SFP-1GB-FX-I-SGMII-C-AO

Cisco® Compatible 100/1000Base-FX SFP Transceiver (MMF, 1310nm, 500m, LC, DOM, -40 to 85C, SGMII)

Features

- Built-In PHY Supporting SGMII Interface
- Dual-Rate of 100Base-FX/1000Base-LX Operation
- Built-In High Performance MCU Supporting Easier Configuration
- Up to 2km Transmission with MMF
- Up to 550m Transmission with MMF @1.25Gbps
- 1310nm FP Laser and PIN Photo-Detector
- Duplex LC Connector
- Standard Serial ID Information Compatible with SFP MSA
- Operating Temperature: -40 to 85 Celsius
- 3.3V Single Power Supply
- RoHS Compliant and Lead-Free

Applications

- 1x Fibre Channel
- 1000Base-LX Ethernet
- Access and Enterprise

Product Description

This Cisco® SFP transceiver provides 100/1000Base-FX throughput up to 500m over multi-mode fiber (MMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® 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. 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
Supply Voltage		Vcc	-0.5		3.6	V	
Storage Temperature		Tstg	-40		85	ºC	
Operating Case Temperature		Tc	-40		85	ºC	
Relative Humidity		RH	5		95	%	
Data Rate	**1000Base**			1250		Mbps	
	100Base			125			

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.13	3.3	3.47		
Power Supply Current		Icc			350	mA	1
Power Dissipation		P_{DISS}			1.5	W	
Transmitter							
Differential Data Input Swing		VIN	200		2100	mV	2
Input Differential Impedance		ZIN	80	100	120	Ω	
Tx_Disable	**Disable**		2.0		Vcc		
	Enable		Vee		Vee+0.8		
Tx_Fault	**Fault**		2.0		Vcc		
	Normal		Vee		Vee+0.5		
Receiver							
Differential Data Output Swing		VOUT	370		2000	mV	2
LOS	**High**		2.0		Vcc+0.3	V	
	Low		Vee		Vee+0.5		

Notes:

1. The maximum power supply current after the module is work stable.
2. PECL logic. Internally AC coupled.

Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Center Wavelength		λC	1260	1310	1360	nm	
Average Output Power	**1000Base**	POUT	-11.5		-3	dBm	1
	100Base	POUT	-20		-14		1
POUT @Tx_Disable Asserted		POUT			-45	dBm	1
Spectral Width (RMS)	**1000Base**	σ			4	nm	
	100Base				7.7		
Extinction Ratio		EX	9			dB	
Rise/Fall Time (20-80%)	**1000Base**	Tr/Tf			0.26	ns	2
	100Base				3		
Total Jitter Rate TP2	**1000Base**	JT			0.481	UI	3
	100Base				0.4		
Deterministic Jitter at TP2	**1000Base**	JD			0.250	UI	3
	100Base				0.305		
Output Optical Eye		Compatible with IEEE 802.3ah-2004					4
Receiver							
Center Wavelength		λC	1260	1310	1570	nm	
Receiver Sensitivity	**1000Base**				-22	dBm	5
	100Base				-28		6
Receiver Overload	**1000Base**		-3			dBm	5
	100Base		-8				6
Return Loss			12			dB	
LOS De-Assert	**1000Base**	LOSD			-23	dBm	
	100Base				-23		
LOS Assert	**1000Base**	LOSA	-45			dBm	
	100Base		-45				
LOS Hysteresis			0.5		4.5	dB	
Total Jitter at TP4 (SGMII)		JT			0.749	UI	3
Deterministic at TP4 (SGMII)		JD			0.462	UI	

Notes:

1. The optical power is launched into 62.5/125µm SMF.
2. Unfiltered, measured with 8B/10B code for 1.25Gbps and 4B/5B code for 125Mbps.
3. Meets the specified maximum output jitter requirements if the specified maximum input jitter is present.
4. Measured with 8B/10B code for 1.25Gbps and 4B/5B code for 125Mbps.
5. Measured with 8B/10B code for 1.25Gbps, worst-case extinction ratio, and BER ≤1×10^{-12}.
6. Measured with 4B/5B code for 125Mbps, worst-case extinction ratio, and BER ≤1×10^{-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.	3	2
4	MOD-DEF2	Module Definition 2.	3	3
5	MOD-DEF1	Module Definition 1.	3	3
6	MOD-DEF0	Module Definition 0.	3	3
7	Rate Select	Not Used.	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-	Inverse Received Data Out.	3	5
13	RD+	Received Data Out.	3	5
14	VeeR	Receiver Ground.	1	
15	VccR	Receiver Power.	2	
16	VccT	Transmitter Power.	2	
17	VeeT	Transmitter Ground.	1	
18	TD+	Transmit Data In.	3	6
19	TD-	Inverse Transmit Data In.	3	6
20	VeeT	Transmitter Ground.	1	

Notes:

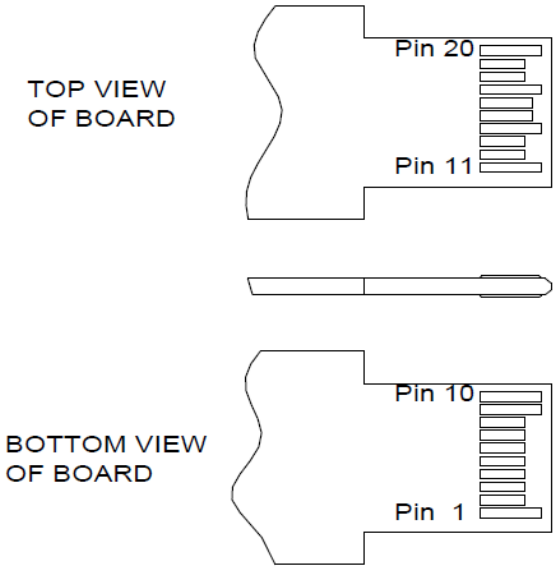
1. Tx_Fault is an open collector output which should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. “Logic 0” indicates normal operation. “Logic 1” indicates a laser fault of some kind. In the “low” state, the output will be pulled to <0.8V.
2. Tx_Disable 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 to 0.8V): Transmitter On
   (>0.8 and <2V): Undefined
   High (2.0V to 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. The pull-up voltage shall be VccT or VccR.

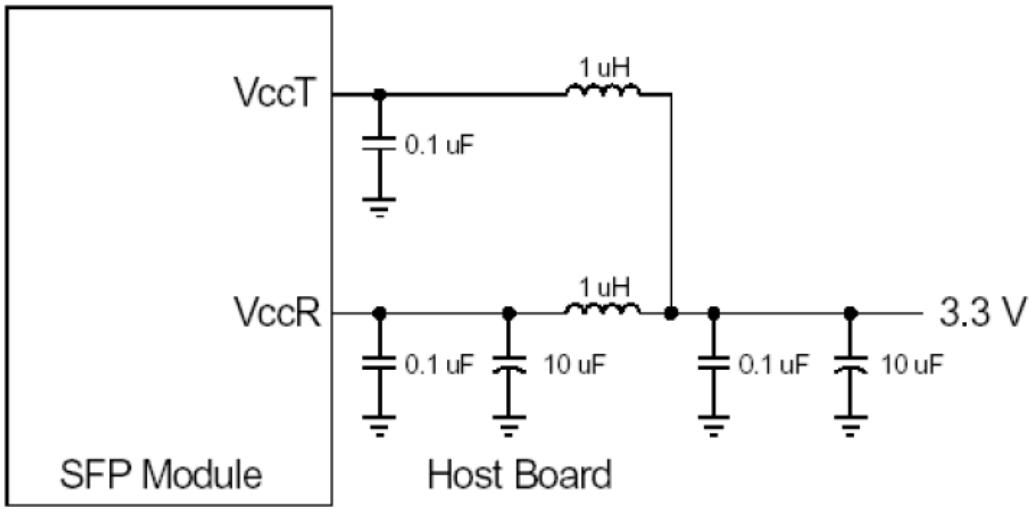
   MOD-DEF0 is grounded by the module to indicate that the module is present.
   MOD-DEF1 is the clock line of 2-wire serial interface for optional serial ID.
   MOD-DEF2 is the data line of 2-wire serial interface for optional serial ID.

4. LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. “Logic 0” indicates normal operation. “Logic 1” indicates loss of signal or link down with partner l. In the “low” state, the output will be pulled to less than 0.8V.
5. These are the differential receiver outputs. They are internally AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the host with SGMII interface.
6. These are the differential transmitter inputs. They are AC coupled, differential lines with 100Ω differential termination inside the module.

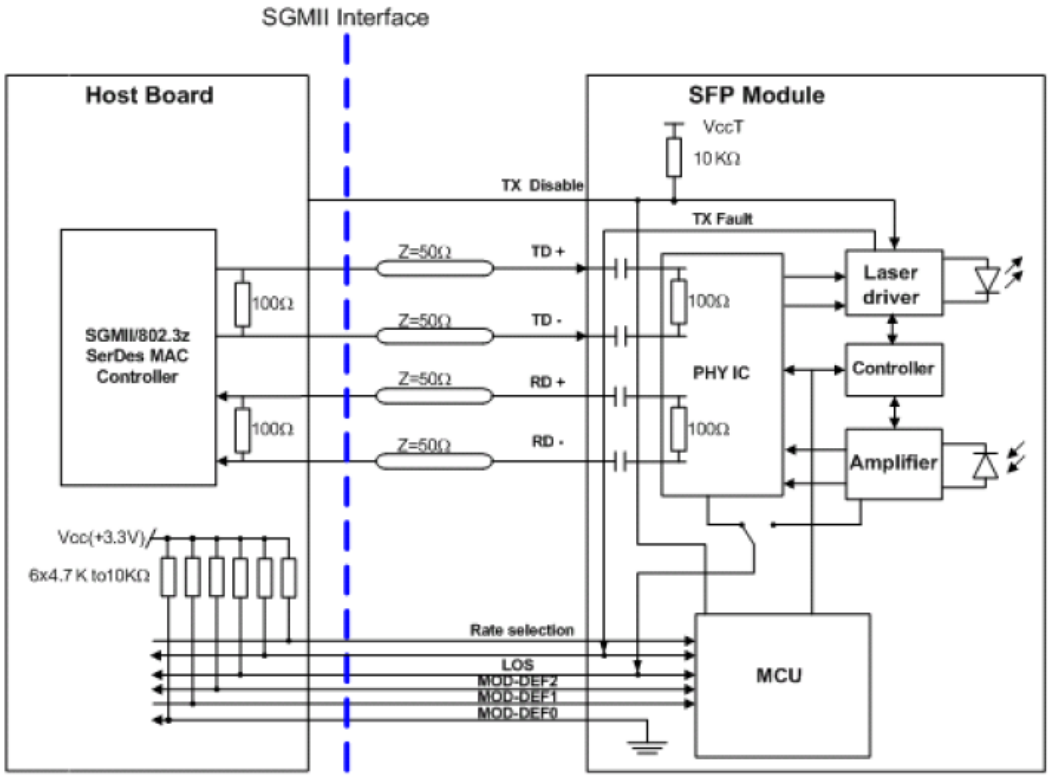
Pin Definitions



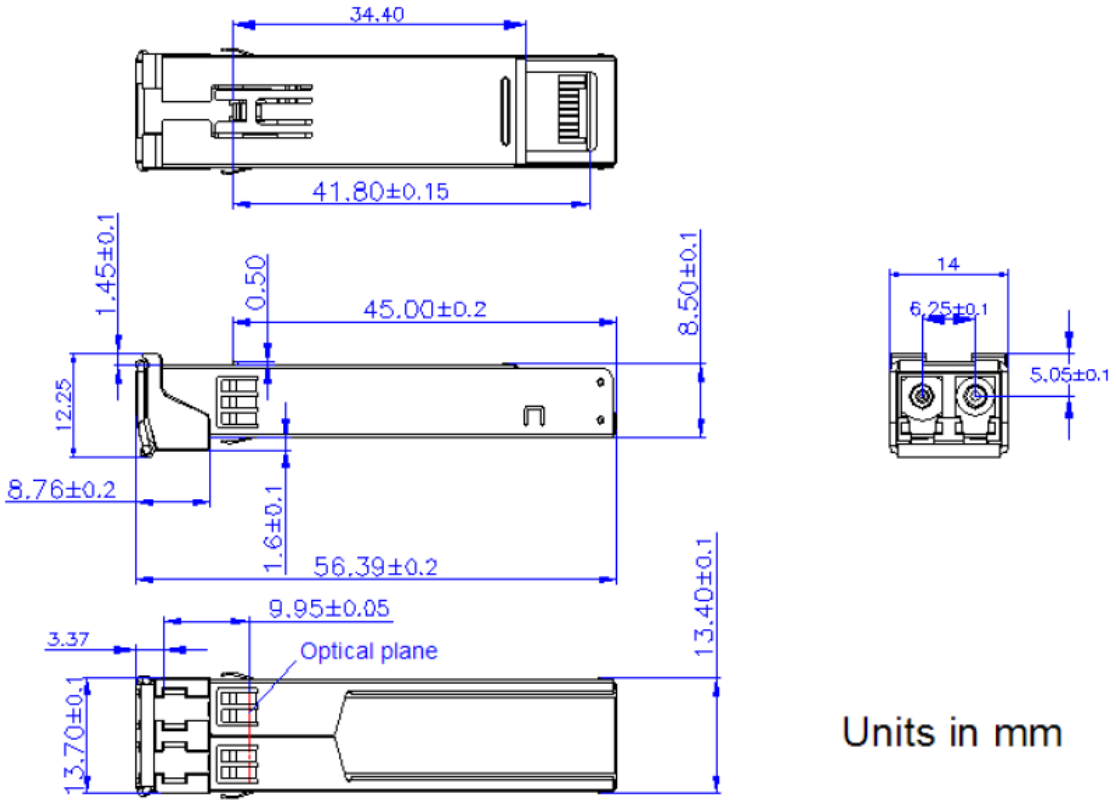
Recommended Host Board Power Supply Circuit



Recommended Interface Circuit



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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