

SFP-OC-12-IR1-I-OPC

MSA and TAA OC-12-IR SFP Transceiver (SMF, 1310nm, 15km, LC, -40 to 85C)

Features

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

**Applications:**

- OC-12 Transmission

Product Description

This MSA compliant SFP transceiver provides OC-12 (622 mbs) IR transmission rates for up to 15km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is capable of withstanding rugged environments and can operate at temperatures between -40 and 85C. 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. 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.	Typ.	Max.	Unit
Maximum Supply Voltage	V _{CC}	-0.5		3.6	V
Storage Temperature	T _S	-40		+85	°C
Operating Case Temperature	T _C	-40		+85	°C
Operating Humidity	RH	5		85	%
Receiver Power	R _{MAX}			-8	dBm
Data Rate			622		Mbps

Electrical Characteristics (TOP=25°C, V_{CC}=3.3Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V _{CC}	3.15	3.30	3.45	V	
Power Supply Current	I _{CC}			300	mA	
Power Consumption	P _{DISS}			800	mW	
Transmitter						
Single ended data input swing	V _{in,pp}	400		2000	mVpp	1
Input differential impedance	Z _{in}	85	100	115	Ω	2
Receiver						
Single ended data output swing	V _{out, pp}	400		2000	mVpp	1
Output differential impedance	Z _{in}	80	100	120	Ω	

Notes:

1. AC coupled.
2. R_{in} > 100 kohms @ DC

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
9µm Core Diameter SMF	L		10		km	
Data Rate			622		Mbps	
Transmitter						
Average Output Power	P _{out}	-15		-8	dBm	1
Optical Extinction Ratio	ER	10			dB	
Optical Wavelength	Tλ	1260	1310	1360	nm	
Spectral Width (RMS)	Δλ			4	nm	
Total Jitter	TJ			0.43	UI	2
Rise/Fall Time (20%~80%)	tr/tf			0.26	ns	
Receiver						
Receiver Sensitivity	P _{min}			-28	dBm	3
Receiver Overload	P _{max}	-8			dBm	
Optical Center Wavelength	λ _C	1260		1600	nm	

Notes:

1. Coupled into a Single-mode fibre
2. Filtered, measured with a PRBS 2²³-1 test pattern @622Mbps.
3. Minimum average optical power is measured at BER less than 1E-12, with 2²³-1 PRBS and ER=9 dB

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTT-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0. Not used	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not used	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
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 Non-Inverted DATA in. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

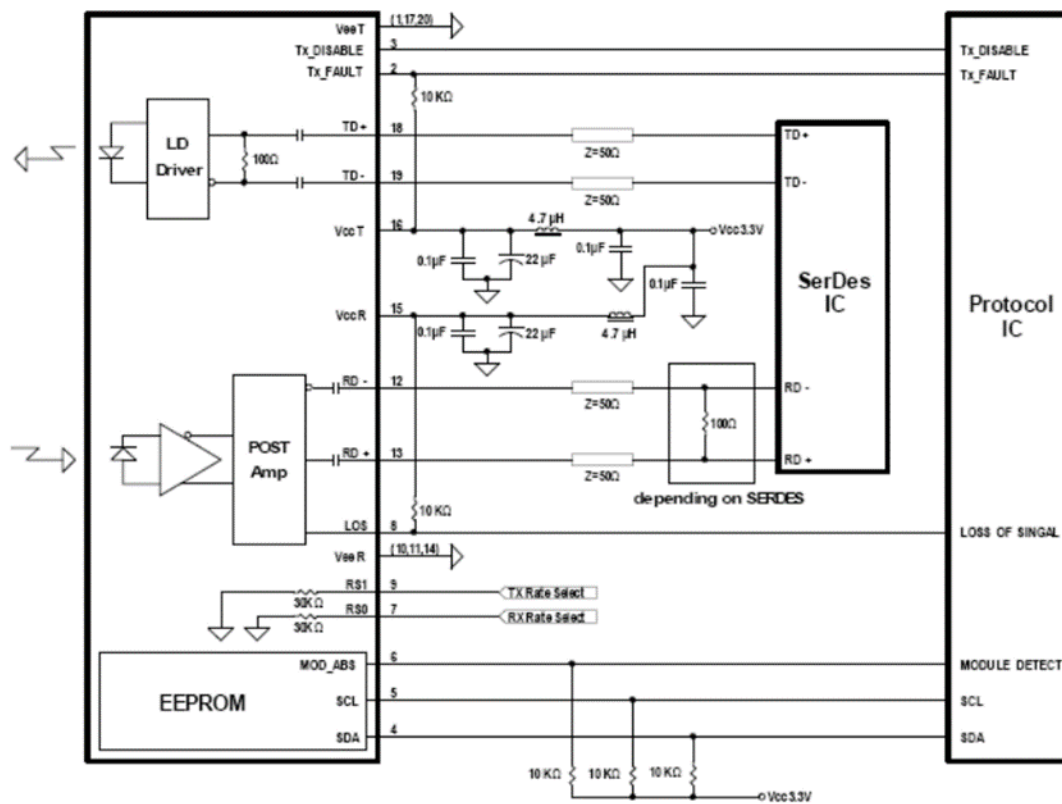
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resistor in the range 4.7KΩ to 10KΩ. Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.
3. Tx_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



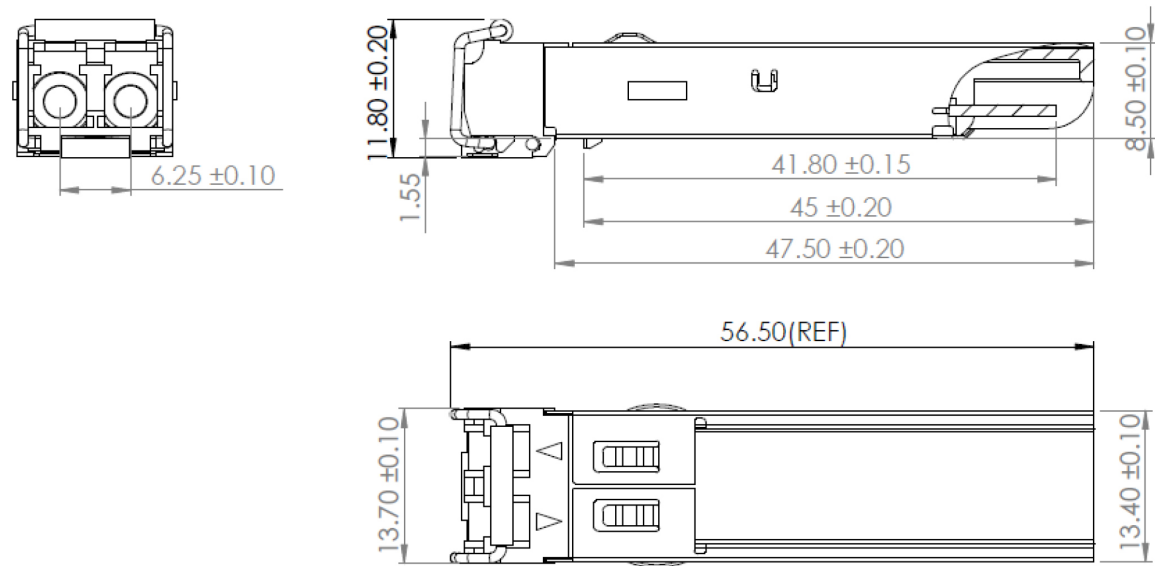
Pin-out of connector Block on Host board

Recommended Circuit Schematic



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:

2 wire address 1010000X (A0h)	2 wire address 1010001X (A2h)
0	0
Serial ID Defined by SFP MSA (96 bytes)	Alarm and Warning Thresholds (56 bytes)
95	55
Vendor Specific (32 bytes)	Cal Constants (40 bytes)
127	95
Reserved, SFF8079 (128 bytes)	Real Time Diagnostic Interface (24 bytes)
255	119
	Vendor Specific (8 bytes)
	127
	User Writable EEPROM (120 bytes)
	247
	Vendor Specific (8 bytes)
	255

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

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