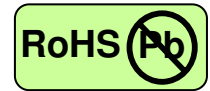


# 155Mbps ATM-Single Mode Transceiver



**1×9, Duplex SC Connector, CWDM LD for Single Mode Fiber, RoHS Compliant**  
Power Budget 36dB



## Features

- CWDM 8 wavelengths Transmitter
- Data Rate: 100Mbps~155Mbps, NRZ
- Single +3.3V or +5V Power Supply
- RoHS Compliant and Lead-free
- PECL Differential Electrical Interface
- Industry Standard 1×9 Output Footprint
- Duplex SC Connector
- Compliance with
  - 100Base-FX of IEEE802.3u Standard
  - FDDI PMD Standard
  - ATM Standard
- Eye Safety
  - Designed to meet Laser Class 1 comply with EN60825-1

## Applications

- CWDM
- Fast Ethernet
- FDDI
- ATM/SONET OC-3/SDH STM-1
- Single mode fiber links
- Optical-Electrical Interface Conversion

## Description

The CT-0155TTR-CxAC series from Coretek Opto Corp. are the high performance and cost-effective modules for serial optical data communication applications specified for single mode of 155 Mb/s. It operates with +5V or +3.3V power supply. The module is intended for single mode fiber, operates at a nominal wavelength of CWDM and complies with the industry standard 1x9 footprint. Each module consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. All of them are housed in a plastic package and the combination produces a reliable component.

The module is a duplex SC connector transceiver designed for use in fast Ethernet applications and to provide an ATM/SONET OC-3/SDH STM-1 compliant link for 155 Mb/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.

# 155Mbps ATM-Single Mode Transceiver



## Product Information

Model Number	Wavelength	Operating Voltage & SD Output	Distance	Output Power	Sensitivity
CT-0155TTR-C1AC	1470 nm	5V PECL DC/DC	120 km	0 ~ +5 dBm	$\leq -36$ dBm
	1490 nm				
	1510 nm				
	1530 nm				
	1550 nm				
	1570 nm				
	1590 nm				
CT-0155TTR-C2AC	1610 nm	3.3V PECL DC/DC			
	1470 nm				
	1490 nm				
	1510 nm				
	1530 nm				
	1550 nm				
	1570 nm				
1590 nm					
1610 nm					

## 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	
Lead Soldering Temperature/Time	T <sub>SOLD</sub>		260	°C	10 sec on lead
Data Input Voltage	---	0	V <sub>CC</sub>	V	

## OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Ambient Operating Temperature	T <sub>A</sub>	0		70	°C	
Supply Voltage (for 3.3V)	V <sub>CC</sub>	3.10		3.50	V	
Supply Voltage (for 5.0V)	V <sub>CC</sub>	4.75		5.25	V	

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
<b>Transmitter</b>					
Transmitter Supply Current	I <sub>CC</sub>		200	mA	
Transmitter Data Input Current – Low	I <sub>IL</sub>	-350		μA	
Transmitter Data Input Current – High	I <sub>IH</sub>		350	μA	
Transmitter Data Input Voltage – Low	V <sub>IL</sub> -V <sub>CC</sub>	-1.810	-1.620	V	1
Transmitter Data Input Voltage – High	V <sub>IH</sub> -V <sub>CC</sub>	-1.025	-0.880	V	1
<b>Receiver</b>					
Receiver Supply Current	I <sub>CC</sub>		100	mA	
Receiver Data Output Voltage – Low	V <sub>OL</sub> -V <sub>CC</sub>	-1.810	-1.620	V	2
Receiver Data Output Voltage – High	V <sub>OH</sub> -V <sub>CC</sub>	-1.025	-0.880	V	2
Signal Detect Output Voltage – Low (for PECL)	V <sub>OL</sub> -V <sub>CC</sub>	-1.810	-1.620	V	2
Signal Detect Output Voltage – High (for PECL)	V <sub>OH</sub> -V <sub>CC</sub>	-1.025	-0.880	V	2

# 155Mbps ATM-Single Mode Transceiver



## TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power (avg.)	P <sub>o</sub>	0		5	dBm	3
Extinction Ratio	ER	10			dB	4, 5
Center Wavelength	$\lambda_c$	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	
Optical Rise time (10%-90% )	t <sub>r</sub>			2.0	ns p-p	4
Optical Fall time (10%-90% )	t <sub>f</sub>			2.0	ns p-p	4
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					

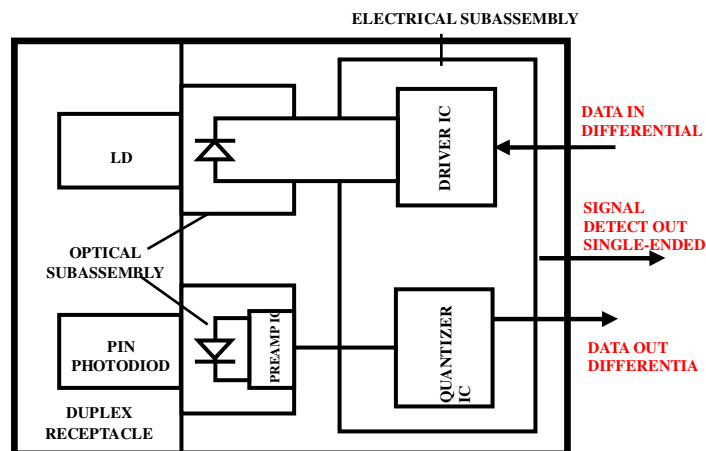
## RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	P <sub>max</sub>	-3			dBm	5
Receiver Sensitivity	P <sub>min</sub>			-36	dBm	5
Operating Wavelength	$\lambda$	1260		1620	nm	
Signal Detect - Asserted	P <sub>A</sub>	P <sub>D</sub> +0.5		-36	dBm	6
Signal Detect - Deasserted	P <sub>D</sub>	-47			dBm	7
Signal Detect - Hysteresis	P <sub>A</sub> - P <sub>D</sub>	0.5		4	dB	

### Notes:

1. Compatible with 10K, 10KH, 100K ECL and PECL output signals.
2. These outputs are compatible with 10K, 10KH, 100K ECL and PECL inputs.
3. Measured average power coupled into 9/125  $\mu$  m single mode fiber.
4. The input data pattern is a 12.5MHz square wave pattern.
5. Measured with 2<sup>23</sup>-1 PRBS at BER<10<sup>-10</sup>
6. Measured on transition – low to high
7. Measured on transition – high to low

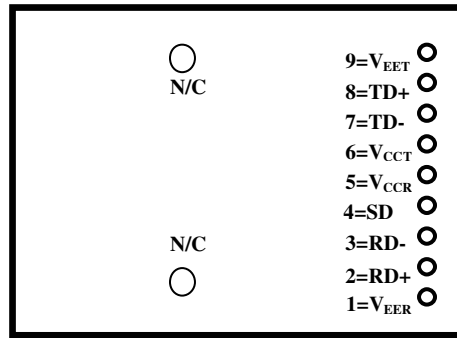
## BLOCK DIAGRAM OF TRANSCEIVER



# 155Mbps ATM-Single Mode Transceiver



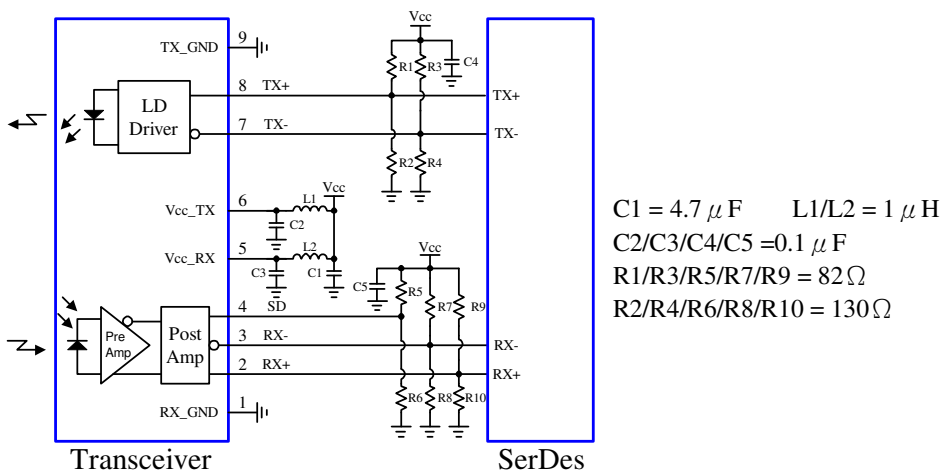
## PIN OUT DIAGRAM OF TRANSCEIVER



Pin	Symbol	Functional Description
Mounting Posts		
The mounting posts are provided for transceiver mechanical attachment to the circuit board. They should not be connected to the circuit ground but can be connected to the chassis ground.		
1	V <sub>EER</sub>	Receiver Signal Ground
2	RD+	Receiver Data Non-inverted Differential Output
3	RD-	Receiver Data Inverted Differential Output
4	SD	Signal Detect is a PECL output. A high level indicates a received optical signal
5	V <sub>CCR</sub>	Receiver Power Supply
6	V <sub>CCT</sub>	Transmitter Power Supply
7	TD-	Transmitter Data Inverted Differential Input
8	TD+	Transmitter Data Non-inverted Differential Input
9	V <sub>EET</sub>	Transmitter Signal Ground

## RECOMMENDED CIRCUIT SCHEMATIC

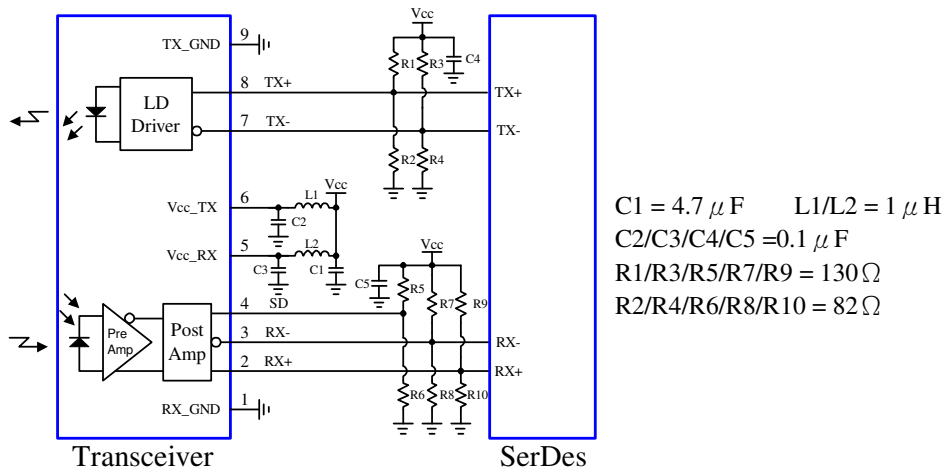
### 1) 5V SD PECL DC/DC Module



# 155Mbps ATM-Single Mode Transceiver

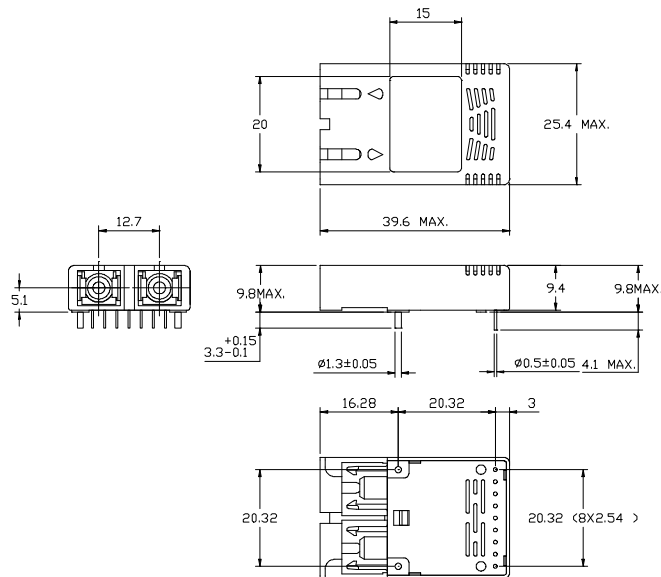


## 2) 3.3V SD PECL DC/DC Module



## MECHANICAL DIMENSIONS

Units in mm



DIMENSIONS ARE IN MILLIMETERS.  
ALL DIMENSIONS ARE  $\pm 0.1$ mm UNLESS OTHERWISE SPECIFIED.

### Claim:

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