TITLE **25G SFP28 SR 100m Transceiver**	**DOC No. RFD-20240310001-001**	
	REVISION：01	**AUTHORIZED BY：Andy Yang**
	DATE：2024/03/15	**CLASSIFICATION：Optical Transceiver**

1. DESCRIPTION

The laser based 25Gigabit SFP28 Transceiver is designed to transmit and receive serial optical data over multimode optical fiber with 100m.They are compliant with SFF-8431,SFF-8432. The transmitter converts serial CML electrical data into serial optical data compliant with the IEEE802.3by standard. The receiver converts serial optical data into serial CML electrical data.Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

2. PRODUCT FEATURES

- Operating data rate up to 25.78Gbps
- High sensitivity Pin photodiode and TIA
- Up to 70m transmission on MMF OM3 and 100m transmission on MMF OM4

  Up to 25.78Gb/s data links
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption <1 W
- 0℃ to 70℃operating wide temperature range
- Single +3.3V±5% power supply
- Digital Monitoring SFF-8472
- Fully RoHS Compliant

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3. PRODUCT DESCRIPTION

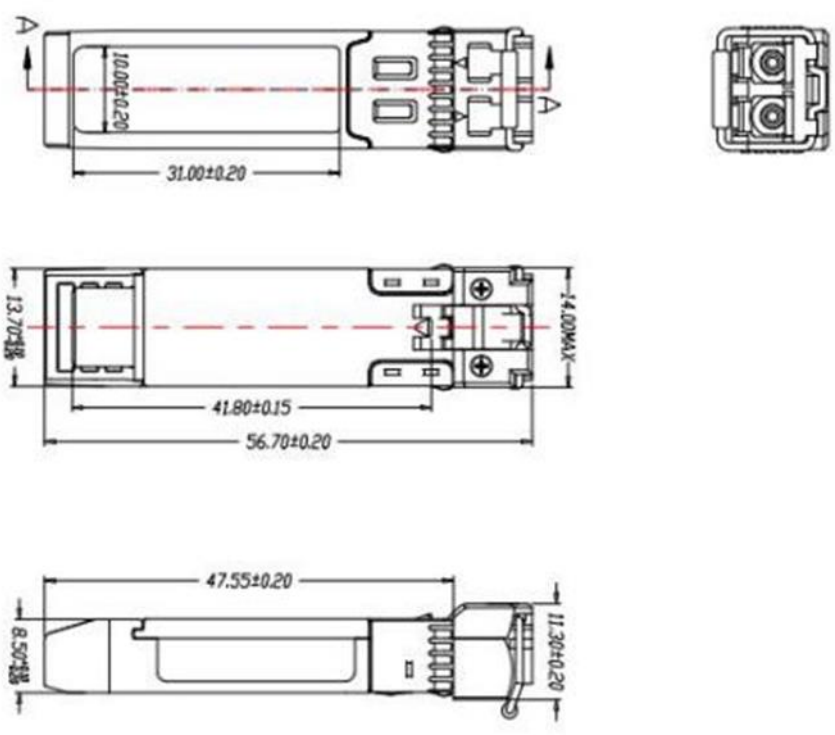
3.1 PRODUCT NAME

25G SFP28 SR 100m Transceiver

JPC P/N	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Tem.
P58**0CRCA01-1	25.78G	850nm	70m-(om3) 100m-(om4)	MMF	-6.4~3	-10.3	LC	C

Note-1：** Indicates the customer code.

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Units: mm

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4. APPLICATIONS

- 25GBASE-SR Ethernet

5. Absolute Maximum Ratings & Recommended Operating Conditions

5.1 Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	℃	-40	85
Relative Humidity	RH	%	0	95
Maximum Supply Voltage	Vcc	V	-0.5	4.0

5.2 Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Case Temperature Range	Tc	℃	0		70
Power Supply Voltage	Vcc	V	3.14	3.3	3.46
Bit Rate	BR	Gb/s		25.78	
Max Supported Link Length（OM4 MMF）	L	m			100

5.3 General Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Note
Supply Voltage	VCC	V	3.14	3.3	3.46	
Module Power		W			1	
Transmitter						
Input Differential Impedance	RIN	Ω	80	100	120	
Differential Data Input	VIN	mVp-p	150		1200	
Transmit Disable Voltage	VDIS	V	2		VCCHOSTTT	
Transmit Enable Voltage	VEN	V	VEE		VEE+0.8	

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Transmit Fault Assert Voltage	VFA	V	2		VCCHOST	
Transmit Fault De-Assert Voltage	VFDA	V	VEE		VEE+0.4	
Receiver						
Differential Data Output	VOD	mVp-p	350		700	
Output Rise Time	tRISE	pS	25			
Output Fall Time	tFALL	pS	25			
LOS Fault	VLOSFT	V	2		VCCHOST	
LOS Normal	VLOSNR	V	VEE		VEE+0.4	

5.4 Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Note	Unit
Transmitter						
Nominal Wavelength	λ	840	850	860		nm
Optical Modulation Amplitude	OMA	-6.4		3		dBm
Extinction Ratio	ER	2				dB
Relative Intensity Noise	RIN			-128		dB/Hz
Receiver						
Center Wavelength	λC	840	850	860		nm
Receiver Sensitivity(OMA)	SEN			-10.3	1	dBm
Receiver Overload (OMA)	Pmax	3				dBm
Optical Return Loss		12				dB
LOS Assert	LOSA	-30				dBm
LOS De-Assert LOS	LOSD			-13		dBm
LOS Hysteresis		0.5				dB

Note1: Measured at ER>2dB, PRBS 2^{31}-1 and BER better than or equal to 5E-5;

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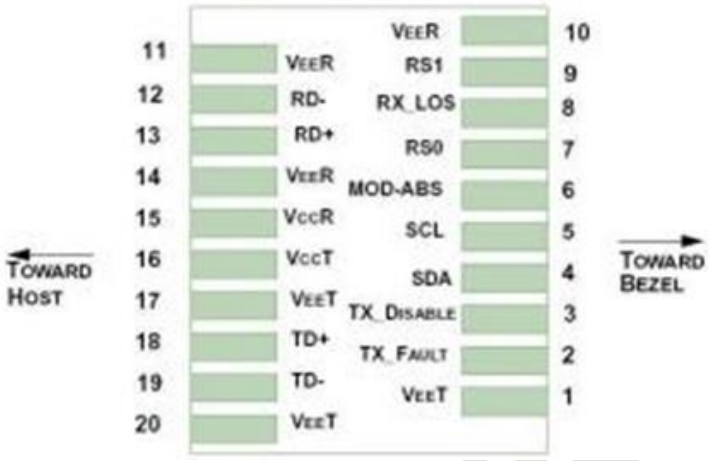
6. Pin-out Definition



Pin Assignment

Pin Number	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Logic "1" Output = Laser Fault (Laser off before t_fault) Logic "0" Output = Normal Operation This pin is open collector compatible, and should be pulled up to Host Vcc with a 10kΩ resistor.
3	TX Disable	Transmitter Disable In (LVTTL)	Logic "1" Input (or no connection) = Laser off Logic "0" Input = Laser on This pin is internally pulled up to VccT with a 10 kΩ resistor.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	These pins have an internal 30kΩ pull-down to ground.A signal on either of these pins will not affect module performance.
9	RS1		

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8	LOS	Loss of Signal Out (OC)	Sufficient optical signal for potential BER ﹥ 1x10-12 = Logic "0" Insufficient optical signal for potential BER < 1x10-12 = Logic "1" This pin is open collector compatible, and should be pulled up to Host Vcc with a 10kΩ resistor.
10,11,14	VeeR	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Light on = Logic "0" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
13	RD+	Receiver Positive DATA Out (CML)	Light on = Logic "1" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
15	VccR	Receiver Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure. Recommended power supply filter
16	VccT	Transmitter Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure. Recommended power supply filter
18	TD+	Transmitter Positive DATA In (CML)	Logic "1" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
19	TD-	Transmitter Negative DATA In (CML)	Logic "0" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.

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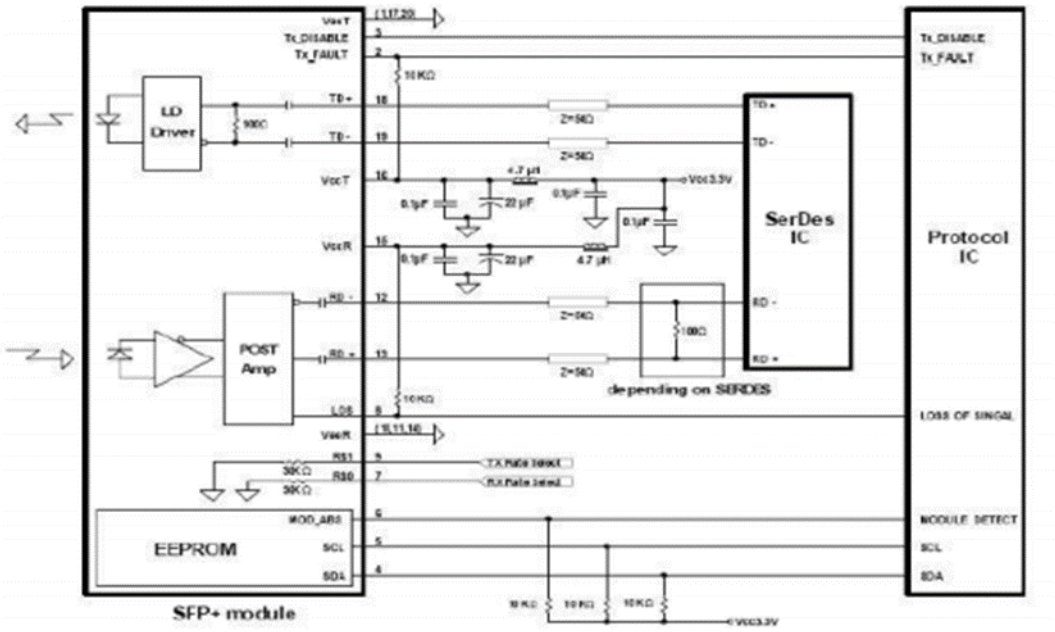
Typical Application Circuit



Digital Diagnostics Functions

As defined by the SFF-8472, Our SFP28 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

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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. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host. The positive edge clocks data into the SFP28 transceiver into those segments of its memory map that are not write-protected. The negative edge clocks data from the SFP28 transceiver. The serial data signal (SDA pin) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. 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 see the SFF-8472 documentation1.

7. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2024/03/15	Andy Yang	Mike Sun