SFP28 CWDM 10Km I-temp
GSS-Cxx250-LRT

Features

- ✓ Hot-pluggable SFP28 form factor
- ✓ Supports CPRI wireless data rate
- ✓ Cooled EML transmitter and APD receiver
- ✓ Suitable for use in 20nm channel spacing CWDM systems
- ✓ Internal CDR circuits on both receiver and transmitter channel
- ✓ Maximum power dissipation：1.8W
- ✓ Maximum link length：10Km on SMF
- ✓ Duplex LC connector
- ✓ Operating case temperature range: -40 to +85°C
- ✓ Single 3.3V power supply
- ✓ RoHS compliant (lead free)

Applications

- ✓ CPRI Option 10
- ✓ 25G Ethernet

Description

This product is a 24.33~25.78Gbps transceiver，designed for optical communication compliant to CPRI Option 10 standard、25GBase. Its high performance cooled CWDM EML transmitter and high sensitivity APD receiver provide superior performance for CPRI/Ethernet application up to 10km (with FEC) Links.

The product is designed with form factor, optical/electrical connection according to the SFP28 Multi-Source Agreement (MSA)

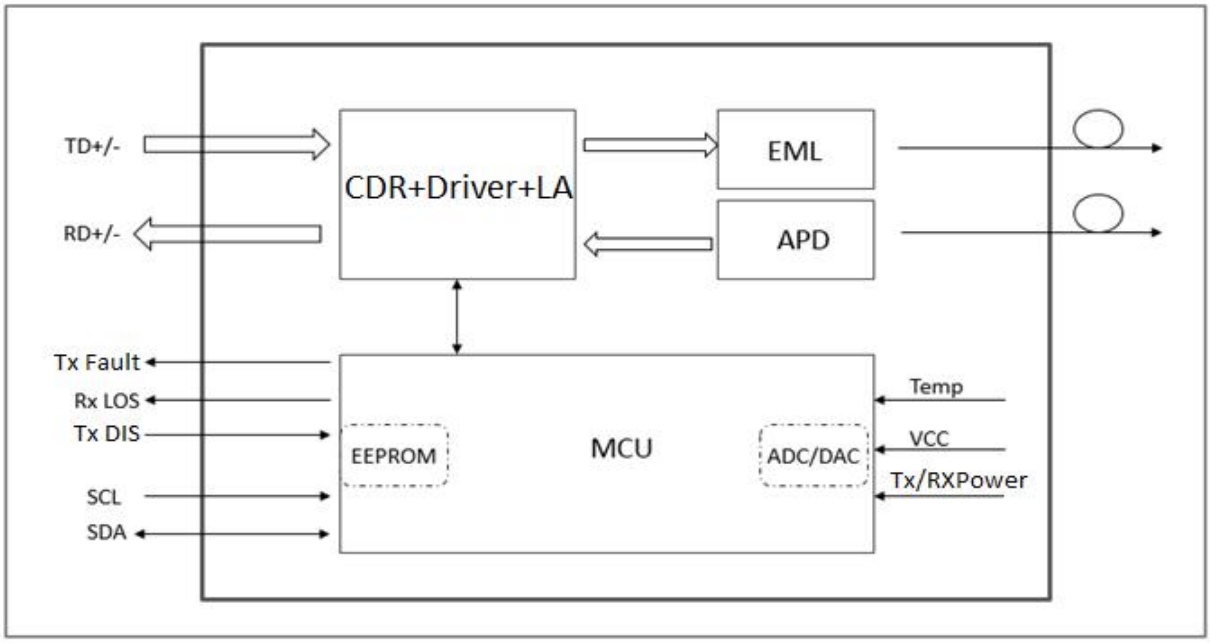

Figure 1. Module Block Diagram

The SFP28 is a Enhanced Small Form Factor Pluggable SFP28 transceivers, and can be contacted through I2C serial interface.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	+3.8	V
Operating Case temperature	Top	-40	+85	ºC
Operating Relative Humidity	RHop	0	85	%
Storage and Transportation Temperature	Tst	-40	+85	ºC
Storage and Transportation Relative Humidity	-	0	85	%
Max Link Length	Lmax		10	km

Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Supply current	Icc	-	-	546	mA
Operating Case temperature	Tca	-40	-	+85	ºC
Module Power Dissipation [1]	Pm	-	-	1.8	W
ESD(High speed pins) [2]	-	-	-	1000	V

Notes:
[1].Power consumption over -40~85℃ case temperature and BOL
[2].Human body model per JEDEC JESD22-A114-B,compliant with INF-077i Rev.4.5 August 31,2005

Transmitter Optical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Laser Safety	Class Ⅰ according to IEC60825				
Optical Wavelength	λ	As per ITU-T G.694.2			nm
Data rate	BR	24.33	25.78125	-	Gbps
Wavelength Deviation [3]	Δλ	-6.5		+6.5	nm
Average Optical Power [1]	Pout	-2	-	+2	dBm
Optical Transmit Power (disabled)	Pout_off	-	-	-30	dBm
Spectral Width (-20dB)	Δλ20	-	-	1	nm
Side Mode Suppression Ratio [2]	SMSR	24	-	-	dB
Extinction Ratio	ER	3.5	-	-	dB

Notes:
[1].Average power measured at output over the operating temperature
[2].Ratio of the average output power in the dominant longitudinal mode to the power in the most significant side mode peak under full modulation condition
[3].Deviation from the ITU G.694.2, wavelength range 1471nm~1571nm
Laser Safety:All transceivers in this datasheet are Class Ⅰ Laser products per FDA/CDRH and IEC-60825 standards.They must be operated under specified operating conditions.

Receiver Optical Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Note
Input Operating Wavelength	λ	1260	-	1620	nm	
Data rate	BR	24.33	25.78125	-	Gbps	
Maximum Input Power	RX-overload	0	-		dBm	
Average Receive Power	Pavg	-14		2	dBm	
Sensitivity(OMA) (10km,24.33)	Rsen1[1]	-	-	-13	dBm	
Sensitivity(OMA) (10km,25.78)	Rsen2[2]			-13	dBm	
Loss of Signal Asserted	LOS_A	-30	-	-	dBm	
LOS De-Asserted	LOS_D	-	-	-15	dBm	
LOS Hysteresis	LOS_H	0.5	-		dB	

Notes:
[1] Measured with PRBS 2^31-1,BER<1E^-12
[2] Measured with PRBS 2^31-1,BER <5E^-5

Transmitter Specifications – Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Data Rate	BR	24.33	25.78125	-	Gbps
Input differential impedance	Rim	80	100	120	Ω
Differential data Input	VtxDIFF	-	-	900	mVpp
Transmit Disable Voltage	VD	2.0	-	Vcc+0.3	V
Transmit Enable Voltage	Ven	-0.3	-	+0.8	V
Transmit Disable Assert Time	t_off	-	-	100	us
Tx Enable Assert Time	t_on	-	-	2	ms
Tx_Fault Assert Time for cooled SFP28	Tx_f_on	-	-	50	ms
Tx_Fault Reset Time [1]	t_reset	10	-	-	us
Initialization Time for cooled SFP28	t_start_up	-	-	10	s

Notes:
[1] Time Tx_Disable must be held high to reset Tx_Fault

Receiver Specifications – Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Data Rate	BR	24.33	25.78125	-	Gbps
Differential Output Impedance	Rout	80	100	120	Ω
Differential Output Swing	Vout P-P	-	-	900	mVpp
Rise/Fall Time	Tr / Tf	9.5	-	-	ps
Loss of Signal –Asserted	VOH	2	-	Vcc+0.3	V
Loss of Signal –Negated	VOL	0	-	+0.4	V
LOS Assert/Deassert Time Delay	T_los on/off	-	-	100/100	us

Digital Diagnostic Functions

Parameter	Symbol	Min.	Max	Unit	Notes
Accuracy					
Transceiver Temperature	DMI_Temp	-3	+3	℃	
TX Output optical power	DMI_TX	-2	+2	dB	
RX Input optical power	DMI_RX	-2	+2	dB	

Transceiver Supply voltage	DMI_VCC	-3%	+3%	V	Full operating
Bias current monitor	DMI_Ibias	-10%	10%	mA	

Support Wavelength

Wavelength(nm)
1471
1491
1511
1531
1551
1571

Table 1. Product ordering codes: the central wavelength is defined as per ITU-T G.694.2

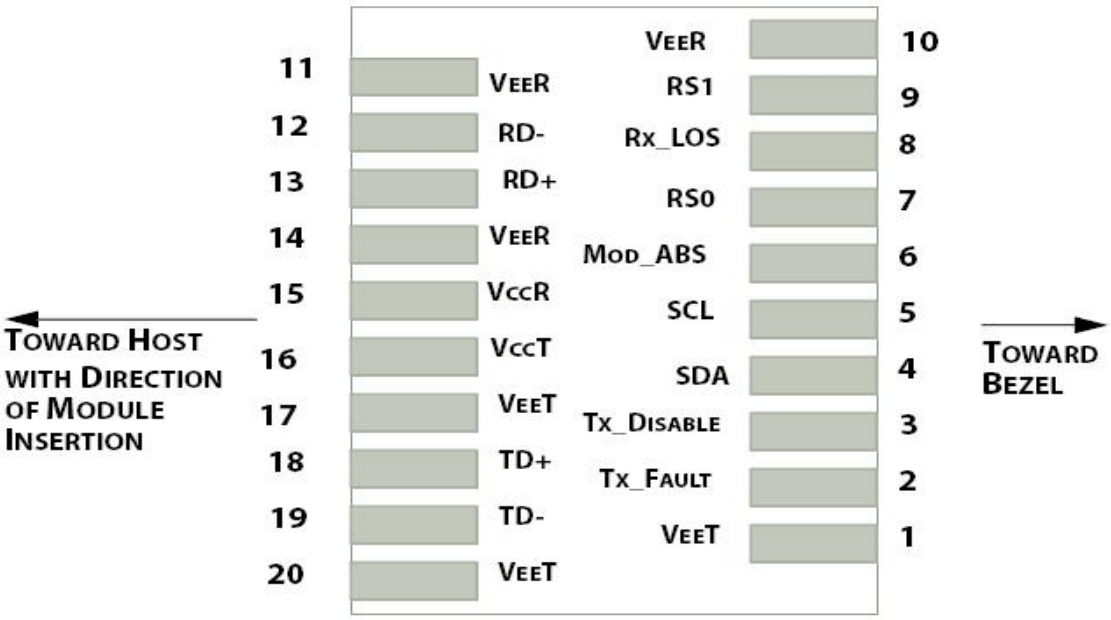

Figure2.Electrical Pin-out Details

Pin Descriptions

Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault

3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:
[1] Module circuit ground is isolated from module chassis ground within the module.
[2].should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.
[3]Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VccT inside the module.
[4]Mod_ABS is connected to VeeT or VeeR in the SFP28 module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

Host Board SFP28 Connector Recommendations

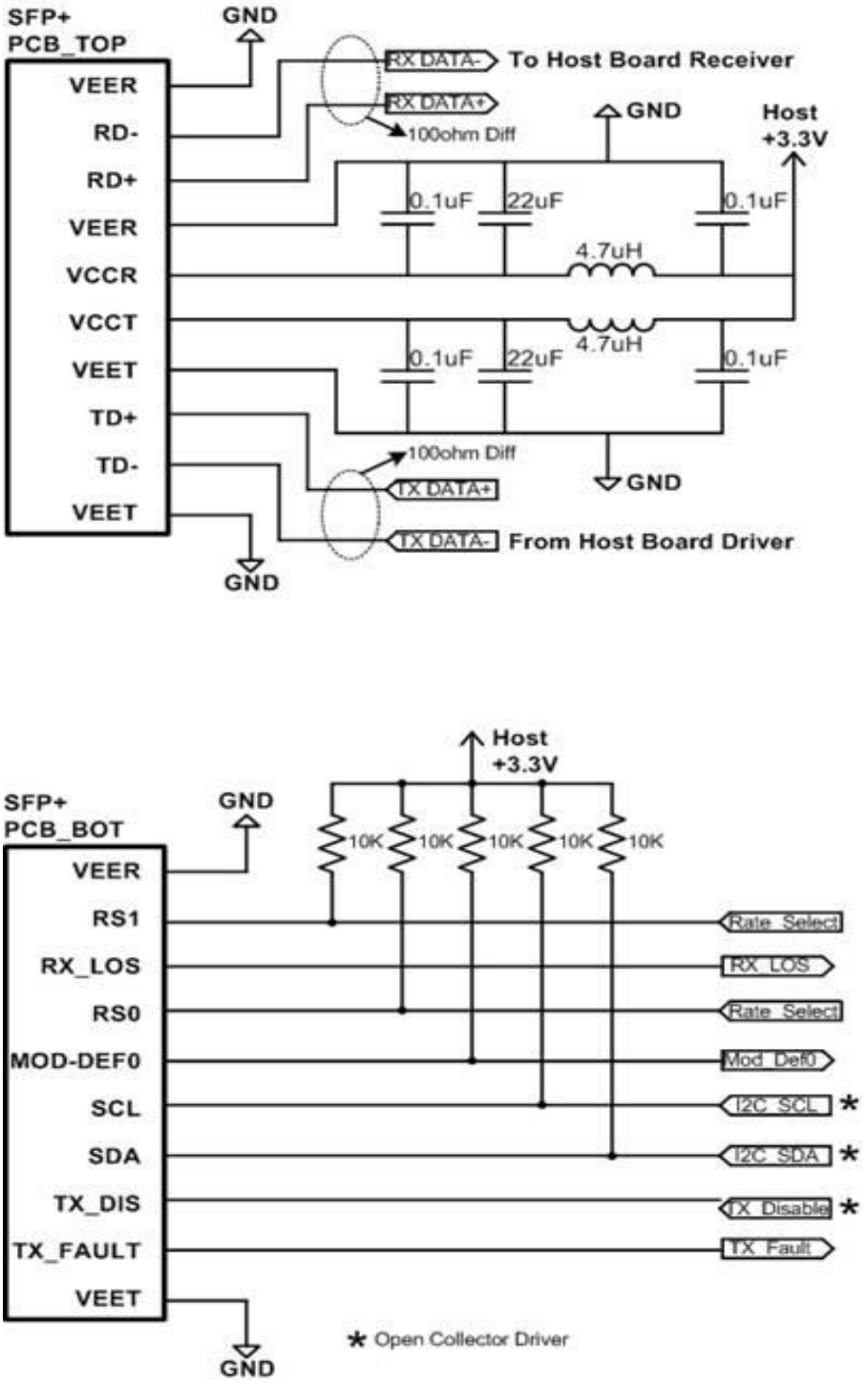

Figure3. Recommended Interface Circuit

Mechanical Dimensions

Gigalight GSS-Cxx250-LRT SFP28 Transceiver are compatible with the SFF-8432 specification for improved pluggable form factor, and shown here for reference purposes only.

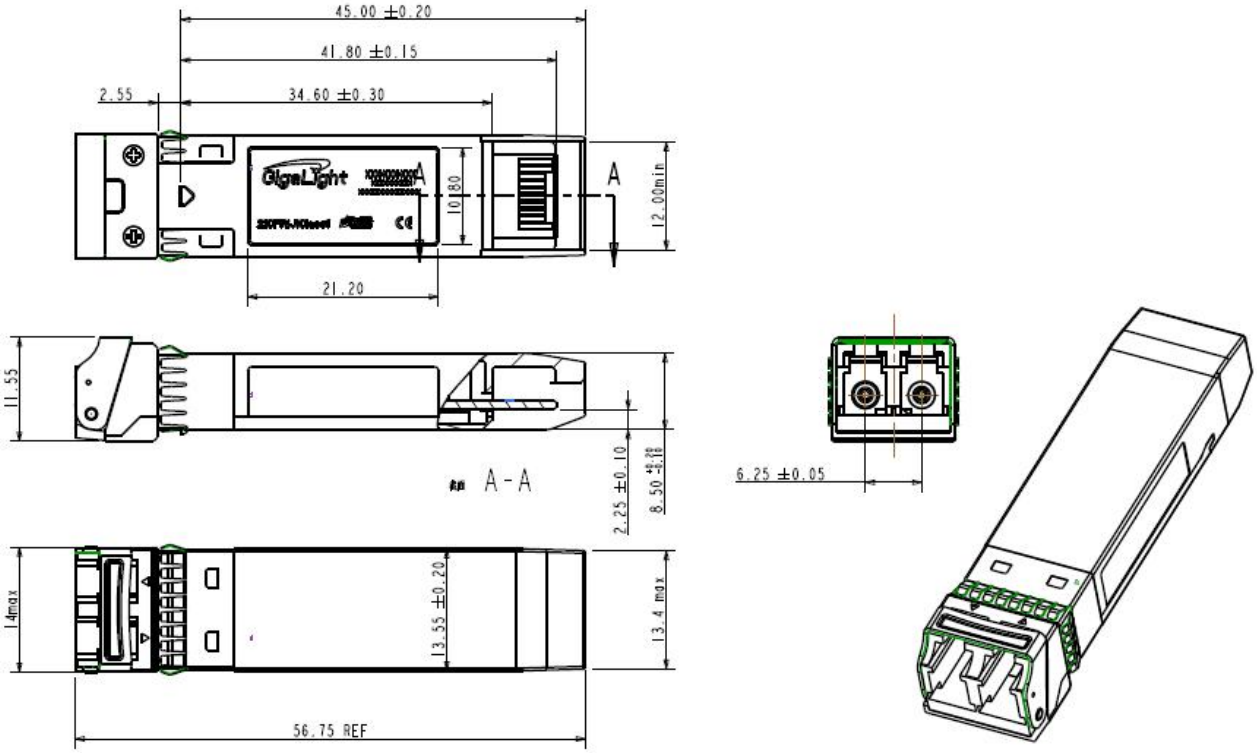

Figure4. Mechanical Specifications

Regulatory Compliance

GIGALIGHT SFP28 transceiver is designed to be Class I Laser safety compliant and is certified per the following standards:

Feature	Standard
Laser Safety	IEC 60825-1:2014 (Third Edition) CDRH 21 CFR 1040 and Laser Notice No. 50
Product Safety	IEC/EN/UL 62368-1
Environmental protection	2011/65/EU REACH NO.1907/2006
CE EMC	EN55032：2015 EN55035：2017 EN61000-3-2:2014 EN61000-3-3:2013
FCC	FCC Part 15, Subpart B; ANSI C63.4-2014

References

1. “Specifications for Enhanced Small Form Factor Pluggable Module SFP+”, SFF-8431, Rev 4.1, July 6, 2009.
2. “Improved Pluggable Form factor”,SFF-8432, Rev 4.2,Apr 18,2007
3. IEEE802.3cc – 2017
4. “Diagnostic Monitoring Interface for Optical Transceivers” SFF-8472, Rev 10.3, Dec 1,2007

⚠CAUTION:

Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Ordering information

Part Number	Product Description
GSS-C47250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1471nm,Gray
GSS-C49250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1491nm, Violet
GSS-C51250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1511nm,Blue
GSS-C53250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1531nm,Green
GSS-C55250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1551nm, Yellow
GSS-C57250-LRT	25Gbps 10km CWDM SFP28,-40~+85ºC,1571nm,Orange

Important Notice

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E-mail: sales@gigalight.com.cn
Web : http://www.gigalight.com.cn

Revision History

Revision	Date	Description
V0	Aug. 12,2019	Advance Release.