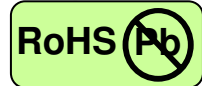


155Mbps ATM-Multimode Transceiver



1×9, Duplex SC/ST/FC Connector, 1310nm/LED for Multimode Fiber, RoHS Compliant
Extended Operating Temperature from -40 to +85 °C



Applications

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

Features

- 1310nm LED
- Data Rate: 100Mbps~155Mbps, NRZ
- Single +3.3V or +5V Power Supply
- RoHS Compliant and Lead-free
- PECL Differential Electrical Interface/PECL Compatible Logic Interface and TTL Signal Detect Output
- Industry Standard 1×9 Output Footprint
- Duplex SC/ST/FC 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

Description

The CT-0155NTR-Mx2x-A from Coretek Opto Corp. is a high performance and cost-effective module for serial optical data communication applications specified for multimode of 155 Mb/s. It operates with +5V or +3.3V power supply. The module is intended for multimode fiber, operates at a nominal wavelength of 1310nm 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 dual fiber 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 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	Connector	Distance	Wavelength	Output Power	Sensitivity
CT-0155NTR-M12C-A	5V PECL DC/DC	SC	2 km	1310 nm	-19 ~ -14 dBm	$\leq$ -32 dBm
CT-0155NTR-M22C-A	3.3V PECL DC/DC					
CT-0155NTR-MA2C-A	5V TTL DC/DC					
CT-0155NTR-ME2C-A	3.3V TTL DC/DC					
CT-0155NTR-M12T-A	5V PECL DC/DC	ST				
CT-0155NTR-M22T-A	3.3V PECL DC/DC					
CT-0155NTR-MA2T-A	5V TTL DC/DC					
CT-0155NTR-ME2T-A	3.3V TTL DC/DC					
CT-0155NTR-M12F-A	5V PECL DC/DC	FC				
CT-0155NTR-M22F-A	3.3V PECL DC/DC					
CT-0155NTR-MA2F-A	5V TTL DC/DC					
CT-0155NTR-ME2F-A	3.3V TTL DC/DC					

ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	T _S	-40	85	°C	
Supply Voltage	V _{CC}	0	6	V	
Lead Soldering Temperature/Time	T _{SOLD}		260	°C	10 sec on lead
Data Input Voltage	---	0	V _{CC}	V	

OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Ambient Operating Temperature	T _A	-40		85	°C	
Supply Voltage (for 3.3V)	V _{CC}	3.10		3.50	V	
Supply Voltage (for 5.0V)	V _{CC}	4.75		5.25	V	

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Transmitter					
Transmitter Supply Current	I _{CC}		140	mA	
Transmitter Data Input Current – Low	I _{IL}	-350		μA	
Transmitter Data Input Current – High	I _{IH}		350	μA	
Transmitter Data Input Voltage – Low	V _{IL} -V _{CC}	-1.810	-1.620	V	1
Transmitter Data Input Voltage – High	V _{IH} -V _{CC}	-1.025	-0.880	V	1
Receiver					
Receiver Supply Current	I _{CC}		100	mA	
Receiver Data Output Voltage – Low	V _{OL} -V _{CC}	-1.810	-1.620	V	2
Receiver Data Output Voltage – High	V _{OH} -V _{CC}	-1.025	-0.880	V	2
Signal Detect Output Voltage – Low (for PECL)	V _{OL} -V _{CC}	-1.810	-1.620	V	2
Signal Detect Output Voltage – High (for PECL)	V _{OH} -V _{CC}	-1.025	-0.880	V	2
Signal Detect Output Voltage – Low (for TTL)	V _{OL}		0.4	V	2
Signal Detect Output Voltage – High (for TTL)	V _{OH}	2.4		V	2

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TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power (avg.)	P _o	-19	-17	-14	dBm	3
Extinction Ratio	ER	8.2			dB	
Center Wavelength	λ_c	1270		1360	nm	
Spectral Width (FWHM)	$\Delta \lambda$			200	nm	
Optical Rise time (10%-90%)	t _r	0.6		3.0	ns p-p	4
Optical Fall time (10%-90%)	t _f	0.6		3.0	ns p-p	4
Output Eye	Compliant with ITU recommendation G.957					

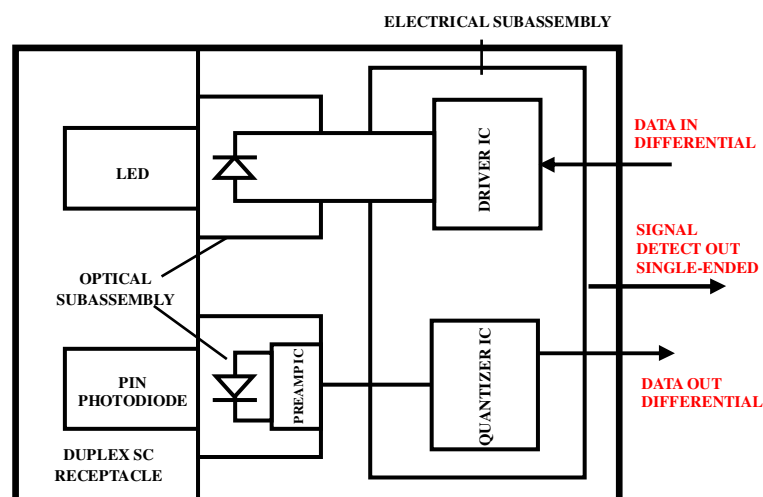
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	P _{max}	-14			dBm	5
Receiver Sensitivity	P _{min}		-34	-32	dBm	5
Operating Wavelength	λ	1100		1600	nm	
Signal Detect - Asserted	P _A			-32	dBm	6
Signal Detect - Deasserted	P _D	-47			dBm	7
Signal Detect - Hysteresis	P _A - P _D	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 62.5/125 μ m, 0.275 NA graded index multimode fiber.
4. These are 10-90% values.
5. Measured with 2²³-1 PRBS at BER<10⁻¹⁰
6. Measured on transition – low to high
7. Measured on transition – high to low

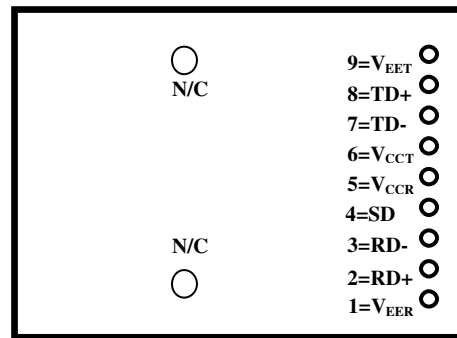
BLOCK DIAGRAM OF TRANSCEIVER



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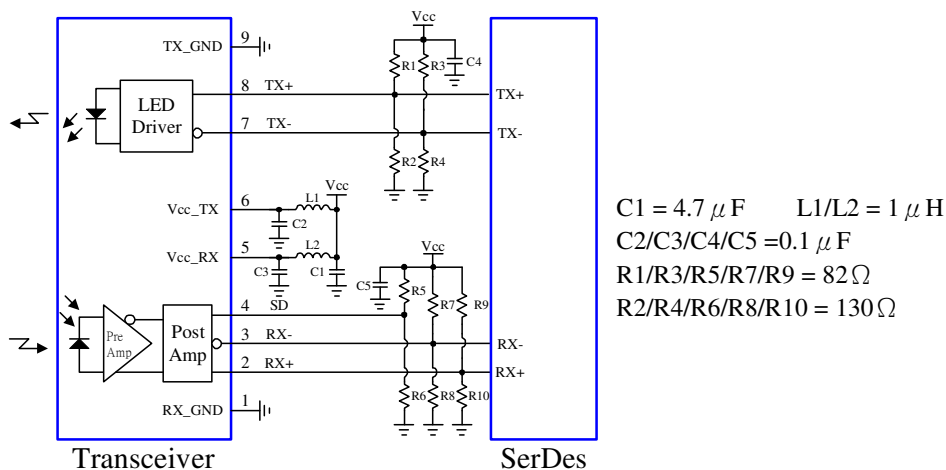
PIN OUT DIAGRAM OF TRANSCEIVER



Pin	Symbol	Functional Description
Mounting Posts		
1	V_{EER}	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 or TTL output. A high level indicates a received optical signal
5	V_{CCR}	Receiver Power Supply
6	V_{CCT}	Transmitter Power Supply
7	TD-	Transmitter Data Inverted Differential Input
8	TD+	Transmitter Data Non-inverted Differential Input
9	V_{EET}	Transmitter Signal Ground

RECOMMENDED CIRCUIT SCHEMATIC

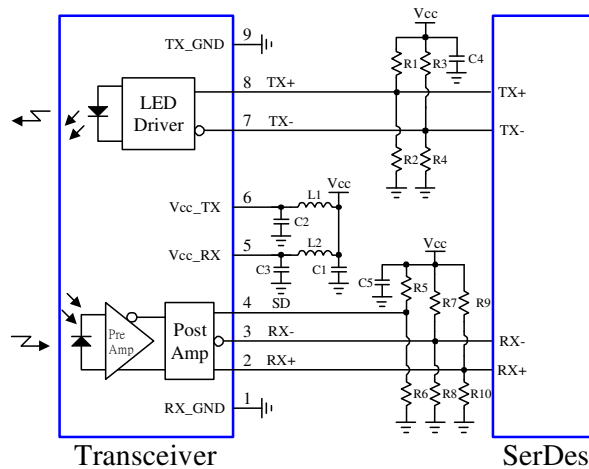
1) 5V SD PECL DC/DC Module



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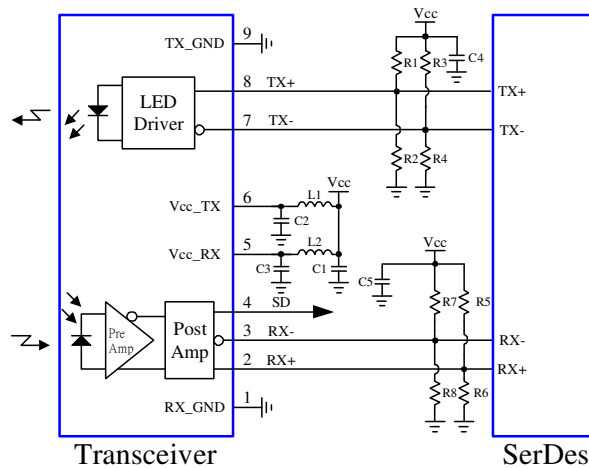


2) 3.3V SD PECL DC/DC Module



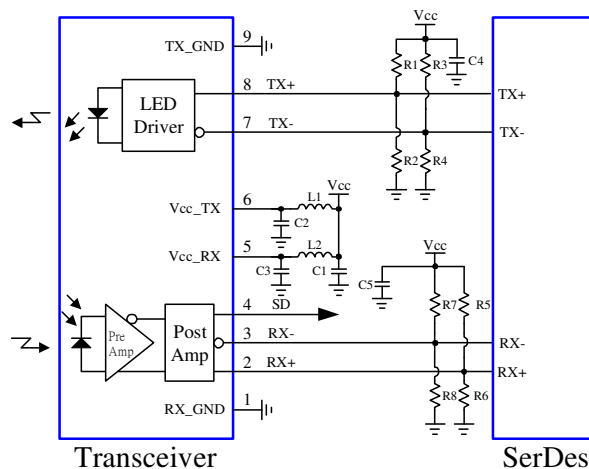
$C1 = 4.7 \mu F$ $L1/L2 = 1 \mu H$
 $C2/C3/C4/C5 = 0.1 \mu F$
 $R1/R3/R5/R7/R9 = 130 \Omega$
 $R2/R4/R6/R8/R10 = 82 \Omega$

3) 5V SD TTL DC/DC Module



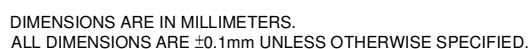
$C1 = 4.7 \mu F$ $L1/L2 = 1 \mu H$
 $C2/C3/C4/C5 = 0.1 \mu F$
 $R1/R3/R5/R7 = 82 \Omega$
 $R2/R4/R6/R8 = 130 \Omega$

4) 3.3V SD TTL DC/DC Module



$C1 = 4.7 \mu F$ $L1/L2 = 1 \mu H$
 $C2/C3/C4/C5 = 0.1 \mu F$
 $R1/R3/R5/R7 = 130 \Omega$
 $R2/R4/R6/R8 = 82 \Omega$

Units in mm



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



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