SFP-25GBASE-LR-20-HW-OPC

Huawei® Compatible TAA 25GBase-LR SFP28 Transceiver (SMF, 1310nm, 20km, LC, DOM)

Features

- SFF-8432 and SFF-8472 MSA Compliant
- Duplex LC Connector
- 1310nm un-cooled direct modulation laser
- PIN photodiode receiver with limiting amplifier
- 3.3V power supply
- Commercial Temperature 0 to 70 Celsius
- Support Hot Pluggable
- Metal with lower EMI
- Excellent ESD protection
- RoHS compliant and Lead Free

Applications:

- 25GBase Ethernet
- Access and Enterprise

Product Description

This Huawei® compatible SFP28 transceiver provides 25GBase-LR throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Huawei®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide 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.

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

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	0		3.6	V	+3.3V
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0	25	70	°C	
Optical Receiver Input	Pmax			5.5	dBm	Average

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.30	3.465	V	
Power Supply Noise	Vrip			2 3	% %	DC – 1MHz 1 – 10MHz
Power Consumption	Pw			1.2	W	

High-Speed Electrical Characteristics

Parameter	Test Point	Min.	Typ.	Max.	Unit	Notes/Conditions
High-Speed Electrical Input Characteristics						
Overload Differential Voltage (pk-to-pk)	TP1a	900			mV	Calibrated at TP1a Note 3: Section 13.3.12
Differential Termination Mismatch	TP1			10	%	At 1 MHz Note 3: Section 13.3.6
Differential Return Loss (SDD11)	TP1			Note 1	dB	
Common-Mode to Differential Conversion and Differential to Common-Mode Conversion (SDC11, SCD11)	TP1			Note 2	dB	
High-Speed Electrical Output Characteristics						
Differential Voltage (pk-pk)	TP4			900	mV	
Common-Mode Noise (RMS)	TP4			17.5	mV	Note 6: Section 13.3.5
Differential Termination Mismatch	TP4			10	%	At 1MHz
Differential Return Loss (SDD22)	TP4			Note 4	dB	
Common-Mode to Differential Conversion and Differential to Common-Mode Conversion (SDC22, SCD22)	TP4			Note 5		
Transition Time (20-80%)	TP4	9.5			ps	Note 6: Section 13.3.10
Vertical Eye Closure (VEC)				5.5	dB	Note 6: Section 13.3.11
Eye Width at 10^{-15} Probability (EW15)	TP4	0.57			UI	Note 6: Section 13.3.11
Eye Height at 10^{-15} Probability (EH15)	TP4	228			mV	Note 6: Section 13.3.11

Notes:

1. SDD11, SDD22 < -11dB for 0.05<f<fb/7 (fb=28GHz).
   SDD11, SDD22 < -6.0+9.2*$\log_{10}$(2f/fb) dB for fb/7<f<fb (fb=28 GHz).
2. SDC11, SCD11 < -22+14*(f/fb) dB for 0.05<f<fb/2 (fb=28 GHz).
   SDC11, SCD11 < -18+6*f/fb dB for fb/2<f<fb (fb=28 GHz).
3. Ref. OIF-CEI-28G-VSR as described in Implementation Agreement OIF-CEI-03.1.
4. SDD11, SDD22 < -11dB for 0.05<f<fb/7 (fb=28GHz).
   SDD11, SDD22 < -6.0+9.2*log10(2f/fb) dB for fb/7<f<fb (fb=28 GHz).
5. SDC22, SCD22 < -25+20*(f/fb) dB for 0.05<f<fb/2 (fb=28 GHz).
   SDC22, SCD22 < -18+6*f/fb dB for fb/2<f<fb (fb=28 GHz).
6. Ref. OIF-CEI-28G-VSR as described in Implementation Agreement OIF-CEI-03.1.

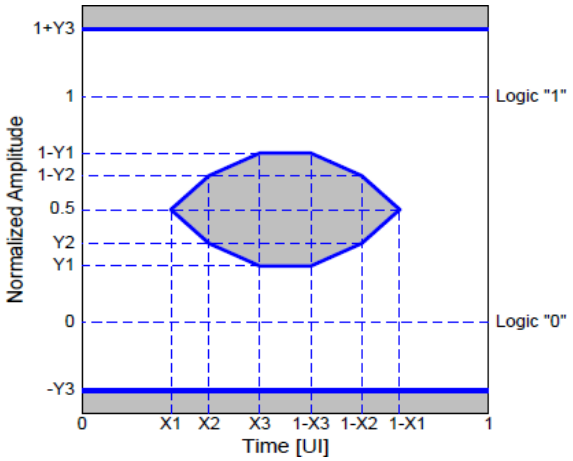
Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Data Rate	DR		25.78125		Gbps	1
Signal Speed Variation from Nominal	ΔfD	-100		100	ppm	
Transmitter Center Wavelength	λC	1295	1310	1325	nm	
Average Launch Power	Pavg	-3		4	dBm	
Optical Output Power in OMA	OMA	-2		4	dBm	
Launch Power in OMA Minus TDP		-3			dBm	
Average Launch Power of Off Transmitter	Poff			-30	dBm	
Extinction Ratio	ER	3.0			dB	
Transmitter Eye Mask Definition			Figure Below			
Receiver						
Receiver Sensitivity in OMA	PminOMA			-14	dBm	2, 3
Stressed Receiver Sensitivity in OMA	PminSOMA			-11.5	dBm	2
Average Received Power	PRavg			+4.0	dBm	

Notes:

1. Testing by data rate: NRZ at 25.78125Gbps, Mark Ratio 50%, and PRBS=2^{31}-1.
2. For BER 5x10^{-5}.
3. Receiver sensitivity in OMA is a normative specification.

Mask of Optical Output Eye Diagram



X1	X2	X3	Y1	Y2	Y3	Maximum Hit Ratio (Note)
0.31	0.4	0.45	0.34	0.38	0.4	5 x 10^{-5}

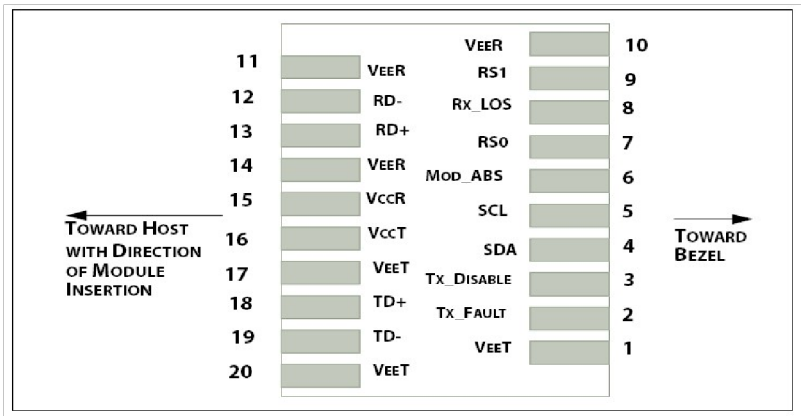
Note: The acceptable ratio of samples inside to outside the hatched area (the “hit ratio”) must be met.

Pin Description

Pin	Symbol	Name/Description	Note
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	2-Wire Serial Interface Data. LVCMOS-I/O. MOD-DEF2.	4
5	SCL	2-Wire Serial Interface Clock. LVCMOS-I/O. MOD-DEF1.	4
6	MOD_ABS	Module Absent (Output). Connected to the VeeT or VeeR in the module.	5
7	RS0	N/A.	6
8	Rx_LOS	Receiver Loss of Signal. LVTTL-O.	2
9	RS1	N/A.	6
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.	1
15	VccR	+3.3V Receiver Power.	
16	VccT	+3.3V Transmitter Power.	
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

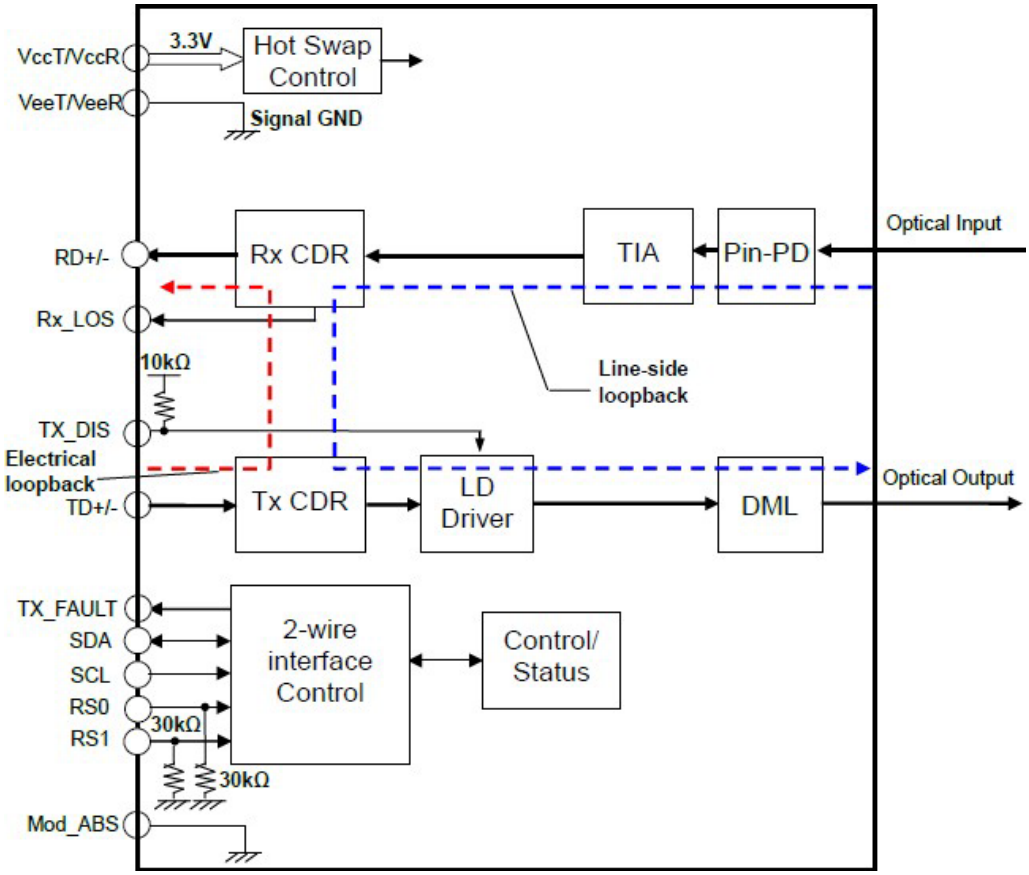
Notes:

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 4.7kΩ to 10kΩ pull-up resistor to the Host_Vcc.
3. This input is internally biased high with a 4.7kΩ to 10kΩ pull-up resistor to the VccT.
4. 2-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 4.7kΩ to 10kΩ pull-up resistor to the Host_Vcc.
6. Rate Select can also be set through the 2-wire bus in accordance with SFF-8472 v. 12.1. Rx Rate Select is set at Bit 3, Byte 110, and Address A2h. Tx Rate Select is set at Bit 3, Byte 118, and Address A2h.
   Note: Writing a “1” selects maximum bandwidth operation. Rate Select is the logic OR of the input state of Rate Select Pin and 2-wire bus.



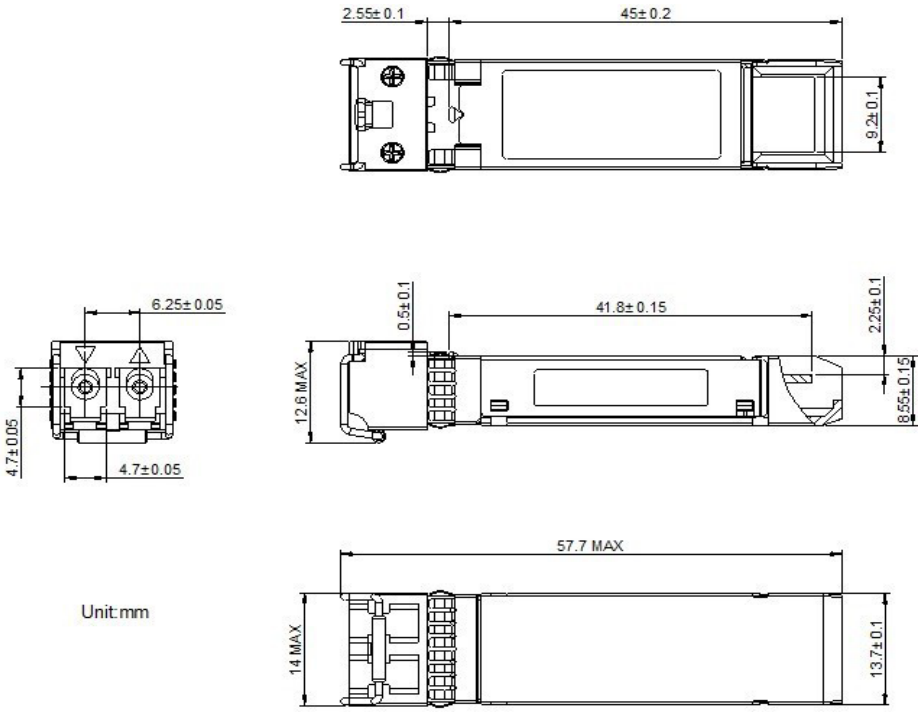
Pin-Out of Connector Block on the Host Board

Functional Block Diagram



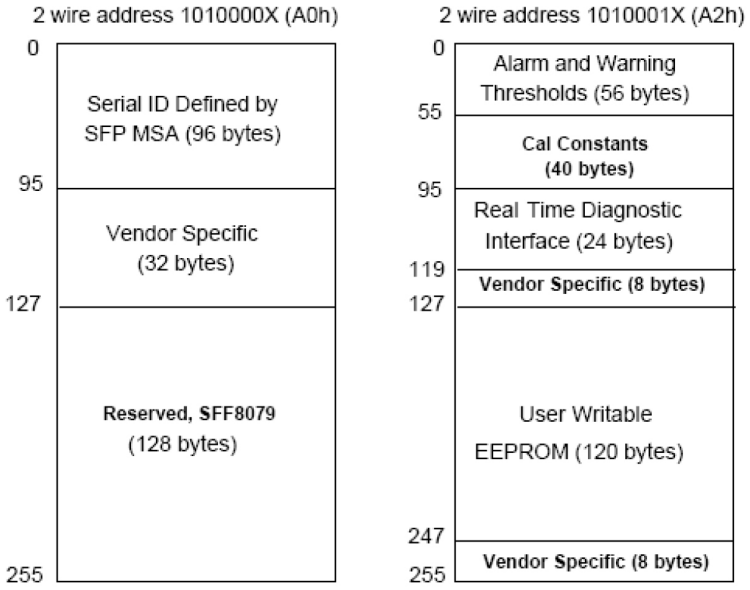
Mechanical Specifications

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



EEPROM Information

EEPROM memory map-specific data field description is as below:



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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