

#### SFP-10GBASE-ER31-I-HW-OPC

Huawei® Compatible TAA 10GBase-ER SFP+ Transceiver (SMF, 1310nm, 40km, LC, -40 to 85C)

#### **Features**

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Operating Temperature -40 to 85 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead-Free



## **Applications:**

- 10GBase-LR Ethernet
- 8x/10x Fibre Channel
- Access, Datacenter and Enterprise
- Mobile Fronthaul CPRI/OBSAI

### **Product Description**

This Huawei® compatible SFP+ transceiver provides 10GBase-LR throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It can operate at temperatures between -40 and 85C. It is guaranteed to be 100% compatible with the equivalent Huawei® 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.

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

## **Regulatory Compliance**

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

## **Absolute Maximum Ratings**

Parameter	Symbol	Min.	Тур.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	TS	-40		85	°C
Operating Case Temperature	Тс	-40	25	85	°C
Data Rate			10.3125		Gbps

## Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter		Symbol	Min.	Тур.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.135	3.3	3.465	V	
Power Supply Current		Icc			300	mA	
Power Dissipation		PD			1000	mW	
Transmitter							
Input Differe	ntial Impedance	Zin		100		Ω	
Differential Data Input Swing		Vin,p-p	180		700	mVp-p	
TX_FAULT	Transmitter Fault	Voн	2.0		VccHOST	V	
	Normal Operation	VOL	0		0.8	V	
TX_DISABLE	Transmitter Disable	VIH	2.0		VCCHOST	V	
	Transmitter Enable	VIL	0		0.8	V	
Receiver							
Output Differential Impedance		Zo		100		Ω	
Differential Data Output Swing		VOUT, P-P	300		850	mVp-p	1
Data Output Rise Time, Fall Time		t <sub>r</sub> , t <sub>f</sub>	28			ps	2
RX_LOS	Loss of signal (LOS)	Voн	2.0		VCCHOST	V	3
	Normal Operation	VOL	0		0.8	V	3

## Notes:

- 1. Internally AC coupled, but requires an external  $100\Omega$  differential load termination.
- 2. 20-80%.
- 3. LOS is an open collector output. Should be pulled up with  $4.7k\Omega$  on the host board.

**Optical Characteristics** 

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Transmitter							
Launch Optical Power	Ро	0		+5	dBm	1	
Center Wavelength Range	λς	1260	1310	1355	nm		
Extinction Ratio	ER	3.5			dB	2	
Optical Modulation Amplitude	OMA	-5.2			dBm		
Spectral Width (-20dB)	Δλ			1	nm		
Side Mode Suppression Ratio	SMSR	30			dB		
Transmitter and Dispersion Penalty	TDP			3.2	dB		
Optical Return Loss Tolerance	ORLT			12	dB		
Pout @TX_Disable Asserted	Poff			-30	dBm	1	
Eye Diagram	IEEE Std 802.	IEEE Std 802.3-2005 10Gb Ethernet 10GBASE-ER compatible					
Receiver							
Center Wavelength	λς	1260	1310	1355	nm		
Receiver Sensitivity (Pavg)	S			-15	dBm	3	
Receiver Overload (Pavg)	POL	0.5			dBm	3	
Stressed Sensitivity (OMA)				-10.3	dBm	4	
Optical Return Loss	ORL	12			dB		
LOS De-Assert	LOS <sub>D</sub>			-16	dBm		
LOS Assert	LOS <sub>A</sub>	-30			dBm		
LOS Hysteresis		0.5		4.5	dB		

## Notes:

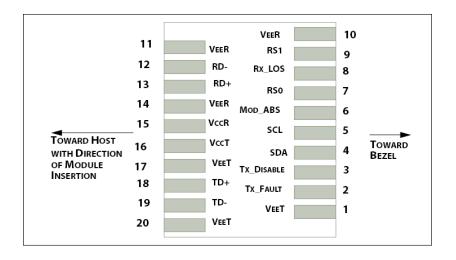
- 1. The optical power is launched into  $9/125\mu m$  SMF.
- 2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps
- 3. Measured with PRBS  $2^{31}$ -1 test pattern, 10.3125 Gb/s, BER<10<sup>-12</sup>.
- 4. Comply with IEEE 802.3-2005.

# **Pin Descriptions**

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault (LVTTL-O) - High indicates a fault condition	2
3	TX_Disable	Transmitter Disable (LVTTL-I) – High or open disables the transmitter	3
4	SDA	Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2)	4
5	SCL	Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1)	4
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module	5
7	RS0	Rate Select 0 – Not used, Presents high input impedance	
8	RX_LOS	Receiver Loss of Signal (LVTTL-O)	2
9	RS1	Rate Select 1 – Not used, Presents high input impedance	
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O)	
13	RD+	Received Data out (CML-O)	
14	VeeR	Receiver Ground	
15	VccR	Receiver Power - +3.3V	
16	VccT	Transmitter Power - +3.3 V	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Data In (CML-I)	
19	TD-	Inverse Transmitter Data In (CML-I)	
20	VeeT	Transmitter Ground	1

## **Notes:**

- 1. The module signal grounds are isolated from the module case.
- 2. This is an open collector/drain output that on the host board requires a 4.7K $\Omega$  to 10K $\Omega$  pull-up resistor to VccHost.
- 3. This input is internally biased high with a 4.7K $\Omega$  to 10K $\Omega$  pull-up resistor to VccT.
- 4. Two-Wire Serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
- 5. This is a ground return that on the host board requires a 4.7K $\Omega$  to 10K $\Omega$  pull-up resistor to VccHost.



# **Recommended Host Board Power Supply Filter Network**

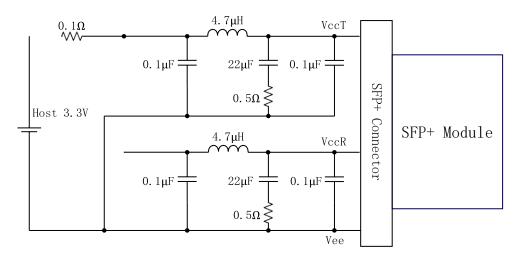
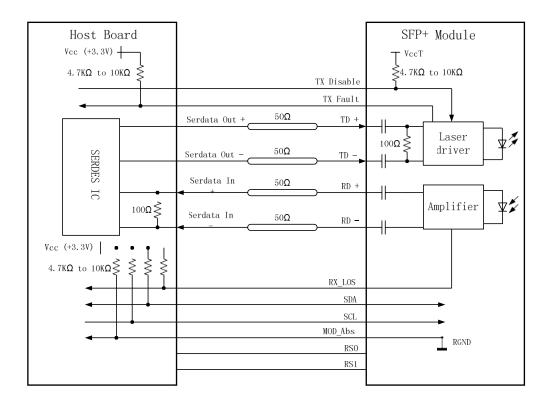


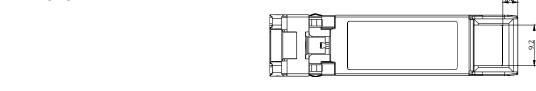
Figure 2. Recommended Host Board Power Supply Filter Network

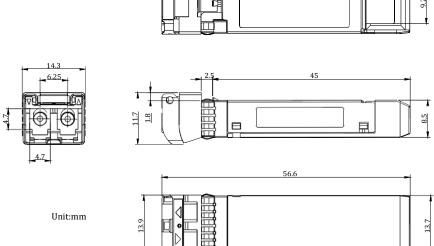
# **Recommended Application Interface Block Diagram**



# **Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).





## **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 Al-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**

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