



### **SFP-1/10GB-LR-MX-OPC**

Mellanox® Compatible TAA 1/10GBase-LR SFP+ Dual-Rate Transceiver (SMF, 1310nm, 10km, LC, DOM)

#### **Features**

- Supports Rate Selectable 1.25Gbps or 9.83Gbps to 11.3Gbps Bit Rates
- Compliant with IEEE 802.3.2-2012 10GBASE-LR/LW and 1000BASE-LX
- Compliant with SFF-8431
- Hot-Pluggable SFP+ Footprint
- 1310 DFB Laser Transmitter
- Built-In Digital Diagnostic Functions
- Duplex LC Connector
- Up to 10km on SMF
- 3.3V Power Supply
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



#### **Applications:**

- 10GBase Ethernet

#### **Product Description**

This Mellanox® compatible SFP+ transceiver provides 1/10GBase-LR throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm 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. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V <sub>CC</sub>	-0.5		4	V	1
Storage Temperature	T <sub>stg</sub>	-40		85	°C	
Operating Case Temperature	T <sub>c</sub>	0		70	°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 <sup>-12</sup>		

### Notes:

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

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.46	V	
Module Supply Current	I <sub>CC</sub>		290	380	mA	1
Power Dissipation	P <sub>DISS</sub>		1.0	1.3	W	
Transmitter						
Input Differential Impedance	R <sub>IN</sub>		100		Ω	
Differential Data Input Swing	V <sub>IN,pp</sub>	180		700	mVp-p	
Transmit Disable Voltage	V <sub>D</sub>	2		Host_V <sub>CC</sub>	V	
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.8	V	
Receiver						
Differential Data Output Swing	V <sub>OUT,pp</sub>	300		850	mVp-p	
Data Output Rise/Fall Time (20-80%)	T <sub>r</sub> /T <sub>f</sub>	28			ps	
LOS Assert	V <sub>LOSA</sub>	2		Host_V <sub>CC</sub>	V	
LOS De-Assert	V <sub>LOSD</sub>	V <sub>EE</sub>		V <sub>EE</sub> +0.5	V	

### Notes:

1. For the electrical power interface.

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Output Optical Power @1.25Gbps	PTX1	-9.5		-3	dBm	1
Output Optical Power @10.3Gbps	PTX2	-8.2		0.5	dBm	1
Optical Center Wavelength	$\lambda_C$	1260		1355	nm	
Optical Modulation Amplitude	OMA	-5.2			dBm	2
Extinction Ratio @1.25Gbps	ER1	9			dB	
Extinction Ratio @10.3Gbps	ER2	3.5			dB	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.2	dB	
Launch Power of Off Transmitter	P <sub>off</sub>			-30	dBm	1
Transmitter Jitter						2
<b>Receiver</b>						
Optical Center Wavelength	$\lambda_C$	1260		1600	nm	
Receive Overload	P <sub>OL</sub>	0.5			dBm	
Receiver Sensitivity @1.25Gbps	R <sub>X_SEN1</sub>			-19	dBm	3
Receiver Sensitivity @10.3Gbps	R <sub>X_SEN2</sub>			-14.4	dBm	4
Receiver Reflectance	TR <sub>RX</sub>			-12	dB	
LOS Assert @1.25Gbps	LOSA	-30			dBm	
LOS Assert @10.3Gbps	LOSA	-30			dBm	
LOS De-Assert @1.25Gbps	LOSD			-17	dBm	
LOS De-Assert @10.3Gbps	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5			dB	

### Notes:

1. Average.
2. According to IEEE 802.3ae requirements.
3. Average. Test the resulting value using the minimum ER value within the defined range:  $BER < 10^{-12}$  and  $2^7-1$  PRBS.
4. Average. Test the resulting value using the minimum ER value within the defined range:  $BER < 10^{-12}$  and  $2^{31}-1$  PRBS.

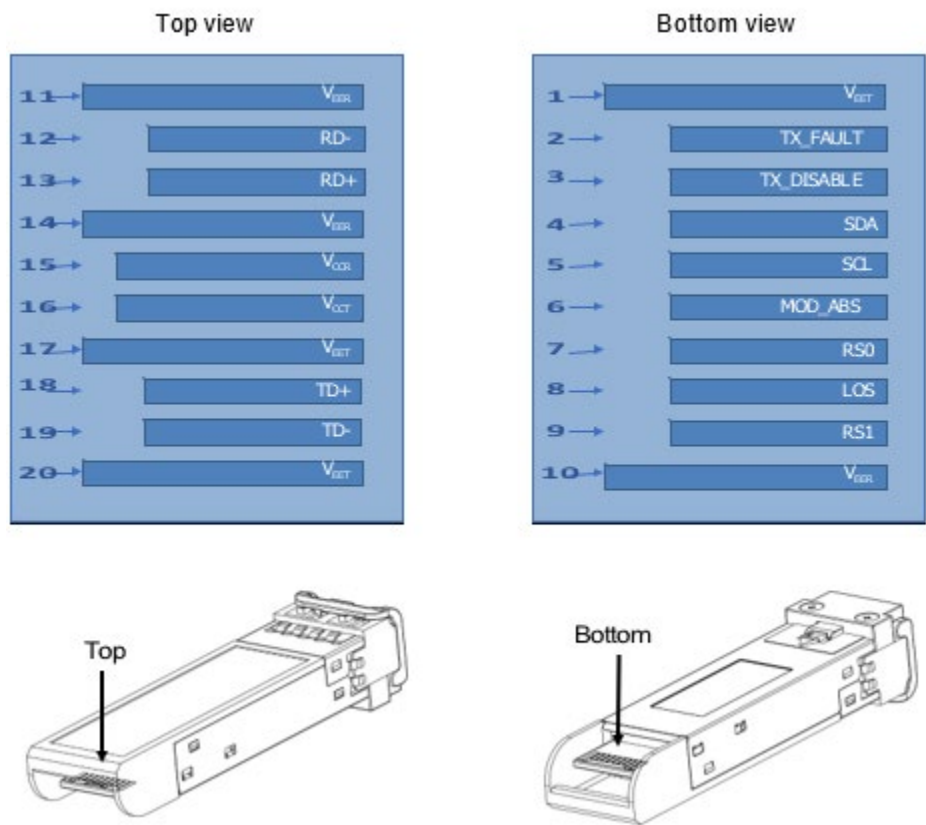
## Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault.	2
3	Tx_Disable	Transmitter Disable. Laser output disables on “high” or “open.”	3
4	SDA	2-Wire Serial Interface Data.	4
5	SCL	2-Wire Serial Interface Clock.	4
6	MOD_ABS	Module Absent. Grounded within the module.	4
7	RS0	Module Rate Selection: “Open” or “Low” Level = 1.25Gbps rate (low bandwidth). “High” Level = 9.95-10.31Gbps rate (high bandwidth).	
8	LOS	Loss of Signal Indication. “Logic 0” indicates normal operation.	5
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

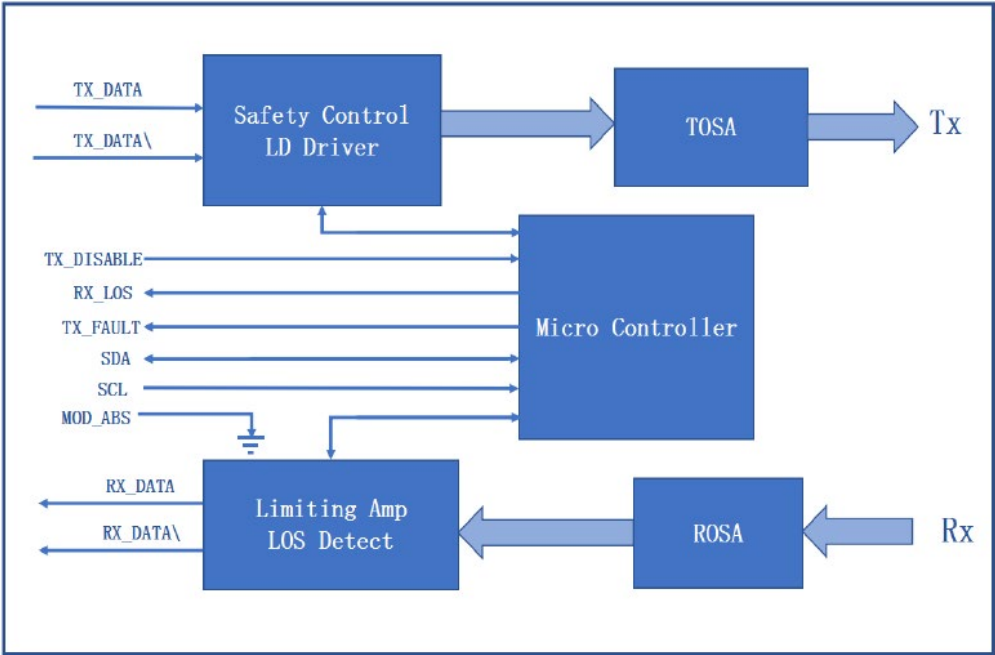
### Notes:

1. The circuit ground is isolated from the chassis ground.
2. Tx\_Fault is the open collector output and should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
3. Disabled: T<sub>DIS</sub>>2V or open. Enabled: T<sub>DIS</sub><0.8V.
4. Should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
5. LOS is an open collector output and should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V. “Logic 0” indicates normal operation. “Logic 1” indicates that the receiver signal is lost.

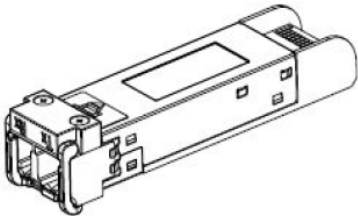
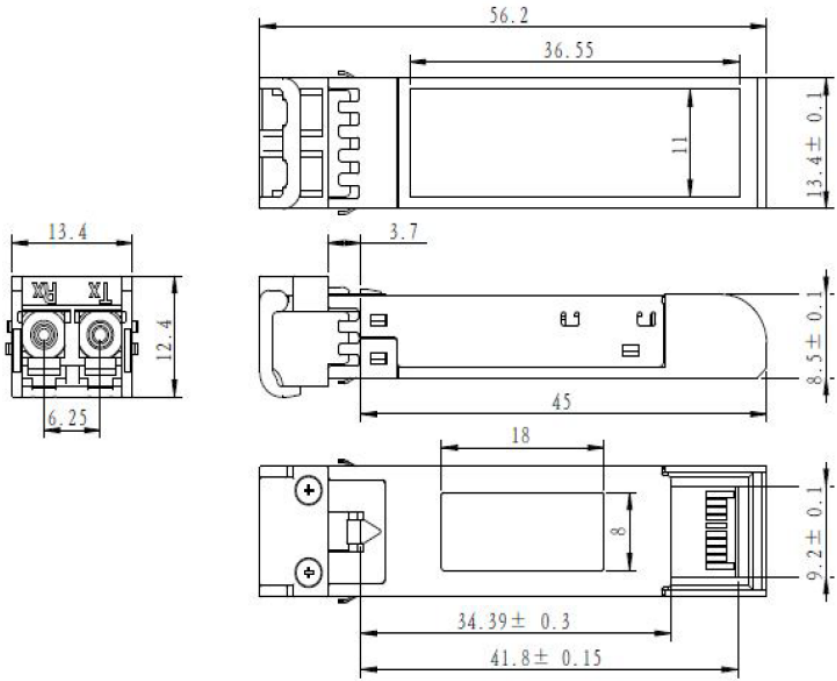
Electrical Pin-Out Details



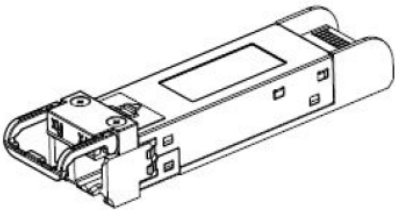
Block Diagram



Mechanical Specifications



LATCHED



UNLATCHED

## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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