SFP-1/10GB-SR-I-AO

MSA and TAA 1/10GBase-SR SFP+ Dual-Rate Transceiver (MMF, 850nm, 300m, LC, DOM, -40 to 85C)

Features

- Supports Rate Selectable 1.25Gbps or 9.83Gbps to 11.3Gbps Bit Rates
- Compliant with SFF-8431
- Compliant with IEEE 802.3-2012 10GBASE-SR/SW and 1000BASE-SX
- 850nm VCSEL Laser Transmitter
- Duplex LC Connector
- Hot-Pluggable SFP+ Footprint
- Class 1 Laser
- Built-In Digital Diagnostic Functions
- RoHS Compliant and Lead-Free
- Operating Temperature: -40 to 85 Celsius

Applications

- 10GBase-SR Ethernet

Product Description

This MSA Compliant SFP+ transceiver provides 10GBase-SR throughput up to 300m over multi-mode fiber (MMF) using a wavelength of 850nm via an LC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow 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."

TAA COMPLIANT

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		4	V	1
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	-40		85	°C	
Data Rate (RS0 = Low)	DR		1.25		Gbps	2
Data Rate (RS0 = High)	DR	9.83	10.3125	11.3	Gbps	2
Bit Error Rate	BER			10^{-12}		

Notes:

1. For the electrical power interface.
2. IEEE 802.3-2012.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Module Supply Current	Icc		180	300	mA	1
Transmitter						
Input Differential Impedance	RIN		100		Ω	
Differential Data Input Swing	VIN,pp	180		700	mVp-p	
Transmit Disable Voltage	VD	2		Host_Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver						
Differential Data Output Swing	VOUT,pp	300		850	mVp-p	
Data Output Rise/Fall Time (20-80%)	Tr/Tf	28			ps	
LOS Assert	VLOSA	2		Host_Vcc	V	
LOS De-Assert	VLOSD	Vee		Vee+0.5	V	

Notes:

1. For the electrical power interface.

Optical Characteristics RS0 = Low (1G Operation)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{TX}	-9.5		-1	dBm	1
Optical Center Wavelength	λC	840	850	860	nm	
Rise/Fall Time (20-80%)	Tr/Tf			300	ps	
Extinction Ratio	ER	9			dB	
Spectral Width (RMS)	Δλ			0.45	nm	
Relative Intensity Noise	RIN			-120	dB/Hz	
Transmitter Jitter	TJ					2
Launch Power of Off Transmitter	Poff			-30	dBm	3
Receiver						
Optical Center Wavelength	λC	840		860	nm	
Receiver Sensitivity @1.25Gbps	R_{X_SEN}			-17	dBm	4
Receiver Overload	P_{OL}	0.5			dBm	
Optical Return Loss	ORL	12			dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-18	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Class 1 Product.
2. According to IEEE 802.3-2012 requirements.
3. Average.
4. Measured with worst ER, BER<10^{-12}, and 2^7-1 PRBS.

Optical Characteristics RS0 = High (10G Operation)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Output Optical Power	P_{TX}	-5		-1	dBm	1
Optical Center Wavelength	λC	840	850	860	nm	
Optical Modulation Amplitude	OMA		-1.5		dBm	2
Extinction Ratio	ER	3	5.5		dB	
Spectral Width (RMS)	Δλ			0.45	nm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.9	dB	
Transmitter Jitter	TJ					3
Launch Power of Off Transmitter	Poff			-30	dBm	4
Receiver						
Optical Center Wavelength	λC	840		860	nm	
Receiver Sensitivity @10.3Gbps	R_{X_SEN}			-10	dBm	1
Receiver Overload	P_{OL}	0.5			dBm	
Receiver Reflectance	TR_{RX}			-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-14	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Class 1 Product.
2. IEEE 802.3-2012.
3. According to IEEE 802.3-2012 requirements.
4. Average.
5. Measured with worst ER, BER<10^{-12}, and 2^{31}-1 PRBS.

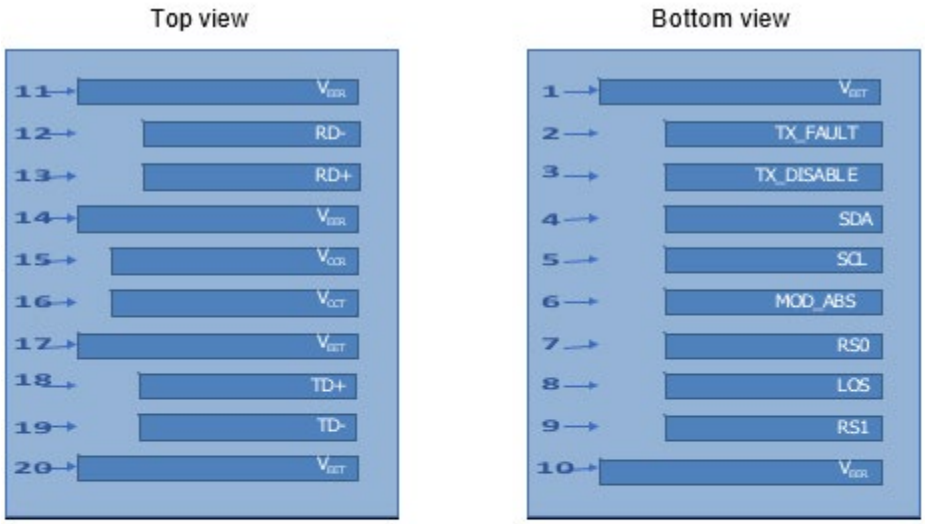
Pin Descriptions

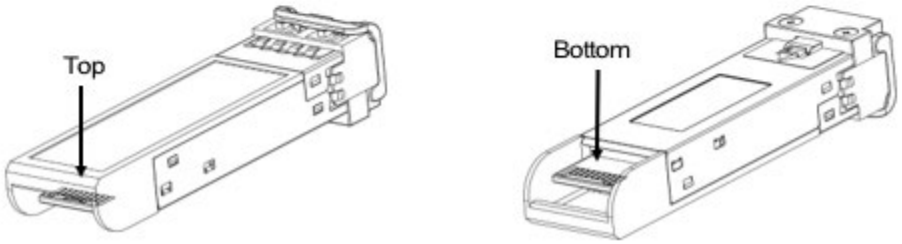
Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault.	
3	Tx_Disable	Transmitter Disable. Laser output disables on “high” or “open.”	2
4	SDA	2-Wire Serial Interface Data.	3
5	SCL	2-Wire Serial Interface Clock.	3
6	MOD_ABS	Module Absent. Grounded within the module.	3
7	RS0	Rate Selection.	
8	LOS	Loss of Signal Indication. “Logic 0” indicates normal operation.	4
9	RS1	No Connection Required.	1
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Inverse Receiver Data Out. AC Coupled.	
13	RD+	Received Data Out. AC Coupled.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Data In. AC Coupled.	
19	TD-	Inverse Transmitter Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

Notes:

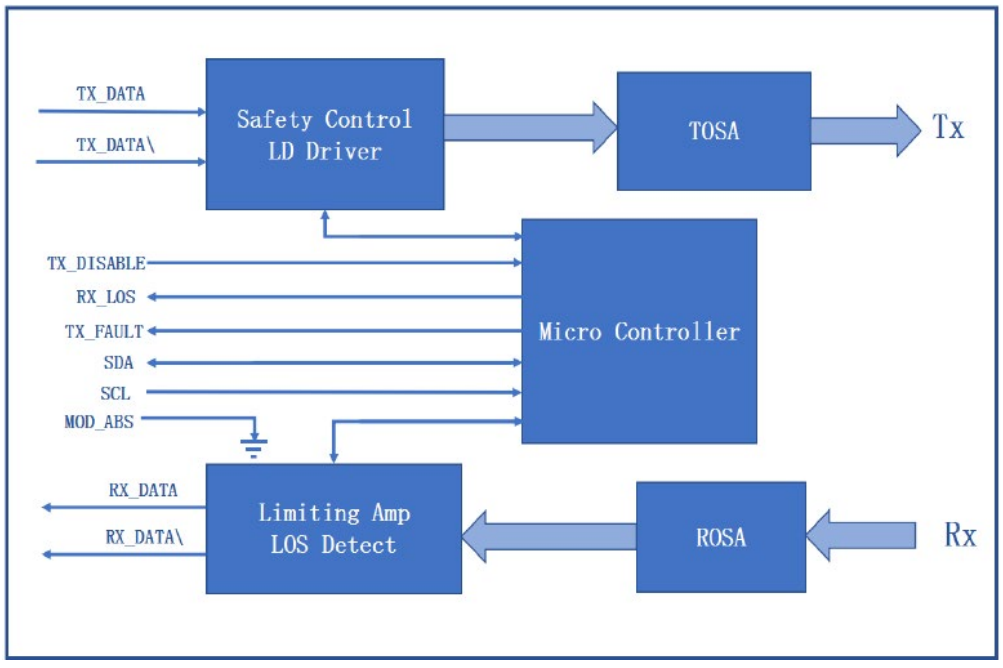
1. The circuit ground is isolated from the chassis ground.
2. Disabled: T_{DIS}>2V or open. Enabled: T_{DIS}<0.8V.
3. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and Vcc+0.3V.
4. LOS is an open collector output.

Electrical Pin-Out Details

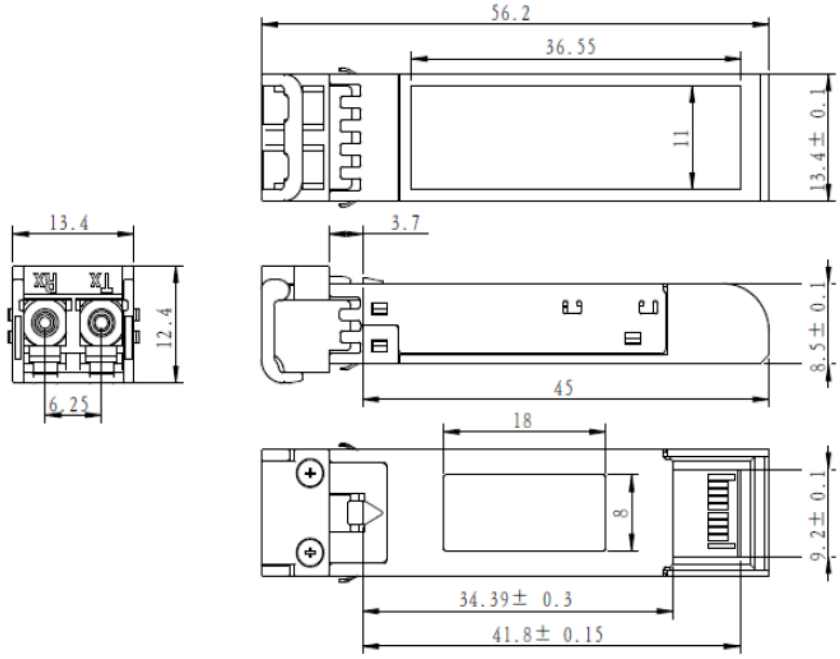


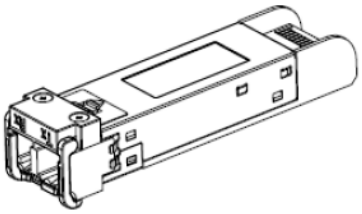


Block Diagram



Mechanical Specifications





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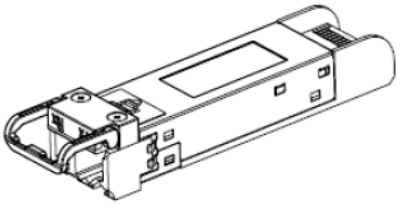

UNLATCHED

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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