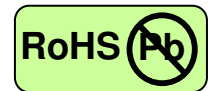


# 1.25 Gigabit Ethernet-Multimode Transceiver



## GBIC, Duplex SC Connector, 850nm VCSEL for Multimode Fiber, RoHS Compliant

Extended Operating Temperature from -10 to +85 °C



### Features

- 850nm VCSEL
- 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

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

### Description

The CT-1250NGR-SC1C-A from Coretek Opto Corp. is a high performance and cost-effective module for serial optical data communication applications specified for multimode of 1.25 Gb/s. It operates with +3.3/5V power supply. The module is intended for multimode fiber, operates at a nominal wavelength of 850nm 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 short 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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## Product Information

Model Number	Operating Voltage & SD Output	Wavelength	Output Power	Sensitivity	Distance
CT-1250NGR-SC1C-A	3.3/5V TTL AC/AC	850 nm	-9.5 ~ -4 dBm	$\leq -17$ dBm	550 m(50/125 $\mu$ m) 275 m(62.5/125 $\mu$ m)

## ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	T <sub>S</sub>	-40	85	°C	
Supply Voltage	V <sub>CC</sub>	0	6	V	
Data Input Voltage	---	0	V <sub>CC</sub>	V	
Supply Current	I <sub>S</sub>		240	mA	

## OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Case Operating Temperature	T <sub>A</sub>	-10		85	°C	
Supply Voltage	V <sub>CC</sub>	3.10		5.25	V	
Data Input Voltage Swing	V <sub>ID</sub>	300		1860	mV	

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
<b>Transmitter</b>					
Transmitter Supply Current	I <sub>CC</sub> T		140	mA	
Tx_Disable Input Voltage - Low	V <sub>IL</sub>	0	0.8	V	
Tx_Disable Input Voltage - High	V <sub>IH</sub>	2.0	V <sub>CC</sub>	V	
Tx_Fault Output Voltage - Low	V <sub>OL</sub>	0	0.8	V	
Tx_Fault Output Voltage - High	V <sub>OH</sub>	2.0	V <sub>CC</sub>	V	
<b>Receiver</b>					
Receiver Supply Current	I <sub>CC</sub> R		100	mA	
Receiver Data Output Differential Voltage	V <sub>OD</sub>	0.4	1.3	V	
Rx_LOS Output Voltage - Low	V <sub>OL</sub>	0	0.8	V	
Rx_LOS Output Voltage - High	V <sub>OH</sub>	2.0	V <sub>CC</sub>	V	
MOD_DEF (1) , MOD_DEF (2) - Low	V <sub>IL</sub>	-0.6	V <sub>CC</sub> × 0.3	V	
MOD_DEF (1) , MOD_DEF (2) - High	V <sub>IH</sub>	V <sub>CC</sub> × 0.7	V <sub>CC</sub> + 0.5	V	

## TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power	P <sub>O</sub>	-9.5		-4	dBm	1
Extinction Ratio	ER	9			dB	
Center Wavelength	$\lambda_c$	830	850	860	nm	
Spectral Width (RMS)	$\Delta \lambda$			0.85	nm	
RIN	RIN			-117	dB/Hz	
Coupled Power Ratio	CPR	9			dB	2
Optical Rise time (20%-80% )	t <sub>r</sub>			260	ps	3
Optical Fall time (20%-80% )	t <sub>f</sub>			260	ps	3
Output Eye		Compliant with IEEE802.3z/D5.0				

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## RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	$P_{max}$	-3			dBm	4
Minimum Input Optical Power	$P_{min}$			-17	dBm	4
Operating Wavelength	$\lambda$	770		860	nm	
Optical Return Loss	ORL	12			dB	
Receiver Electrical 3dB Upper Cutoff Frequency	---			1500	MHz	
LOS of Signal - Asserted	$P_A$	-30			dBm	
LOS of Signal - Deasserted	$P_D$			-17	dBm	
Loss of Signal -Hysterisis	$P_D - P_A$	0.5			dB	

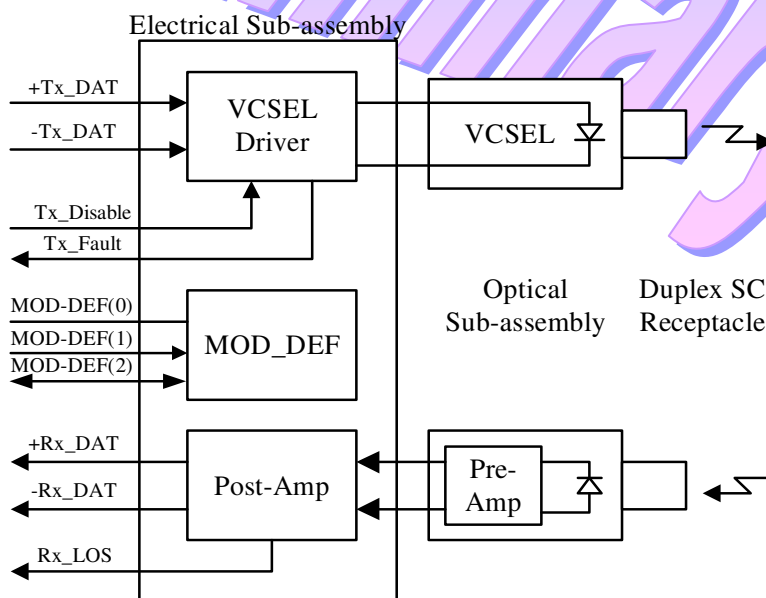
### Notes:

1. Measured average power coupled into 9/125  $\mu$  m single mode fiber.
2. CPR is measured in accordance with EIA/TIA-526-14A as referenced in IEEE 802.3 section 38.6.10.
3. These are 20-80% values.
4. 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	$\mu$ 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	$\mu$ s	
TX_DISABLE time to start reset	$t_{reset}$	10			$\mu$ s	
Receiver Loss of Signal Assert Time (off to on)	$t_{A,RX\_LOS}$			100	$\mu$ s	
Receiver Loss of Signal Assert Time (on to off)	$t_{D,RX\_LOS}$			100	$\mu$ s	

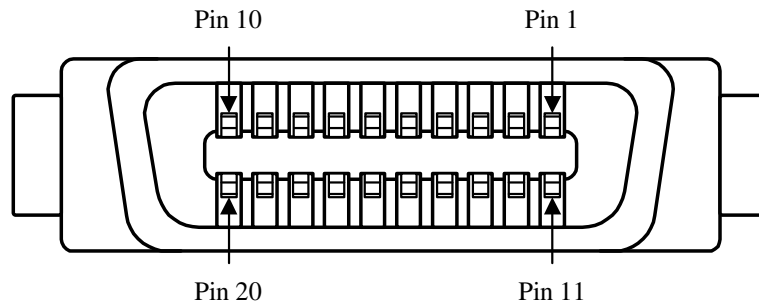
## BLOCK DIAGRAM OF TRANSCEIVER



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## PIN OUT DIAGRAM OF TRANSCEIVER



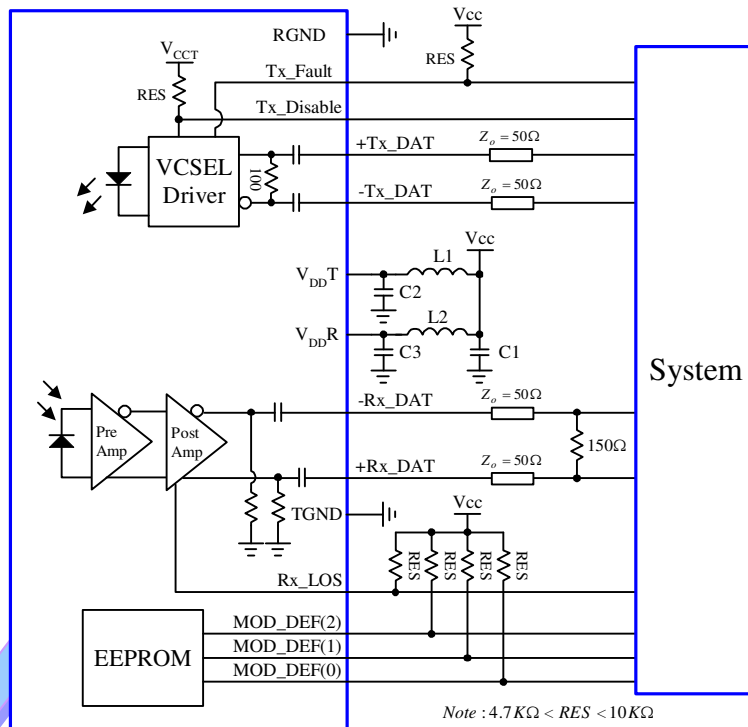
## PIN OUT TABLE

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 <sub>DD</sub> R	Receiver Power
16	V <sub>DD</sub> 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:  $4.7K\Omega < RES < 10K\Omega$

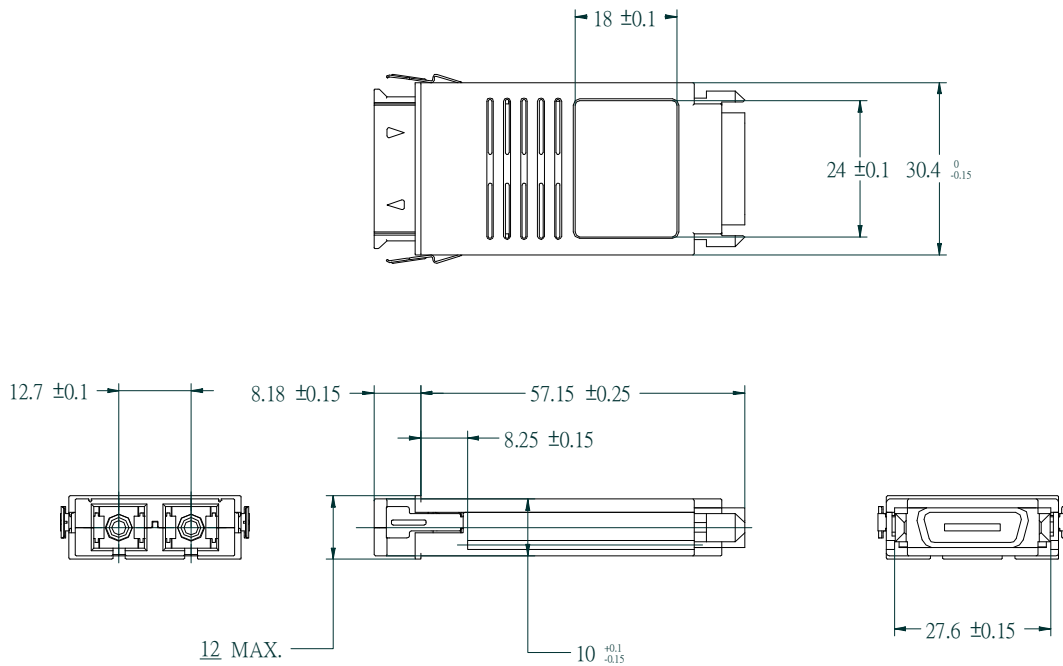
$L1, L2 = 1\mu H$

$C1 = 10\mu F$

$C2, C3 = 0.1\mu F$

## MECHANICAL DIMENSIONS

Units in mm



### Claim:

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