SFP-10/16GB-SW-C

MSA and TAA 10/16GBase-SR/SW FC SFP+ Transceiver Multi-Rate (MMF, 850nm, 100m, LC, DOM)

Features:

- Up to 16Gbps Fiber Channel Serial Line Rate
- Up to 10Gbps Ethernet
- Duplex LC Connector
- 850nm VCSEL
- OM3
- AC/AC Coupling Interface
- Multi-Mode Fiber
- Commercial Temperature: 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead-Free

Applications:

- 10GBase-SR Ethernet
- Tri-Rate 4G/8G/16G Fibre Channel
- Datacenter and Enterprise

Product Description

This MSA compliant multi-rate SFP+ transceiver provides 10/16GBase-SR/SW Fibre Channel throughput up to 100m over multi-mode fiber (MMF) using a wavelength of 850nm via an LC connector. It can operate at temperatures between 0 and 70C. 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.

ProLabs' 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

Rev. 012026

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	Vcc	-0.5		4	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0	25	70	°C
Relative Humidity	RH	0		85	%

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	Vcc	3.15	3.3	3.46	V
Supply Current	Icc			300	mA
Transmitter					
Input Differential Impedance	RIN		100		Ω
Single-Ended Data Input Swing	VIN,pp	90		800	mV
Transmit Disable Voltage	VD	2		Vcc	V
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V
Receiver					
Single-Ended Data Output Swing	VOUT,pp	185		425	mV
LOS Fault	$VLOS_{fault}$	2		Host_Vcc	V
LOS Normal	$VLOS_{norm}$	Vee		Vee+0.8	V
Power Supply Rejection	PSR	100			mVp-p
Receiver Deterministic Jitter @14.025Gbps	DJ			0.22	UI
Receiver Deterministic Jitter @8.5Gbps	DJ			0.42	UI

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate	BR	4.25		14.025	Gbps	
Bit Error Rate	BER			10^{-12}		1
Transmitter						
Center Wavelength	λ	840		860	nm	
RMS Spectral Width	σ			0.6	nm	
Average Optical Power	Pavg	-8.4		2.4	dBm	2
Optical Modulation Amplitude	OMA	-6.4		3	dBm	
Extinction Ratio	ER	2			dB	
Optical Return Loss Tolerance	ORLT			12	dB	
Receiver						
Center Wavelength	λ	840		860	nm	
Damage Threshold		3.4			dBm	
Receiver Power Overload		2.4			dBm	
Receiver Sensitivity	SENS			-10.3	dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-13	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. PRBS 2^7-1 for 8GFC. PRBS 2^{31}-1 for 16GFC.
2. Class 1 Laser Safety limits CDRH and EN60825 standards.

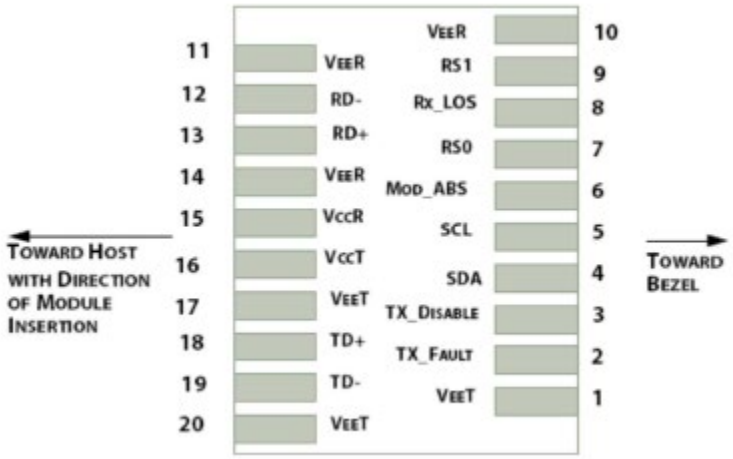
Pin Descriptions

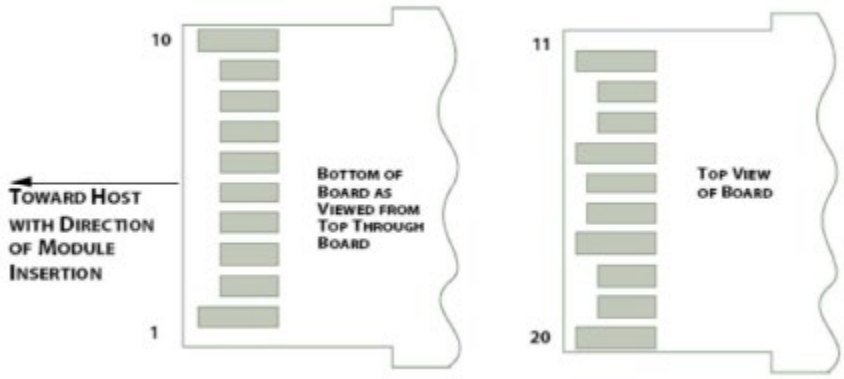
Pin	Logic	Symbol	Name/Description	Notes
1		VeeT	Module Transmitter Ground.	1
2	LVTTL-O	Tx_Fault	Module Transmitter Fault.	2
3	LVTTL-I	Tx_Disable	Transmitter Disable. Turns off the transmitter laser output.	3
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data.	
5	LVTTL-I	SCL	2-Wire Serial Interface Clock.	
6		MOD_ABS	Module Absent. Connected to the VeeT or VeeR in the module.	2
7	LVTTL-I	RS0	Rate Select 0. Optionally controls the SFP+ module receiver. When "high," the input signaling rate is >4.25GBd. When "low," the input signal rate is ≤4.25GBd.	
8	LVTTL-O	Rx_LOS	Receiver Loss of Signal Indication.	2
9	LVTTL-I	RS1	Rate Select 1. Optionally controls the SFP+ module transmitter. When "high," the input signaling rate is >4.25GBd. When "low," the input signal rate is ≤4.25GBd.	
10		VeeR	Module Receiver Ground.	1
11		VeeR	Module Receiver Ground.	1
12	CML-O	RD-	Receiver Inverted Data Output.	
13	CML-O	RD+	Receiver Data Output.	
14		VeeR	Module Receiver Ground.	1
15		VccR	3.3V Module Receiver Power Supply.	
16		VccT	3.3V Module Transmitter Power Supply.	
17		VeeT	Module Transmitter Ground.	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input.	
19	CML-I	TD-	Transmitter Inverted Data Input.	
20		VeeT	Module Transmitter Ground.	1

Notes:

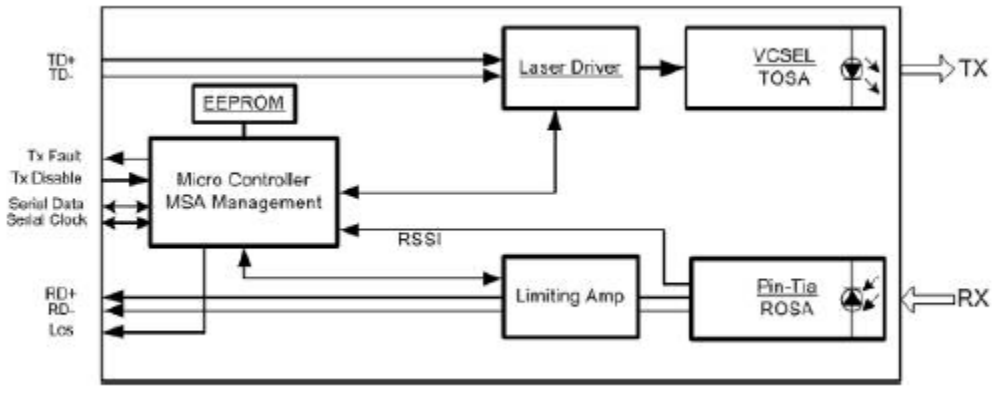
1. Module ground pins are isolated from the module case and chassis ground within the module.
2. Shall be pulled up with 4.7kΩ to 10kΩ to a voltage between 3.15V and 3.45V on the host board.
3. Shall be pulled up with 4.7kΩ to 10kΩ to the VccT in the module.

Electrical Pin-Out Details

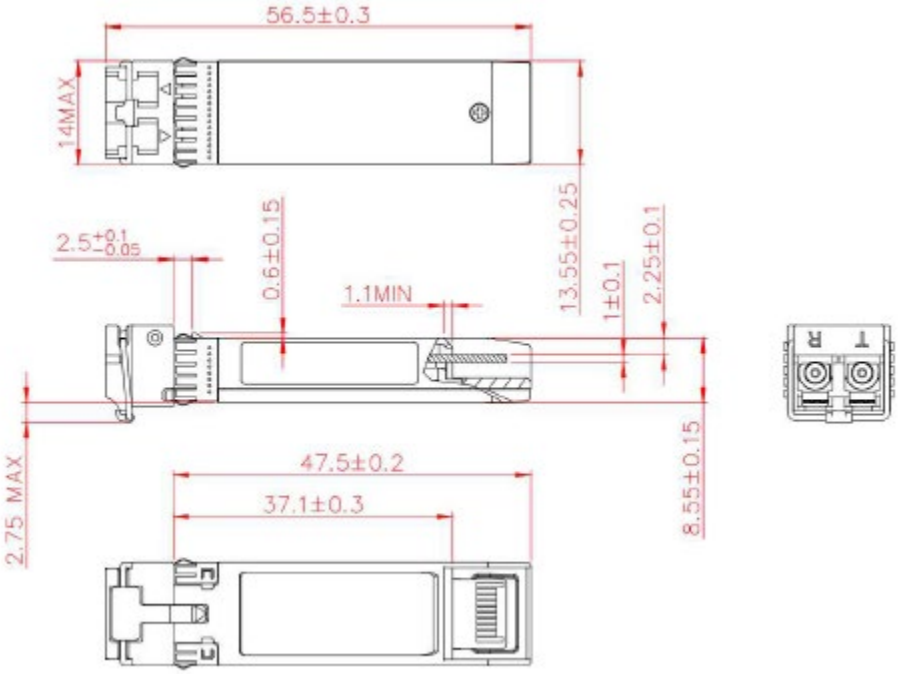




Transceiver Block Diagram



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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