1.25 Gb/s, 60 - 80 km
CWDM 1470 nm – 1610 nm
GBIC Dual SC Package

OptixCom
Connect with Light
Gigabit Ethernet (GBIC) Transceivers

Lead-Free

GBC-1250CEX-AT60K-*XX*
GBC-1250CEX-AT80K-*XX*

Description

OptixCom's CWDM transceivers are designed with high performance DFB laser and cover the wavelength spectrum from 1470 nm to 1610 nm, with industry standard 20 nm spacing. The product is compliant with Gigabit Interface Converter (GBIC) specifications. This product can be used at 1.0625 Gb/s for Fiber Channel or 1.25 Gb/s for Gigabit Ethernet applications.

Two transceiver designs reach up to 60 km and 80 km of distances with 20 dB and 24 dB of power budget, respectively, for standard single mode fibers. The products are RoHS compliant.

Key Features

- 1470 - 1610 nm single mode, 1.0625/1.25 Gb/s
- Duplex SC connector optical interface
- Z-axis hot pluggable with SCA-2 host connector
- AC coupling LVPECL differential I/O logics
- 60 km with 20 dB power budget
- 80 km with 24 dB power budget
- Compliant with IEEE 802.3z, 1000BASE-EX
- Compliant with Fiber Channel Standard
- TTL Signal detect to monitor optical signals
- Single 3.3/5 V power supply
- RoHS compliant

Applications

- ✓ 1X Fiber Channel
- ✓ Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

Ordering Information

Part Number: GBC-1250CEX-AT60K-***XX***
Description
CWDM 1470 - 1610 nm 1.0625/1.25 Gb/s GBIC Transceiver, 60 km reach, 1***XX***0 nm wavelength, 0-70°C.

Part Number: GBC-1250CEX-AT80K-***XX***
Description:
CWDM 1470 – 1610 nm 1.0625/1.25 Gb/s GBIC Transceiver, 80 km reach, 1***XX***0 nm wavelength, 0-70°C.

XX specifies the wavelength as below. For example, GBC-1250CEX-AT60K-47 is the 1470 nm module.

XX	Wavelength	***XX***	Wavelength
47	1470 nm	55	1550 nm
49	1490 nm	57	1570 nm
51	1510 nm	59	1590 nm
53	1530 nm	61	1610 nm

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	5.25	V
Supply Current	---	250	400	mA

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	*Tst*	-40	85	°C
Supply Voltage	V_{CC}	-0.5	6.0	V
Input Voltage	V_{IN}	-0.5	V_{CC}	V
Operating Current	*Iop*	---	400	mA
Output Current	*Io*	---	50	mA

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage [1]	ΔV_i	0.65	---	2.0	V
Differential Input Impedance [2]	*Z*		150		ohm
Optical Output Power [3] (GBC-1250CEX-AT60K-XX)	P_o	-4	---	+1	dBm
Optical Output Power [3] (GBC-1250CEX-AT80K-XX)	P_o	0	+2	+5	dBm
Center Wavelength – 1470 nm	λ_c	1464.5	1470	1477.5	nm
Center Wavelength – 1490 nm	λ_c	1484.5	1490	1497.5	nm
Center Wavelength – 1510 nm	λ_c	1504.5	1510	1517.5	nm
Center Wavelength – 1530 nm	λ_c	1524.5	1530	1537.5	nm
Center Wavelength – 1550 nm	λ_c	1544.5	1550	1557.5	nm
Center Wavelength – 1570 nm	λ_c	1564.5	1570	1577.5	nm
Center Wavelength – 1590 nm	λ_c	1584.5	1590	1597.5	nm
Center Wavelength – 1610 nm	λ_c	1604.5	1610	1617.5	nm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	*ET*	9	---	---	dB
Side Mode Suppression Ratio	*SMSR*	30	---	---	dB
Relative Intensity Noise	*RIN*	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	T_r/T_f	---	---	260	ps
Total Jitter	T_j	---	---	227	ps
TX Disable Asserted	P_{OFF}	---	---	-35	dBm
TX Fault Output - High	V_{FH}	2.4	---	V_{CC}	V
TX Fault Output - Low	V_{FL}	0	---	0.5	V

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

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Transmitter Electro-Optical Characteristics (cont.)

Parameter	Symbol	Min.	Typical	Max.	Units
TX Disable Voltage – High	V_{DH}	2.4	---	V_{CC}	V
TX Disable Voltage - Low	V_{DL}	0	---	0.5	V
TX Disable Assert Time	T_{ass}	---	---	10	µs
TX Disable Deassert Time	T_{disass}	---	---	1.0	ms
Time to Initialize	T_{as}	---	---	300	ms
TX Fault from Fault to Assertion	T_{fault}	---	---	100	µs
TX Disable Time to Start Reset	T_{reset}	10	---	---	µs

Notes:

1. Module is designed for AC coupling. DC voltage will be filtered by internal capacitor.
2. Single ended will be 75 ohm for each signal line.
3. Output of average coupling optical power into 9/125 µm SMF.
4. Optical eye diagram is compliant with IEEE 802.3z

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	λ_C	1260	---	1610	nm
Receiver Overload	P_{max}	-3	---	---	dBm
Receiver Sensitivity [1]	P_I	---	-26	-24	dBm
Differential Output Voltage	ΔV_O	0.4	---	2.0	V
Differential Input Impedance [2]	Z	---	150	---	Ohm
Optical Return Loss	OL	12	---	---	dB
Rise/Fall Time	T_r/T_f	---	---	350	ps
RX Signal Loss – Asserted	P_{SD+}	---	---	-24	dBm
RX Signal Loss – Deasserted	P_{SD-}	-31	---	---	dBm
RX Signal Loss Output - High	V_{RL+}	2.4	---	V_{CC}	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.5	V
RX Signal Loss Assert Time	T_{RL+}	---	---	100	µs
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	µs

Notes:

1. Test at 1.25 Gb/s, $2^7 - 1$ PRBS data pattern, and > 1×10^{-12} of Bit-Error-Rate (BER).
2. Single ended will be 75 ohm for each signal line.

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