -40°C to 85°C LC Simplex DDM
SFP-1G-BX60-54-I	1000Base SMF SFP Bidi Tx1550nm/Rx1490nm 60km -40°C to 85°C LC Simplex DDM

# PIN Description

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

Notes:

1. Open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board if intended for use. Pull up voltage should be between 2.0V to 3.6V. 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.
2. Laser output disabled on Tx\_Disable >2.0V or open, enabled on Tx\_Disable <0.8V.
3. LOS is open collector output. Should be pulled up with 4.7kΩ to 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
4. RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
5. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.



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

## Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit	Notes
Maximum Supply Voltage	-0.3	-	3.6	V	-
Storage Temperature	-40	-	+85	°C	-
Relative Humidity	5	-	95	%	1

Notes:

1. Non-condensing.

## Recommend Operation Conditions

Parameter	Min	Typ	Max	Unit	Notes
Power Supply Voltage	3.13	3.3	3.47	V	-
Power Supply Current (com.)	-	-	250	mA	-
Power Supply Current (ind.)	-	-	300	mA	-
Case Operating Temperature (com.)	0	-	+70	°C	-
Case Operating Temperature (ind.)	-40	-	+85	°C	-

## Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Notes
Transmitter					
Input differential impedance	-	100	-	Ω	1
Single ended data input swing	250	-	1200	mV	-
TX Disable-High	Vcc-1.3	-	Vcc	V	-
TX Disable-Low	Vee	-	Vee+0.8	V	-
TX Fault-High	Vcc-0.5	-	Vcc	V	-
TX Fault-Low	Vee	-	Vee+0.5	V	-
Receiver					
Single ended data output swing	300	400	800	mV	2
Data output rise time	-	-	300	ps	3
Data output fall time	-	-	300	ps	3
LOS-High	Vcc-0.5	-	Vcc	V	-
LOS-Low	Vee	-	Vee+0.5	V	-

Notes:

1. AC coupled
2. into 100Ω differential termination
3. 20 - 80%

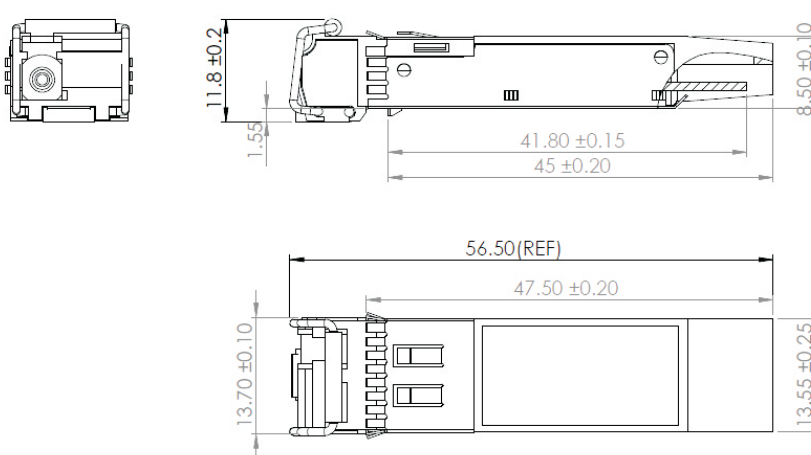
# Optical Characteristics

Parameter	Min	Typ	Max	Unit	Notes
Transmitter					
Optical Center Wavelength (Up)	1470	1490	1510	nm	-
Optical Center Wavelength (Down)	1530	1550	1570	nm	-
Average Output Power	0	-	5	dBm	1
Optical Extinction Ratio	9.0	-	-	dB	-
Optical Rise/Fall Time	-	-	260	ps	2
Side Mode Suppression Ratio	30	-	-	dB	-
Data Rate	-	1.25	-	Gb/s	-
Receiver					
Optical Center Wavelength (Up)	1530	1550	1570	nm	-
Optical Center Wavelength (Down)	1470	1490	1510	nm	-
Receiver Sensitivity	-	-	-24	dBm	3,4
Damage Threshold	-1.0	-	-	dBm	-
LOS Assert	-35	-	-	dBm	-
LOS De-Assert	-	-	-24	dBm	-
LOS Hysteresis	0.5	-	-	dB	-

## Notes:

1. Class 1 Laser Safety.
2. Unfiltered, 20-80%.
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2-1 at 10 BER.

## Mechanical Dimensions



units : mm

## Revision history

Revision	Date	Author	Description
V1.1	05-03-2020	JGN	Initial Document

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