

SFP-10/16GB-SW-OPC

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.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V _{cc}	-0.5		4	V
Storage Temperature	T _{stg}	-40		85	°C
Operating Case Temperature	T _c	0	25	70	°C
Relative Humidity	RH	0		85	%

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V _{cc}	3.15	3.3	3.46	V
Supply Current	I _{cc}			300	mA
Transmitter					
Input Differential Impedance	R _{IN}		100		Ω
Single-Ended Data Input Swing	V _{IN,pp}	90		800	mV
Transmit Disable Voltage	V _D	2		V _{cc}	V
Transmit Enable Voltage	V _{EN}	V _{ee}		V _{ee} +0.8	V
Receiver					
Single-Ended Data Output Swing	V _{OUT,pp}	185		425	mV
LOS Fault	V _{LOS_{fault}}	2		Host_V _{cc}	V
LOS Normal	V _{LOS_{norm}}	V _{ee}		V _{ee} +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.

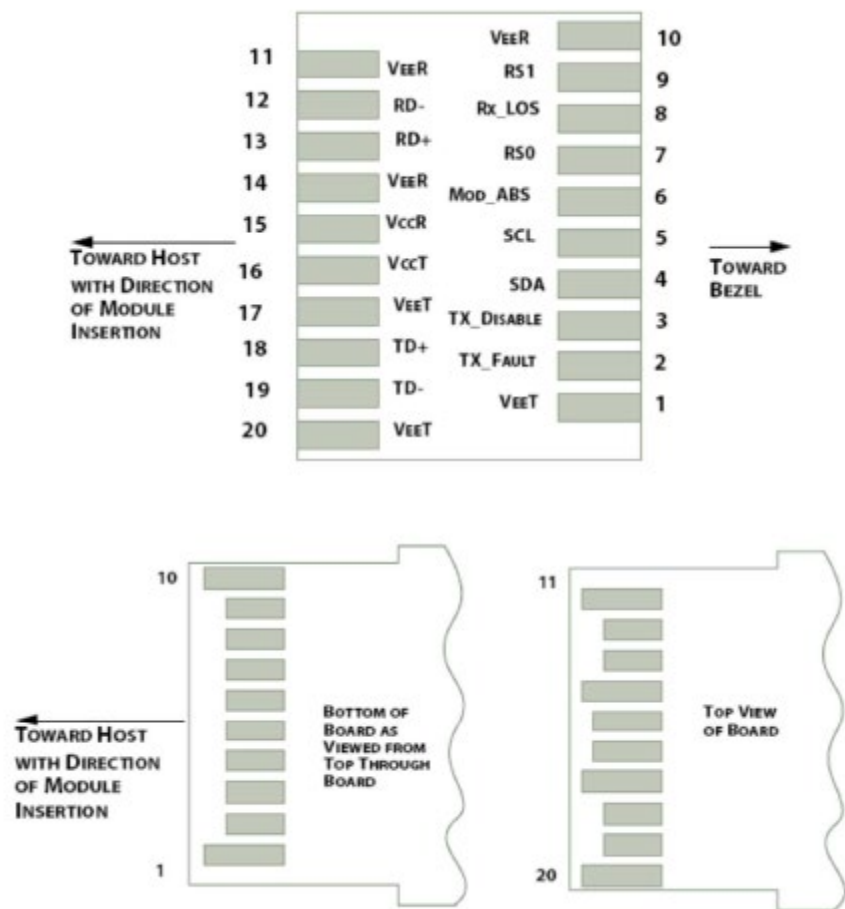
Pin Descriptions

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

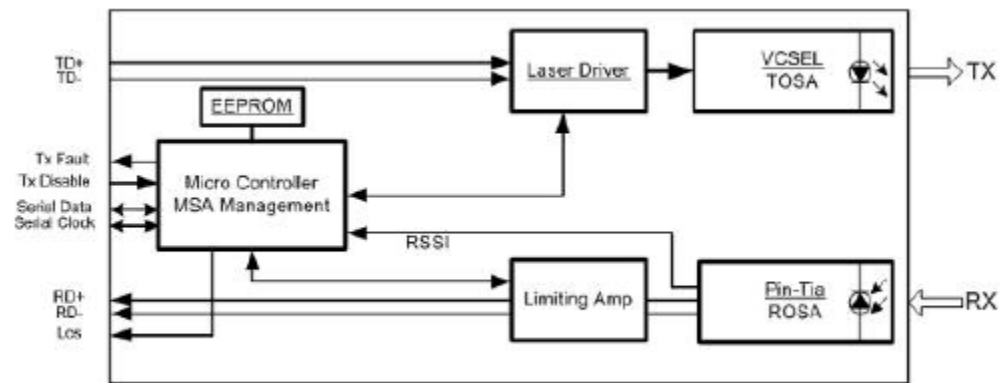
Notes:

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

