

1.25 Gigabit Ethernet-Single Mode Transceiver



GBIC, Duplex SC Connector, CWDM LD for Single Mode Fiber, RoHS Compliant
Power Budget 24dB



Features

- CWDM 8 wavelengths Transmitter
- Data Rate: 1.25Gbps, NRZ
- Single +3.3V/5V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Compliant with Gigabit Interface Converter (GBIC)
- Duplex SC Connector
- Compliance with specifications for IEEE-802.3z Gigabit Ethernet at 1.25 Gbps
- Compliance with ANSI specifications for Fibre Channel applications at 1.06 Gbps
- Eye Safety
Designed to meet Laser Class 1 comply with EN60825-1

Applications

- CWDM
- Gigabit Ethernet Links
- Fibre Channel Links at 1.06 Gbps
- High Speed Backplane Interconnects
- Switched Backbones

Description

The AB-GSC-Cxx-ZX-x series from ACC Systems Oy are the high performance and cost-effective module for serial optical data communication applications specified for single mode of 1.25 Gb/s. It operates with +3.3/5V power supply. The module is intended for single-mode fiber, operates at a nominal wavelength of CWDM and complies with Gigabit Interface Converter (GBIC). Each module consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. All of them are housed in a metal package and the combination produces a reliable component.

The module is a duplex SC connector transceiver designed for use in Gigabit Ethernet applications and to provide IEEE-802.3z compliant link for 1.25Gb/s long reach applications. The characteristics are performed in accordance with ITU-T G.694.2 and G.695.

EMC

Most equipment utilizing high-speed transceivers will be required to meet the following requirements:

- 1) FCC in the United States
- 2) CENELEC EN55022 (CISPR 22) in Europe

To assist the customer in managing the overall equipment EMC performance, the transceivers have been designed to satisfy FCC class B limits and provide good immunity to radio-frequency electromagnetic fields.

Eye Safety

The transceivers have been designed to meet Class 1 eye safety and comply with EN 60825-1.

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Product Information

Model Number	Wavelength	Operating Temperature & Monitor Function	Distance	Output Power	Sensitivity
AB-GSC-C47-ZX	1470 nm	0~70 °C	80 km	0 ~ +5 dBm	≤-24 dBm
AB-GSC-C49-ZX	1490 nm				
AB-GSC-C51-ZX	1510 nm				
AB-GSC-C53-ZX	1530 nm				
AB-GSC-C55-ZX	1550 nm				
AB-GSC-C57-ZX	1570 nm				
AB-GSC-C59-ZX	1590 nm				
AB-GSC-C61-ZX	1610 nm				
AB-GSC-C47-ZX-T	1470 nm	-40~85 °C	80 km	0 ~ +5 dBm	≤-24 dBm
AB-GSC-C49-ZX-T	1490 nm				
AB-GSC-C51-ZX-T	1510 nm				
AB-GSC-C53-ZX-T	1530 nm				
AB-GSC-C55-ZX-T	1550 nm				
AB-GSC-C57-ZX-T	1570 nm				
AB-GSC-C59-ZX-T	1590 nm				
AB-GSC-C61-ZX-T	1610 nm				

ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	T _S	-40	85	°C	
Supply Voltage	V _{CC}	0	6	V	
Data Input Voltage	---	0	V _{CC}	V	
Supply Current	I _S		300	mA	

OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Supply Voltage	V _{CC}	3.10		5.25	V	
Data Input Voltage Swing	V _{ID}	300		1860	mV	

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Transmitter					
Transmitter Supply Current	I _{CC_T}		200	mA	
Tx_Disable Input Voltage - Low	V _{IL}	0	0.8	V	
Tx_Disable Input Voltage - High	V _{IH}	2.0	V _{CC}	V	
Tx_Fault Output Voltage - Low	V _{OL}	0	0.8	V	
Tx_Fault Output Voltage - High	V _{OH}	2.0	V _{CC}	V	
Receiver					
Receiver Supply Current	I _{CC_R}		100	mA	
Receiver Data Output Differential Voltage	V _{OD}	0.4	1.3	V	
Rx_LOS Output Voltage - Low	V _{OL}	0	0.8	V	
Rx_LOS Output Voltage - High	V _{OH}	2.0	V _{CC}	V	
MOD_DEF (1) , MOD_DEF (2) - Low	V _{IL}	-0.6	V _{CC} × 0.3	V	
MOD_DEF (1) , MOD_DEF (2) - High	V _{IH}	V _{CC} × 0.7	V _{CC} + 0.5	V	

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TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power	P _o	0		5	dBm	1
Extinction Ratio	ER	9			dB	
Center Wavelength	λ_c	1464.5	1470	1477.5	nm	
		1484.5	1490	1497.5		
		1504.5	1510	1517.5		
		1524.5	1530	1537.5		
		1544.5	1550	1557.5		
		1564.5	1570	1577.5		
		1584.5	1590	1597.5		
		1604.5	1610	1617.5		
Spectral Width (-20dB)	$\Delta \lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
RIN	RIN			-120	dB/Hz	
Optical Rise time (20%-80%)	t _r			260	ps	2
Optical Fall time (20%-80%)	t _f			260	ps	2
Output Eye		Compliant with IEEE802.3z/D5.0				

RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	P _{max}	-3			dBm	3
Minimum Input Optical Power	P _{min}			-24	dBm	3
Operating Wavelength	λ	1260		1620	nm	
Optical Return Loss	ORL	12			dB	
Receiver Electrical 3dB Upper Cutoff Frequency	---			1500	MHz	
LOS of Signal - Asserted	P _A	-35			dBm	
LOS of Signal - Deasserted	P _D			-24	dBm	
Loss of Signal -Hysteresis	P _D -P _A	0.5			dB	

Notes:

1. Measured average power coupled into 9/125 μ m single mode fiber.
2. These are 20-80% values.
3. Measured with 2⁷-1 PRBS at BER<10⁻¹²

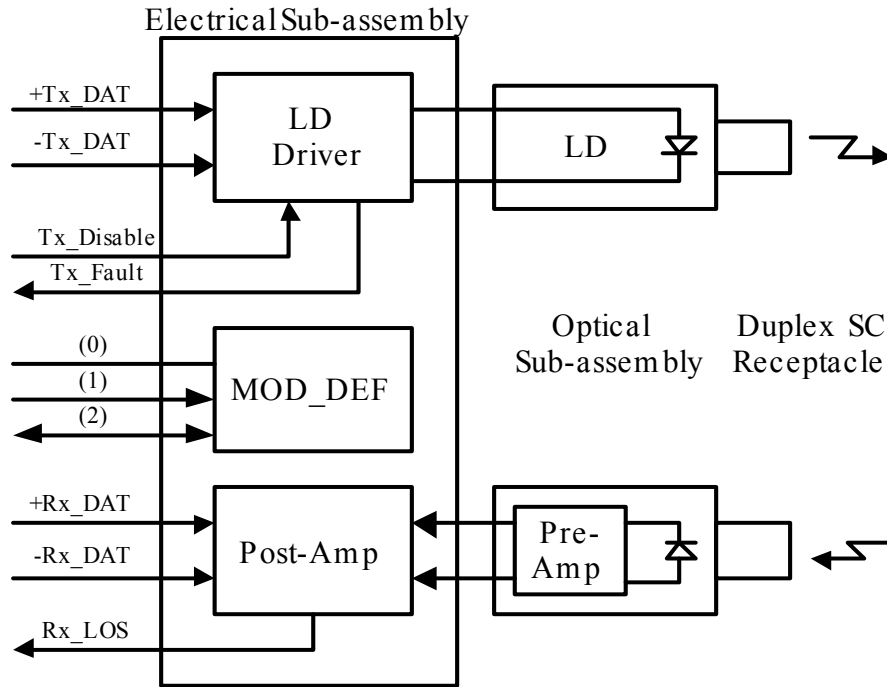
TIMING CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
TX_DISABLE Assert Time	t _{off}			10	μ s	
TX_DISABLE Negate Time	t _{on}			1	ms	
Time to initialize, include reset of TX_FAULT	t _{init}			300	ms	
TX_FAULT from fault to assertion	t _{fault}			100	μ s	
TX_DISABLE time to start reset	t _{reset}	10			μ s	
Receiver Loss of Signal Assert Time (off to on)	t _{A,RX LOS}			100	μ s	
Receiver Loss of Signal Assert Time (on to off)	t _{D,RX LOS}			100	μ s	

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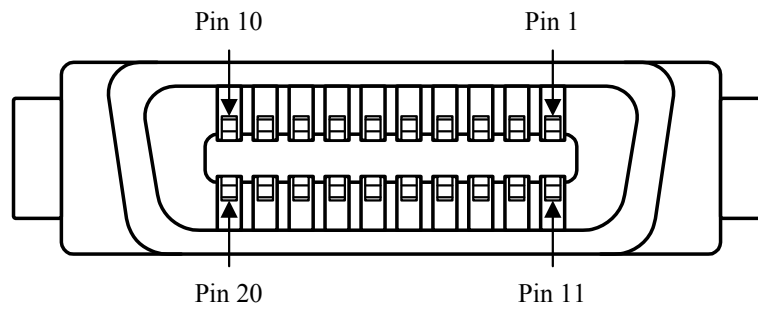


BLOCK DIAGRAM OF TRANSCEIVER



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PIN OUT DIAGRAM OF TRANSCEIVER

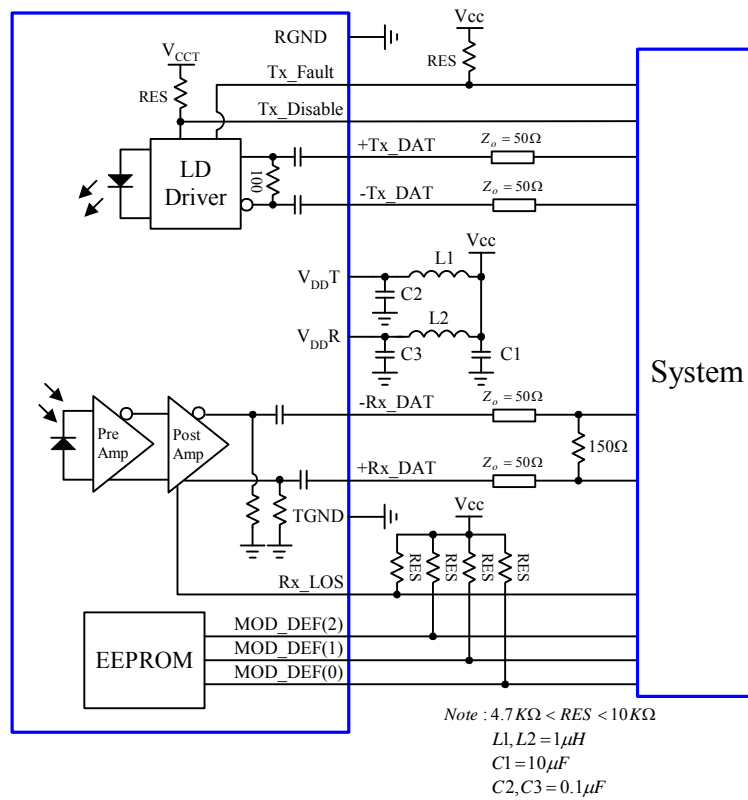


PIN OUT TABLE

Pin	Symbol	Functional Description
1	Rx_LOS	Loss of Signal
2	RGND	Receiver Ground
3	RGND	Receiver Ground
4	MOD-DEF(0)	Module Definition 0 – Grounded in module
5	MOD-DEF(1)	Module Definition 1 – Two wire serial ID interface
6	MOD-DEF(2)	Module Definition 2 – Two wire serial ID interface
7	Tx_Disable	Transmitter Disable – Module disables on high or open
8	TGND	Transmitter Ground
9	TGND	Transmitter Ground
10	Tx_Fault	Transmitter Fault Indication
11	RGND	Receiver Ground
12	-Rx_DAT	Inverse Received Data Out
13	+Rx_DAT	Received Data Out
14	RGND	Receiver Ground
15	V _{DD} R	Receiver Power
16	V _{DD} T	Transmitter Power
17	TGND	Transmitter Ground
18	+Tx_DAT	Transmitter Data In
19	-Tx_DAT	Inverse Transmitter Data In
20	TGND	Transmitter Ground

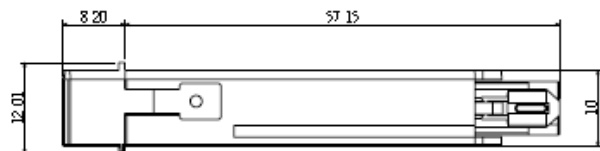
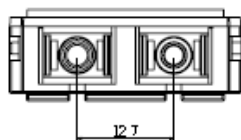
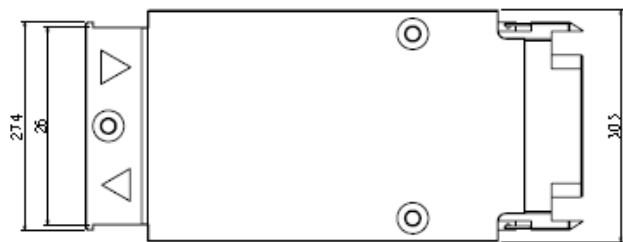
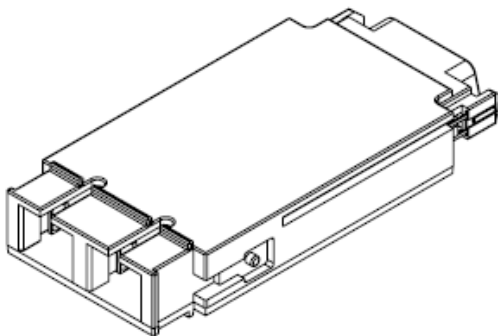
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RECOMMENDED CIRCUIT SCHEMATIC



MECHANICAL DIMENSIONS

Units in mm



Claim:

ACC Systems Oy reserves the right to make changes in the specification described hereinafter without prior notice.