1G SFP BiDi 120km

1G Eth, SFP, BiDi, 120km, LC, 1490/1550nm, SM

CB-GB-120-xDyy02

OVERVIEW

The CB-GB-120-xDxx02 series consists of single-fiber bidirectional (BiDi) SFP transceiver solutions designed for long-reach Gigabit Ethernet (GbE) and 1G Fiber Channel (1G FC) applications. These modules operate over single-mode fiber using complementary wavelength pairs, with one variant transmitting at 1490nm and receiving at 1550nm, and the other transmitting at 1550nm and receiving at 1490nm, enabling full-duplex data transmission over a single optical fiber.

Both variants support transmission distances of up to 120km and comply with the SFP Multi-Source Agreement (MSA) and SFF-8472 Digital Diagnostics Monitoring (DDM) standard. The integrated diagnostics interface provides real-time monitoring of operating conditions, including temperature, supply voltage, transmit optical power, receive optical power, and laser bias current.

Each module incorporates a high-performance DFB laser transmitter and an APD photodiode with integrated trans-impedance amplifier (TIA), providing excellent receiver sensitivity and reliable long-distance optical communication. The transceivers are available in both Commercial (0°C to +70°C) and Industrial (-40°C to +85°C) operating temperature ranges, making them suitable for carrier-grade, metro access, FTTx, and other long-haul optical networking applications.

KEY SPECIFICATIONS

- 1G BiDi SFP transceivers with single LC connector
- Two wavelength options:
  - 1490nm TX / 1550nm RX
  - 1550nm TX / 1490nm RX
- Supports 1.25Gbps Ethernet and 1.063Gbps Fiber Channel applications
- Up to 120km transmission distance over single-mode fiber
- High-performance DFB laser transmitter with APD receiver and integrated TIA
- Less than 1.0W power consumption
- Temp operating conditions: C-temp (0°C to +70°C), I-Temp (-40°C to +85°C)

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TECHNICAL DATA

Parameter	Value	Parameter	Value
Form Factor	BiDi SFP	**Transmitter Data:**	
Transmission Media	SM (LC)	Tx Power	1 to +5dBm[3]
Typical Reach	120km	Tx Wavelength	1470 -1510nm[1] 1530 -1570nm[2]
Nominal Wavelength	Tx:1490nm Rx:1550nm[1] Tx:1550nm Rx:1490nm[2]	Extinction Ratio	≥ 9dB
Data Rate Support	10Mbps to 1.25Gbps	**Receiver Data:**	
Protocol Support	GbE, 1G FC	Rx Sensitivity	-30dBm[3] [4]
Power Consumption	<1.0W	Rx Overload, max	-1dBm[4]
Operating Temperature	0°C to 70°C, -40°C to +85°C	Rx Wavelength	1530 -1570nm[1] 1470 - 1510nm[2]
Storage Temperature	-40°C to 85°C	LOS Assert	-40dBm
DDM	Yes	LOS De-assert	-31dBm
		LOS Hysteresis	0.5dB

[1] CB-GB-120-xD4502 – Purple-coloured latch
[2] CB-GB-120-xD5402 – Yellow-coloured latch
[3] Average Power
[4] @1250 Mbps, BER ≤$1x10^{-12}$, PRBS 2^{23}-1

Safety/Regulatory Compliance

- Class 1 laser safe
- RoHS Compliance

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ABSOLUTE MAX RATING

Exceeding these limits can cause permanent damage to the transceiver

Parameter	Value	Parameter	Value
Supply Voltage	-0.5V to 3.75V	Relative Humidity	85%
Storage Temp	-40°C to 85°C	Max Rx Optical Power	-1dBm

ORDERING INFORMATION

Ordering Code	Description
CB-GB-120-CD4502	1G SFP, BiDi, 120km, LC, 1490/1550nm, SM, 0 to 70C
CB-GB-120-CD5402	1G SFP, BiDi, 120km, LC, 1550/1490nm, SM, 0 to 70C
CB-GB-120-ID4502	1G SFP, BiDi, 120km, LC, 1490/1550nm, SM, -40 to 85C
CB-GB-120-ID5402	1G SFP, BiDi, 120km, LC, 1550/1490nm, SM, -40 to 85C

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