SFP-OC-12-CW-55-80-AO

MSA and TAA OC-12-CWDM SFP Transceiver (SMF, 1550nm, 80km, LC, DOM, 0 to 70C)

Features

- Class 1 Laser Safety
- CWDM Wavelengths, Uncooled DFB Laser
- SFP MSA Compliant
- Duplex LC Connector
- Single 3.3V Power Supply
- Up to 2.67Gbps Bi-Directional Data Links
- Operating Temperature: -40 to 85 Celsius
- Hot-Pluggable
- Excellent ESD Protection
- RoHS Compliant and Lead-Free
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Applications

- OC-12 Transmission

Product Description

This MSA compliant SFP transceiver provides OC-12 (622 mbs) CWDM transmission rates for up to 80km over single-mode fiber (SMF) using a wavelength of 1550nm via an LC connector. It can operate at temperatures between 0 and 70C. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. 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.")

CWDM Available Wavelengths

Wavelengths	Min.	Typ.	Max.
45	1444.5	1451	1457.5
47	1464.5	1471	1477.5
49	1484.5	1491	1497.5
51	1504.5	1511	1517.5
53	1524.5	1531	1537.5
55	1544.5	1551	1557.5
57	1564.5	1571	1577.5
59	1584.5	1591	1597.5
61	1604.5	1611	1617.5

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	Tc	-40	25	85	°C	
Storage Temperature	Tstg	-40		85	°C	
Relative Humidity	RH	5		95	%	
Supply Voltage	Vcc	-0.5		4.0	V	
Data Rate	DR			2.67	Gbps	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Supply Current	Icc			450	mA	
Power Dissipation	PD			1500	mW	
Transmitter Differential Input Voltage (TD +/-)		300		2200	mVp-p	1
Receiver Differential Input Voltage (TD +/-)		600		1200	mVp-p	2
Low-Speed Output: Transmitter Fault (Tx_Fault)/Loss of Signal (LOS)	VOH	2.0		Vcc	V	3
	VOL	0		0.8	V	
Low-Speed Input: Transmitter Disable (Tx_Disable), MOD_DEF1, MOD_DEF2	VIH	2.0		Vcc	V	4
	VIL	0		0.8	V	

Notes:

1. Internally AC coupled and terminated to 100Ω differential load.
2. Internally AC coupled but requires a 100Ω differential termination or internal to serializer/de-serializer.

3. Pulled up with a 4.7kΩ to 10kΩ resistor on the host board to VccT, VccR.
4. MOD_DEF1 and MOD_DEF2 must be pulled up extremely with a 4.7kΩ to 10kΩ resistor on the host board to VccT, VccR.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λC	λ-6.5	λ	λ+6.5	nm	
Launch Optical Power	Po	0		5	dBm	
Extinction Ratio	ER	8.2			dB	
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Total Jitter	TJ			40	ps	
Dispersion Penalty	TDP			2	dB	
Optical Rise/Fall Time	Tr/Tf			160	dB	
POUT @Tx_Disable Asserted	Poff			-45	dBm	
Eye Diagram	SONET OC-48/ SDH STM-16 Compatible					
Receiver						
Receiver Sensitivity	S			-29	dBm	1
Receiver Overload	POL	-9			dBm	1
Optical Return Loss	ORL	27			dB	
LOS Assert	LOSA	-45			dBm	
LOS De-Assert	LOSD			-60	dBm	
LOS Hysteresis	LOSH	0.5	3	5	dB	

Notes:

1. Measured with PRBS2^{23}-1 test pattern, @2.488Gbps, ER=8.2dB, and BER<10^{-12}.

Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	
2	Tx_Fault	Transmitter Fault Indication.	3	1
3	Tx_Disable	Transmitter Disable. Module disables on “high” or “open.”	3	2
4	MOD_DEF2	Module Definition 2. 2-Wire Serial ID Interface.	3	3
5	MOD_DEF1	Module Definition 2. 2-Wire Serial ID Interface.	3	3
6	MOD_DEF0	Module Definition 0. Grounded within the module.	3	3
7	Rate Select	Not Connected.	3	
8	LOS	Loss of Signal.	3	4
9	VeeR	Receiver Ground.	1	
10	VeeR	Receiver Ground.	1	
11	VeeR	Receiver Ground.	1	
12	RD-	Receiver Inverse Data Out.	3	5
13	RD+	Receiver Data Out.	3	5
14	VeeR	Receiver Ground.	1	
15	VccR	3.3 ± 5% Receiver Power.	2	6
16	VccT	3.3 ± 5% Transmitter Power.	2	6
17	VeeT	Transmitter Ground.	1	
18	TD+	Transmitter Data In.	3	7
19	TD-	Transmitter Inverse Data In.	3	7
20	VeeT	Transmitter Ground.	1	

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 to supply <VccT+0.3V or VccR+0.3V. When “high,” 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. Its states are:

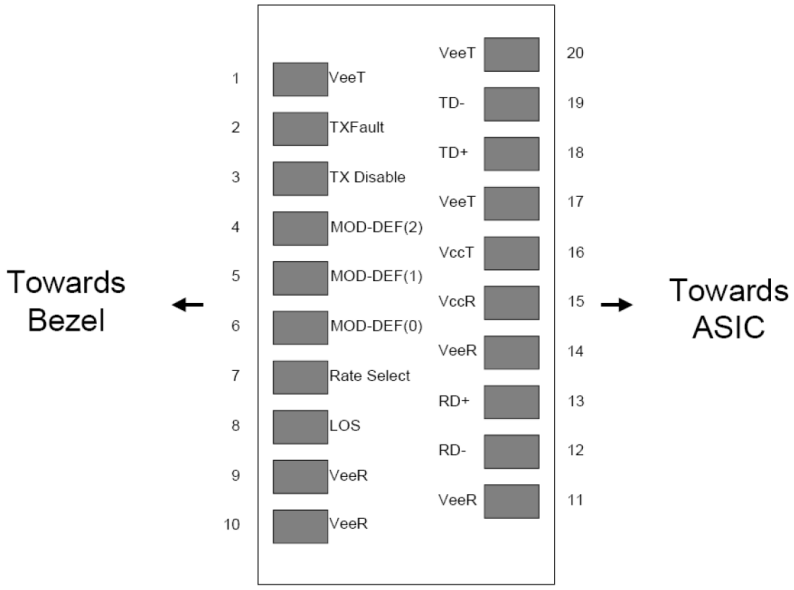
   Low (0V – 0.8V): Transmitter On
   (>0.8V, <2.0V): Undefined
   High (2.0V – 3.465V): Transmitter Disabled
   Open: Transmitter Disabled.
3. MOD_DEF0, 1, & 2. These are the module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board to supply VccT+0.3V or VccR+0.3V.

   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 with a 4.7kΩ to 10kΩ resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When “high,” this output indicates that

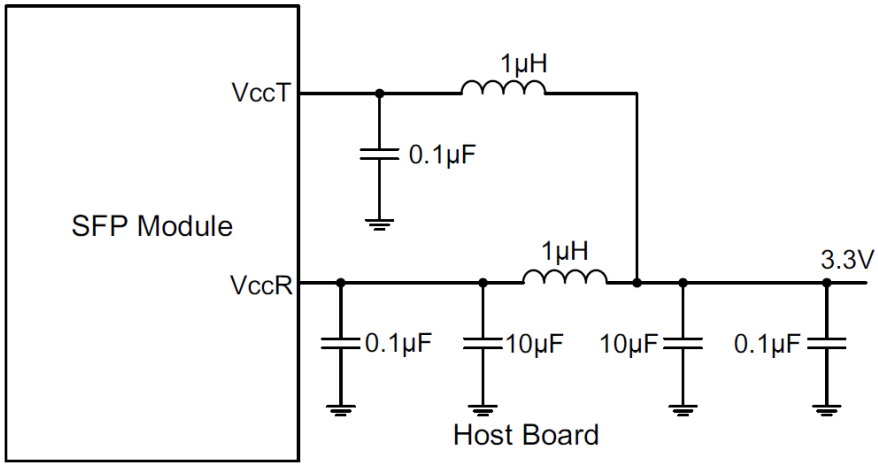
the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). “Low” indicates normal operation. In the “low” state, the output will be pulled to <0.8V.

5. RD-/+. These are the differential receiver outputs. They are AC-coupled, 100Ω differential lines that should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
6. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V ± 5% at the SFP connector pin. The in-rush current will typically be no more than 30mA above steady supply current after 500ns.
7. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

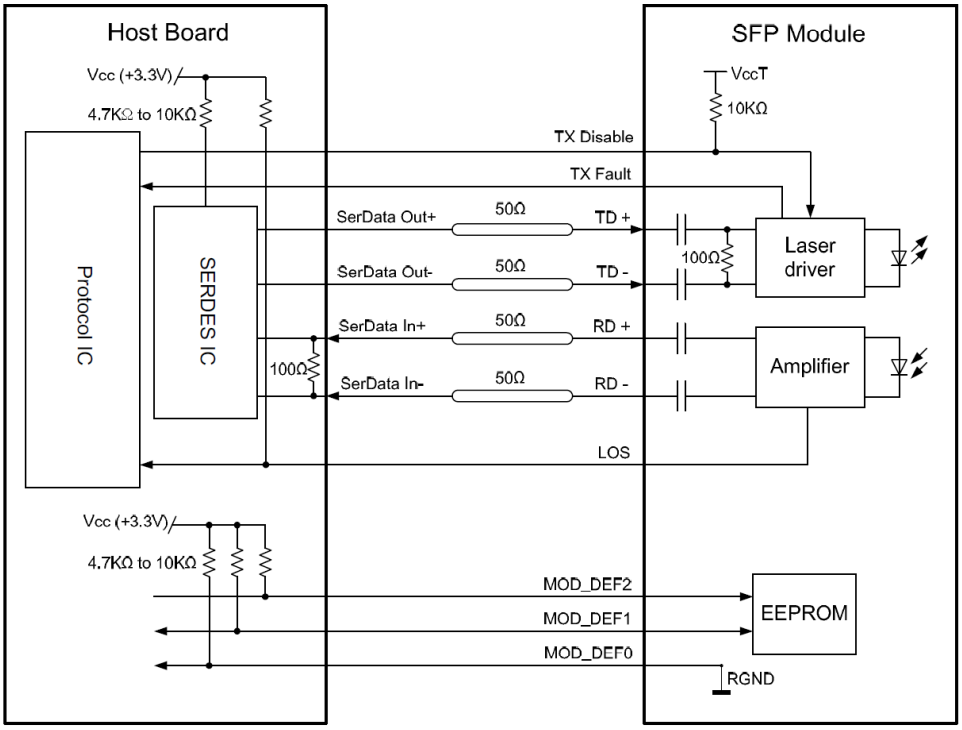
Electrical Pad Layout



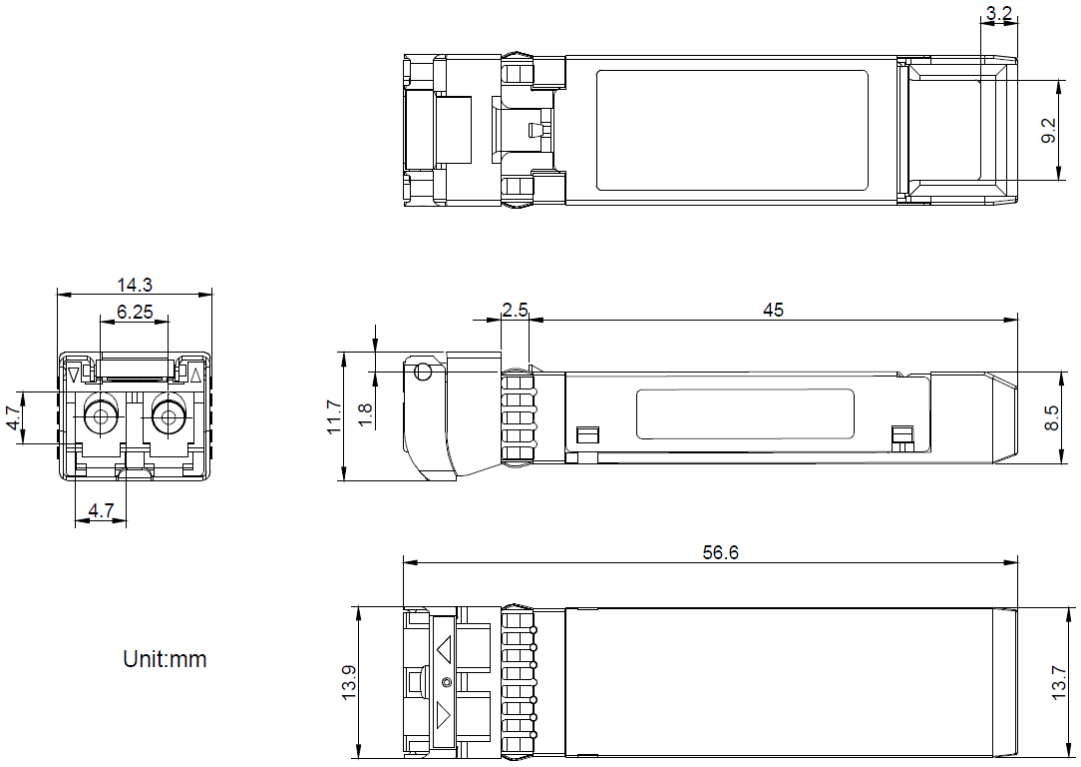
Recommended Host Board Power Supply Circuit



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 ingrained 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 ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.

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