

TITLE: 1G SFP EX Transceiver	DOC No. RFD-20260325300-002	
	REVISION : 02	AUTHORIZED BY: Henry Chen
	DATE : 2026.04.13	CLASSIFICATION: Optical Transceiver

1. Description

1G SFP EX is a high performance, cost effective modules, which is supporting up to 1.25Gbps, and transmission distance up to 40km on SM fiber. The transceiver consists of two sections: The transmitter section incorporates a laser driver and a 1550nm DFB laser. The receiver section consists of a PIN photodiode integrated with a transimpedance preamplifier (TIA) and a Limiting Amplifier. The module is hot pluggable into the 20-pin connector. The high-speed electrical interface is base on low voltage logic, with nominal 100Ohms differential impedance and AC coupled in the module.

The optical output can be disabled by LVTTL logic high-level input of TX_DIS. Transmit Fault (Tx_Fault) is provided to indicate that the module transmitter has detected a fault condition related to laser operation or safety. Loss of signal (RX_LOS) output is provided to indicate the loss of an input optical signal of receiver. A serial EEPROM in the transceiver allows the user to access transceiver monitoring and configuration data via the 2-wire SFP Management Interface. This interface uses a single address, A0h, with a memory map divided into a lower and upper area. Basic digital diagnostic (DD) data is held in the lower area while specific data is held in a series of tables in the high memory area.

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2. Features

- Up to 40km transmission on SMF
- Up to 1.25Gbps
- 1550nm DFB laser and PIN receiver
- 2-wire interface for integrated Digital Diagnostic monitoring
- Hot pluggable
- Very low EMI and excellent ESD protection
- +3.3V power supply
- Power consumption less than 0.8W
- Operating temperature range: -40°C to +85°C

3. Applications

- High-speed storage area networks
- Computer cluster cross-connect
- Custom high-speed data pipes
- 1000Base-EX
- Compliant with MSA SFF-8472
- Compliant with SFP MSA

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4. Product Description

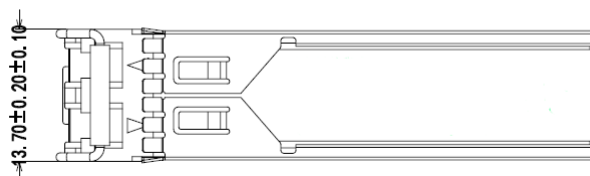
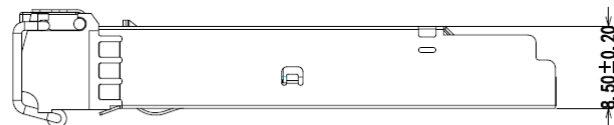
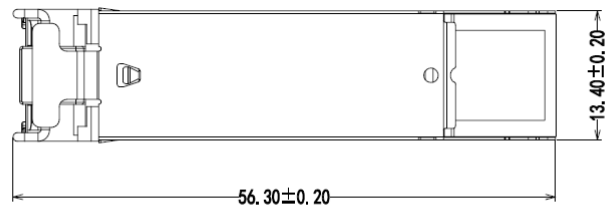
4.1 Product Name

1G SFP EX Transceiver

JPC P/N	Laser(nm)	Distance	Fiber Type	Power (dBm)	Sen. (dBm)	Connector	Tem.
P58**0ARCV40-1	1550	40km	SMF	-4 ~ +4	-23	Dual LC	I

Note-1 : ** Indicates the customer code.

4.2 Dimension, Materials, Platings And Marking



All dimensions' unit are mm.

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5. Product Specification

5.1 Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _s	-40		85	°C
Relative Humidity	RH	5		95	%
Power Supply Voltage	V _{CC}	-0.3		4	V
Signal Input Voltage	V _{SI}	V _{CC} - 0.3		V _{CC} + 0.3	V

5.2 Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Case Operating Temperature	T _{case}	-40		85	°C
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V
Power Supply Current	I _{CC}			240	mA
Data Rate	BR		1.25		Gbps
Transmission Distance	TD			40	km

5.3 Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Center Wavelength	λ	1530	1550	1565	nm
Spectral Width (-20dB)	Δλ			1	nm
Average optical power	P _{avg}	-4		4	dBm
Average launch power of OFF transmitter	P _{off}			-30	dBm
Extinction ratio	ER	9			dB
Output Optical Eye		Compliant with IEEE 802.3			
Optical return loss tolerance				12	dB
Receiver					
Center wavelength	λ	1260		1620	nm
Damage threshold	R _{sen}	0			dBm
Receive power overload	R _{sen}	-2			dBm
Receiver sensitivity	R _{ov}			-23	dBm
Los Assert	LOS _A	-35			dBm
Los De-assert	LOS _D			-27	dBm

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Parameter	Symbol	Min.	Typ.	Max.	Unit
Los Hysteresis	LOS _H	0.5		6	dB

5.4 Digital Diagnostics Functions

As defined by the SFF-8472, Our SFP transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

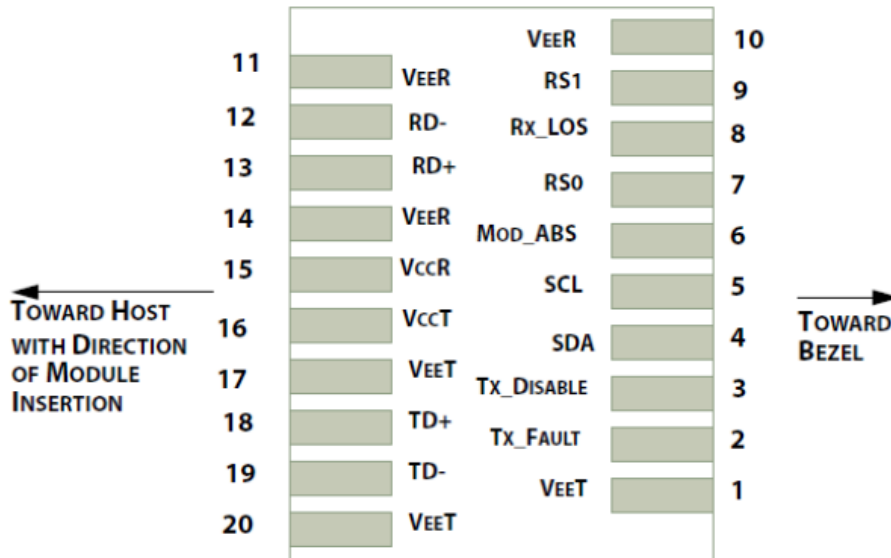
- Transceiver temperature
- Laser bias current
- Transmitted optical power
- Received optical power
- Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range. The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through the 2-wire serial interface. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from 0x00h to the maximum address of the memory. For more detailed information, including memory map definitions, please refer the SFF-8472 documentation. The following characteristics are defined over recommended operating conditions:

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

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5.5 Pin Diagram

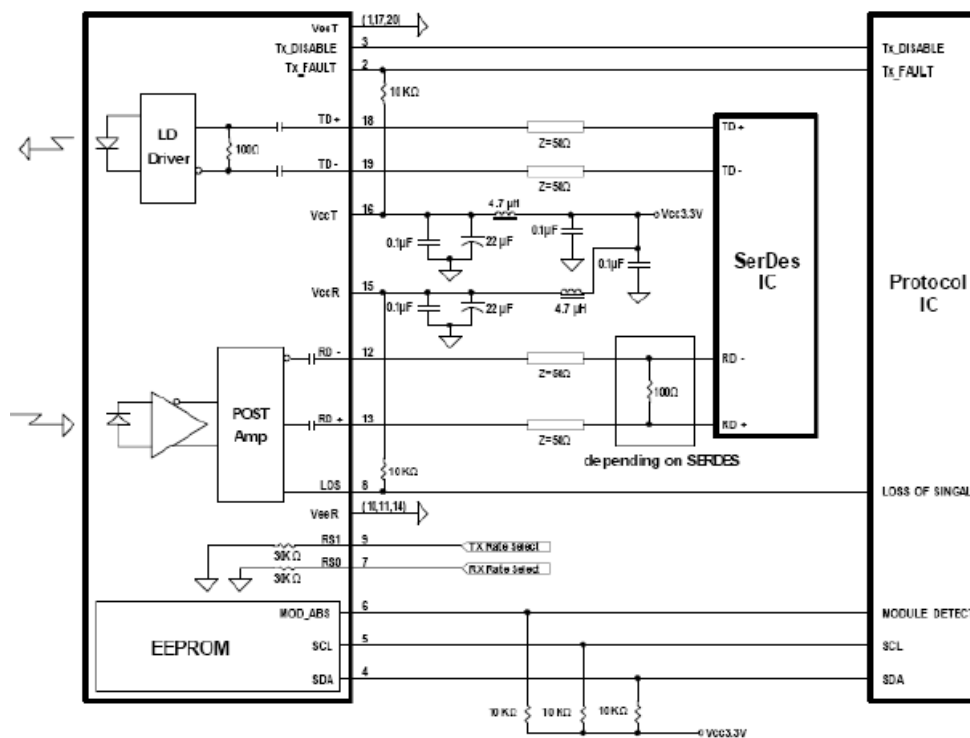


5.6 Pin Descriptions

PIN	Logic	Symbol	Name / Description
1		VeeT	Module Transmitter Ground
2	LVTTTL-O	TX_Fault	Module Transmitter Fault
3	LVTTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output
4	LVTTTL-I/O	SDA	2-Wire Serial Interface Data Line
5	LVTTTL-I	SCL	2-Wire Serial Interface Clock
6		MOD_DEF0	Module Definition, Grounded in the module
7	LVTTTL-I	RS0	Receiver Rate Select
8	LVTTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW
9	LVTTTL-I	RS1	Transmitter Rate Select (not used)
10		VeeR	Module Receiver Ground
11		VeeR	Module Receiver Ground
12	CML-O	RD-	Receiver Inverted Data Output
13	CML-O	RD+	Receiver Data Output
14		VeeR	Module Receiver Ground
15		VccR	Module Receiver 3.3 V Supply
16		VccT	Module Receiver 3.3 V Supply
17		VeeT	Module Transmitter Ground
18	CML-I	TD+	Transmitter Non-Inverted Data Input
19	CML-I	TD-	Transmitter Inverted Data Input
20		VeeT	Module Transmitter Ground

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5.7 Recommended Interface Circuit



6. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2026/03/25	Henry Chen	Mike Sun
02	Document Modify	2026/04/13	Henry Chen	Mike Sun