1.25 Gigabit Ethernet-Single Mode Transceiver

GBIC, Duplex SC Connector, 1310nm/LD for Single Mode Fiber

Product Information:

Model Number	Wavelength	Operating Voltage	Signal Detect Output	Distance
CT-1250SGR-MC4C	*1310 nm*	*3.3/5V*	*TTL*	*10 km*

Features

- 1310nm MQW-FP LD
- Data Rate: 1.25Gbps, NRZ
- Single +3.3V/5V Power Supply
- AC/AC or DC/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 Fiber Channel applications at 1.06 Gbps
- Eye Safety
  Designed to meet Laser Class 1 comply with EN60825-1

Applications

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

Description

The CT-1250SGR-MC4C from Coretek Opto Corp. is a 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 1310nm 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 Telcordia Specification GR-468-CORE.

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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09/23/2003
Version：D

ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	T_S	-40	85	℃	
Supply Voltage	V_{CC}	0	6	V	
Lead Soldering Temperature/Time	T_{SOLD}		260	℃	10 sec on lead
Supply Current	I_S		240	mA	

OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Ambient Operating Temperature	T_A	0		70	℃	
Supply Voltage	V_{CC}	3.1		5.5	V	
Data Input Voltage Swing	V_{ID}	300		1860	mV	

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Transmitter					
Transmitter Supply Current	I_{CCT}		140	mA	
Tx_ Disable Input Voltage - Low	V_{IL}	0	0.8	V	
Tx_ Disable Input Voltage - High	V_{IH}	2.0	Vcc	V	
Tx_ Fault Output Voltage - Low	V_{OL}	0	0.8	V	
Tx_ Fault Output Voltage - High	V_{OH}	2.0	Vcc	V	
Receiver					
Receiver Supply Current	I_{CCR}		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	Vcc	V	
MOD_DEF (1) , MOD_DEF (2) - Low	V_{IL}	-0.6	Vcc × 0.3	V	
MOD_DEF (1) , MOD_DEF (2) - High	V_{IH}	Vcc × 0.7	Vcc + 0.5	V	

TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power	Po	-9.5		-3	dBm	1
Extinction Ratio	ER	9			dB	
Center Wavelength	λ_c	1270		1355	nm	
Spectral Width (RMS)	$\Delta\lambda$			4	nm	
RIN	RIN			-117	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}			-21	dBm	3
Operating Wavelength	λ	1100		1600	nm	
Optical Return Loss	ORL	12			dB	
Receiver Electrical 3dB Upper Cutoff Frequency	---			1500	MHz	
Loss of Signal - Asserted	P_A	-35			dBm	
Loss of Signal - Deasserted	P_D			-21	dBm	
Loss of Signal -Hysterisis	$P_D - P_A$	0.5			dB	

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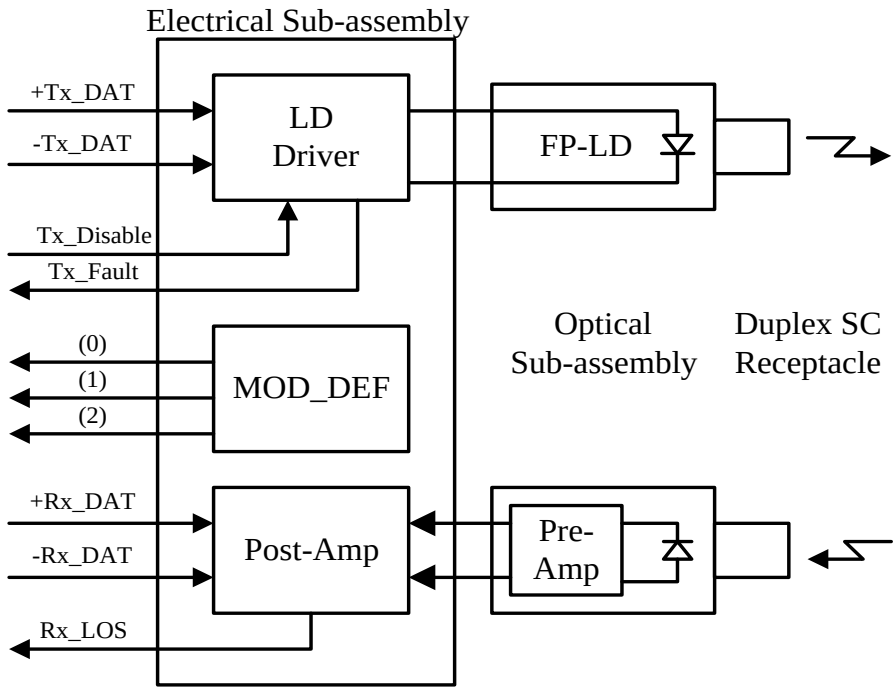
Notes:

1. Measured average power coupled into 9/125 μm single mode fiber.
2. These are 20-80% values.
3. Measured with 2^7-1 PRBS at BER<10^{-12}

TIMING CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
TX_DISABLE Assert Time	t_off			10	μs	
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	μs	
TX_DISABLE time to start reset	t_reset	10			μs	
Receiver Loss of Signal Assert Time (off to on)	t_{A,RX_LOS}			100	μs	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}			100	μs	

BLOCK DIAGRAM OF TRANSCEIVER



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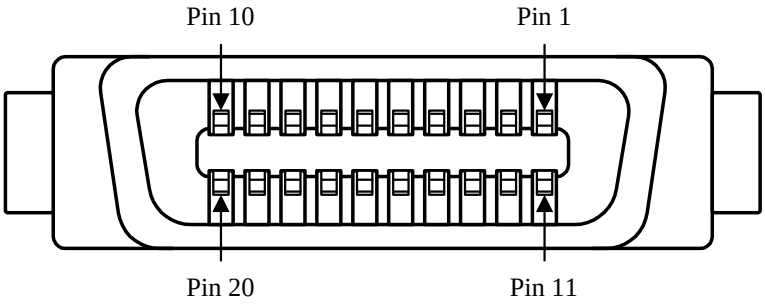
PIN OUT DIAGRAM OF TRANSCEIVER



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 – Two wire serial ID interface
5	MOD-DEF(1)	Module Definition 1 – Two wire serial ID interface
6	MOD-DEF(2)	Module Definition 2 – Grounded in module
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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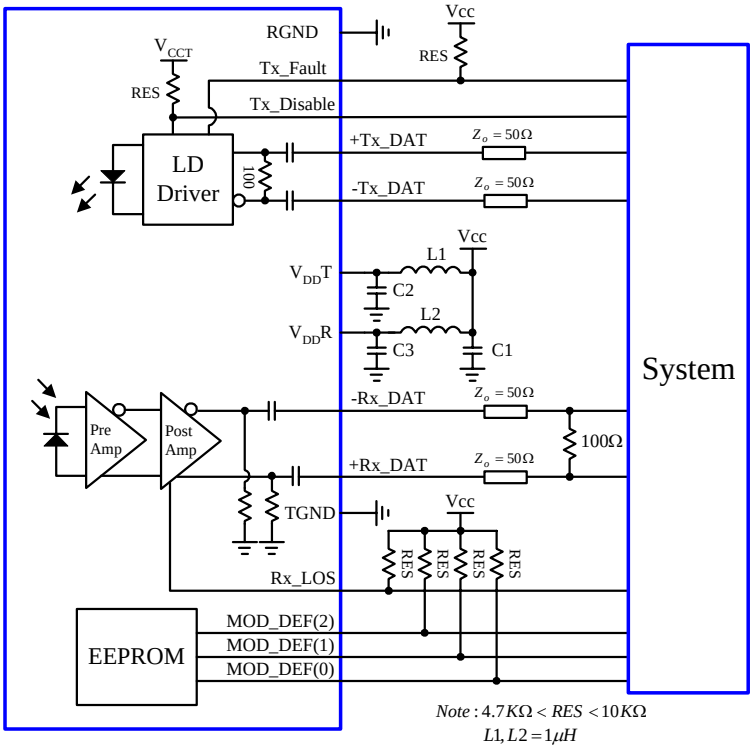
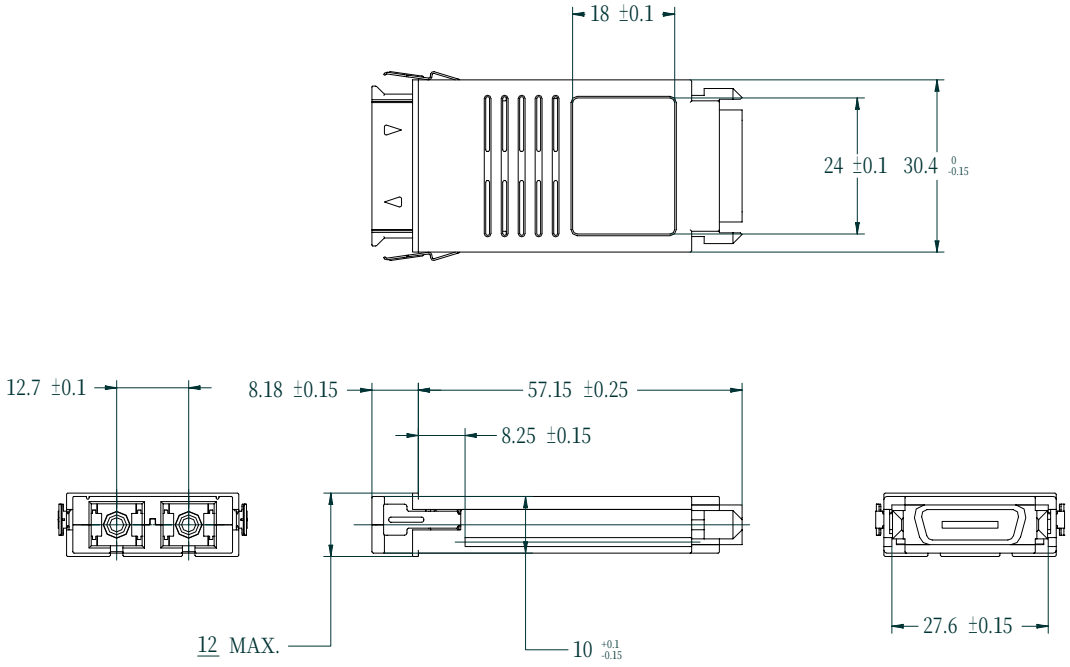
RECOMMENDED CIRCUIT SCHEMATIC



Note : $4.7K\Omega < RES < 10K\Omega$
$L1, L2 = 1\mu H$
$C1 = 10\mu F$
$C2, C3 = 0.1\mu F$

MECHANICAL DIMENSIONS

Units in mm



Claim:

CORETEK Opto Corp. reserves the right to make changes in the specification described hereinafter without prior notice.