280-0012-00-AO

Cyan® 280-0012-00 Compatible TAA OC-48-LR2 SFP Transceiver (SMF, 1550nm, 70km, LC)

Features

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free

Applications

- OC-48 Transmission

Product Description

This Cyan® 280-0012-00 compatible SFP transceiver provides OC-48 (2488mbs) transmission rates for up to 70km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cyan® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Cyan®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

TAA COMPLIANT

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Relative Humidity	RH			95	%
Data Rate			2.488		Gbps
9μm Core Diameter SMF	L		80		km

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.15	3.30	3.45	V	
Power Supply Current		Icc			300	mA	
Transmitter							
LVPECL Differential Inputs		VIN	400		1600	mVp-p	1
Input Differential Impedance		ZIN	85	100	115	Ω	2
Tx_Disable	**Disable**		2		Vcc+0.3	V	
	Enable		0		0.8	V	
Tx_Fault	**Fault**		2		Vcc+0.3	V	
	Normal		0		0.5	V	
Receiver							
LVPECL Differential Outputs		VOUT	400	800	1200	mVp-p	3
Output Differential Impedance		ZOUT	85	100	115	Ω	
Tx_Disable Assert Time		t_off			10	us	
Rx_LOS	**LOS**		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF(0.2)		VOH	2.5				
		VOL	0		0.5	V	

Notes:

1. AC coupled inputs. LVPECL logic. Internally AC coupled.
2. RIN>100kΩ @DC.
3. AC coupled outputs. LVPECL logic. Internally AC coupled.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λC	1500	1550	1600	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	POUT	-2		3	dBm	1
Extinction Ratio	ER	8.2			dB	2
Rise/Fall Time (20-80%)	Tr/Tf			150	ps	
Total Jitter	TJ			0.07	UI	2
Output Optical Eye		ITU-T G.957 Compliant				
POUT @Tx_Disable Asserted	POUT			-45	dBm	
Receiver						
Receiver Sensitivity	Pmin			-28	dBm	3
Receiver Overload	P_{MAX}	-9			dBm	
Center Wavelength	λC	1260		1600	nm	
LOS De-Assert	LOSD			-29	dBm	
LOS Assert	LOSA	-42			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Output power is measured by coupling into a 9/125μm multi-mode fiber.
2. Filtered, measured with a PRBS 2^{23}-1 test pattern @2500Mbps.
3. Minimum average optical power is measured at BER less than $1E^{-12}$ with 2^{23}-1 PRBS and ER=9dB.

Pin Descriptions

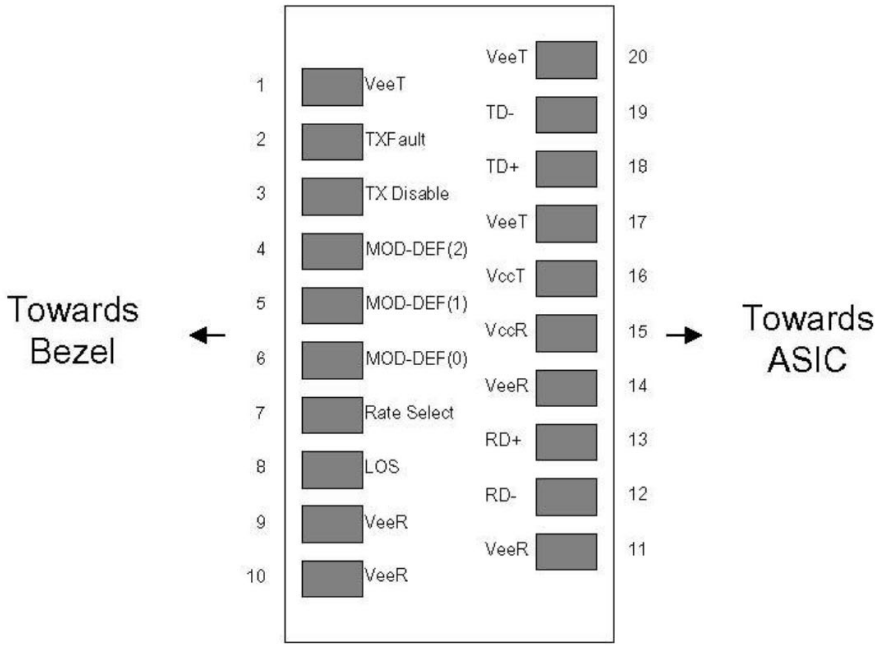
Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground.	5
2	Tx_Fault	Transmitter Fault Indication.	1
3	Tx_Disable	Transmitter Disable. Module disables on “high” or “open.”	2
4	MOD_DEF2	Module Definition 2. 2-Wire Serial ID Interface.	3
5	MOD_DEF1	Module Definition 1. 2-Wire Serial ID Interface.	3
6	MOD_DEF0	Module Definition 0. Grounded within the module.	3
7	Rate Select	No Connection Required. Function not available.	
8	LOS	Loss of Signal.	4
9	VeeR	Receiver Ground.	5
10	VeeR	Receiver Ground.	5
11	VeeR	Receiver Ground.	5
12	RD-	Receiver Inverted Data Out.	6
13	RD+	Receiver Data Out.	7
14	VeeR	Receiver Ground.	5
15	VccR	3.3V ± 5% Receiver Power Supply.	7
16	VccT	3.3V ± 5% Transmitter Power Supply.	7
17	VeeT	Transmitter Ground.	5
18	TD+	Transmitter Data In.	8
19	TD-	Transmitter Inverted Data In.	8
20	VeeT	Transmitter Ground.	5

Notes:

1. Tx_Fault is an open collector/drain output that should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board. Pull-up voltage is between 2.0V and VccT/R+0.3V. When “high,” this output indicates a laser fault of some kind. “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.
2. Tx_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7kΩ to 10kΩ resistor.
   Low (0V – 0.8V): Transmitter On.
   Between (>0.8V and <2.0V): Undefined.
   High (2.0V – 3.465V): Transmitter Disabled.
   Open: Transmitter Disabled.
3. MOD-DEF0, 1, and 2. These are the module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board to supply less than VccT or VccR.
   MOD-DEF0 is grounded by the module to indicate that the module is present.
   MOD-DEF1 is the clock line of 2-wire serial interface for optional serial ID.
   MOD-DEF2 is the data line of 2-wire serial interface for optional serial ID.
4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up externally with a 4.7kΩ to 10kΩ resistor. Pull-up voltage is between 2.0V and VccT/R+0.3V. When “high,” this output indicates that

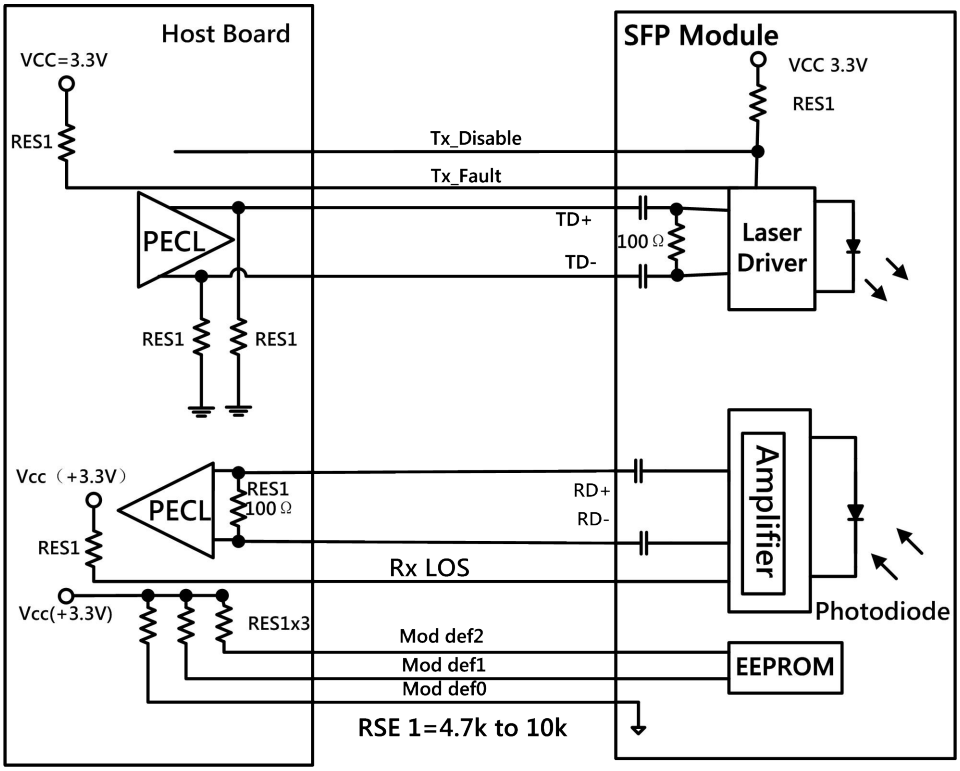
the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.

5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC coupled 100 differential lines which should be terminated with 100 (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 400mV and 2000mV differential (200mV to 1000mV single-ended) when properly terminated.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V ± 5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot-plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module. The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 400mV to 2000mV (200mV to 1000mV single-ended).

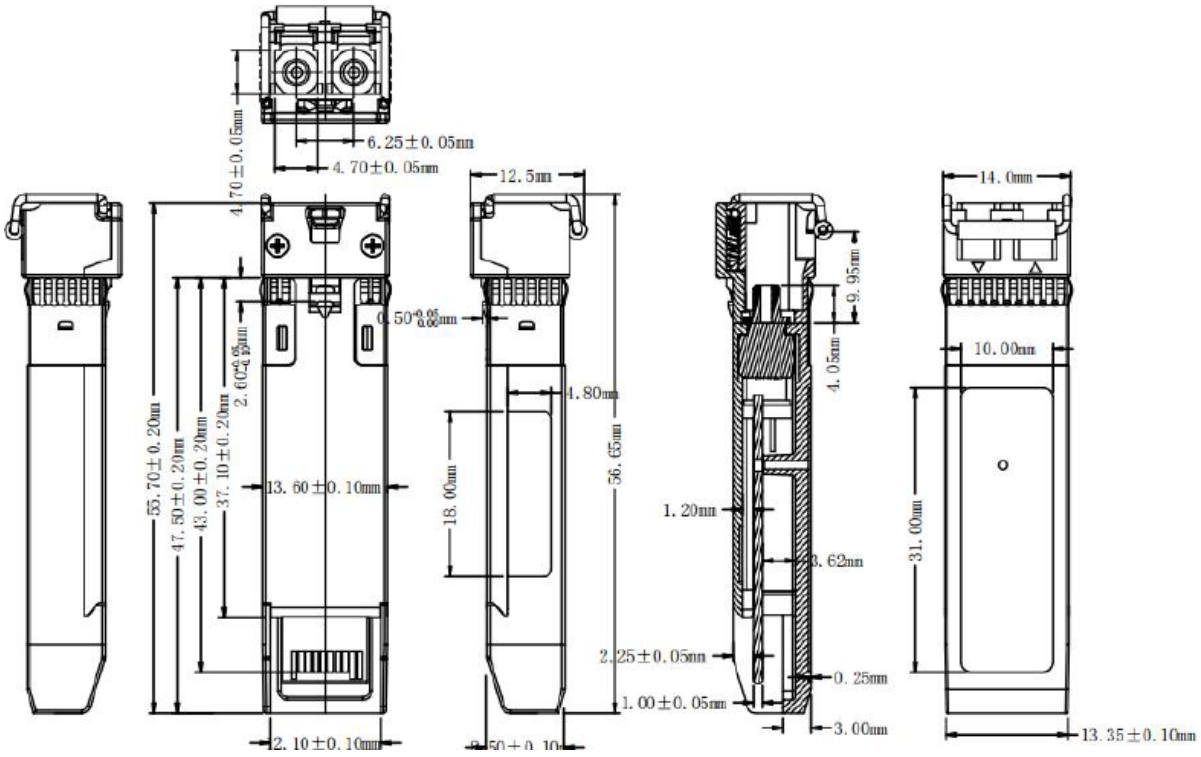


Pin-Out of Connector Block on the Host Board

Recommended Circuit Schematic



Mechanical Specifications



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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