GP-315G-L2TI
4.9Gb/s, 20km Single Mode, Multi-Rate SFP Transceiver

Product Features

➢ Up to 4.9Gbit rates

➢ Hot-pluggable SFP footprint

➢ Single 3.3 V supply

➢ 20km link length

➢ Duplex LC connector

➢ 1310nm DFB transmitter, PIN photo-detector

➢ Operating case temperature: -40 to +85°C

➢ Built-in digital diagnostic functions

➢ Gigabit Ethernet compatible

➢ SFP MSA SFF-8074i compliant

➢ Digital Diagnostic SFF-8472 compliant

➢ Digital Diagnostic Monitoring：Internal Calibration or External Calibration

➢ RoHS-6 compliant (lead-free)

Applications

➢ Multi-Rate 2.4576Gbps/3.0720Gbps/4.9142Gbps for CPRI

➢ Other optical links

Description

Gigalight SFP 20km 1310nm Transceiver is a "Limiting module", and 3.072G/4.25G/4.9G Fiber Channel applications.

The transceiver consists of two sections: The transmitter section incorporates a DFB laser. And the receiver section consists of a PIN photodiode integrated with a TIA. All modules satisfy class I laser safety requirements.

Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as transceiver temperature,laser bias

current, transmitted optical power, received optical power and transceiver supply voltage.

Absolute maximum Rating

These values represent the damage threshold of the module. Stress in excess of any of the individualAbsolute Maximum Ratings can cause immediate catastrophic damage to the module even if all otherparameters are within Recommended Operating Conditions.

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	VCC	0	+3.6	V
Storage Temperature	Tc	-40	+85	℃
Operating Case Temperature	Tc	-40	+85	℃
Relative Humidity	RH	5	95	%

Recommended operating environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	VCC	3.135	3.300	3.465	V
	ICC		200	250	mA
Operating Case Temperature	TC	-40		+85	℃
Power Dissipation	PD			0.8	W
Data Rate			4.25	4.9	Gbps
Transmission Distance				10	KM

Low Speed Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Power Consumption				1.5	W
TX_Fault,RX_LOS	VOL	0		0.4	V
	VOH	Host_Vcc-0.5		Host_Vcc+0.3	V
TX_DIS	VIL	-0.3		+0.8	V
	VIH	2.0		VCCT+0.3	V
RS0,RS1	VIL	-0.3		+0.8	V
	VIH	2.0		VCCT+0.3	V

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Optical characteristics

Parameter	Symbol	Min
Operating Reach	km	10
Transmitter		
Center wavelength (range)	nm	1260 -1355
Side Mode Suppression Ratio (min)	dB	40
Launched power		
maximum	dBm	-1
minimum	dBm	-5 (Notes1)
Transmitter and dispersion penalty	dB	+3.2
Average launch power of OFF transmitter (max)	dBm	-30
Extinction ratio (min)	dB	5
Optical Return Loss Tolerance (min)	dB	12
Receiver		
Center wavelength (range)	nm	1260 -1355
Receive overload (max) in average power[1]	dBm	-1
Receive sensitivity (min)	dBm	-16(Notes2)
Receiver sensitivity (max)	dBm	-14(Notes2)
Receiver Reflectance(max)	dB	-20
Vertical eye closure penalty (min)[3]	dB	2.2
Receiver power (damage, Max)	dBm	0

Notes:
1. The optical power is launched into SMF
2. Measured with a PRBS 2^{7-1} test pattern@4.9Gbps BER$\leq 10^{-12}$

Electrical characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unlessotherwise specified.

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Data Rate			4.25	4.9	Gbps	
Power Consumption				800	mW	
Transmitter						
Single Ended Output Voltage		-0.3		+4.0	V	

Tolerance					
C common mode voltage tolerance		15		mV	
Tx Fault	VoL	-0.3	0.4	V	
Receiver					
Single Ended Output Voltage Tolerance		-0.3	4.0	V	
Rx Output Diff Voltage	Vo	600	850	mV	
Rx Output Rise and Fall Time	Tr/Tf	30		ps	20% to 80%

Digital Diagnostic Functions

The following digital diagnostic characteristics are defined over the Recommended Operating Environmentunless otherwise specified. It is compliant to SFF-8472 Rev12.2 with internal calibration mode. For externalcalibration mode please contact our sales stuff.

Parameter	Symbol	Min	Max	Unit	Notes
Accuracy					
Transceiver Temperature	DMI_Temp	-3	+3	degC	Over operating temp
TX Output optical power	DMI_TX	-3	+3	dB	
RX Input optical power	DMI_RX	-3	+3	dB	
Transceiver Supply voltage	DMI_VCC	-0.08	+0.08	V	Full operating range
Bias current monitor	DMI_Ibias	-10%	10%	mA	
Dynamic Range Accuracy					
Transceiver Temperature	DMI_Temp	0	+70	degC	
TX Output optical power	DMI_TX	-7	1	dBm	
RX Input optical power	DMI_RX	-16	-1	dBm	
Transceiver Supply voltage	DMI_VCC	3.0	3.6	V	
Bias current monitor	DMI_Ibias	0	40	mA	

11 VeeR	VeeR 10
12 RD-	RS1 9
13 RD+	Rx_LOS 8
14 VeeR	RS0 7
15 VccR	Mod_ABS 6
16 VccT	SCL 5
17 VeeT	SDA 4
18 TD+	Tx_Disable 3
19 TD-	Tx_Fault 2
20 VeeT	VeeT 1

TOWARD HOST WITH DIRECTION OF MODULE INSERTION

TOWARD BEZEL
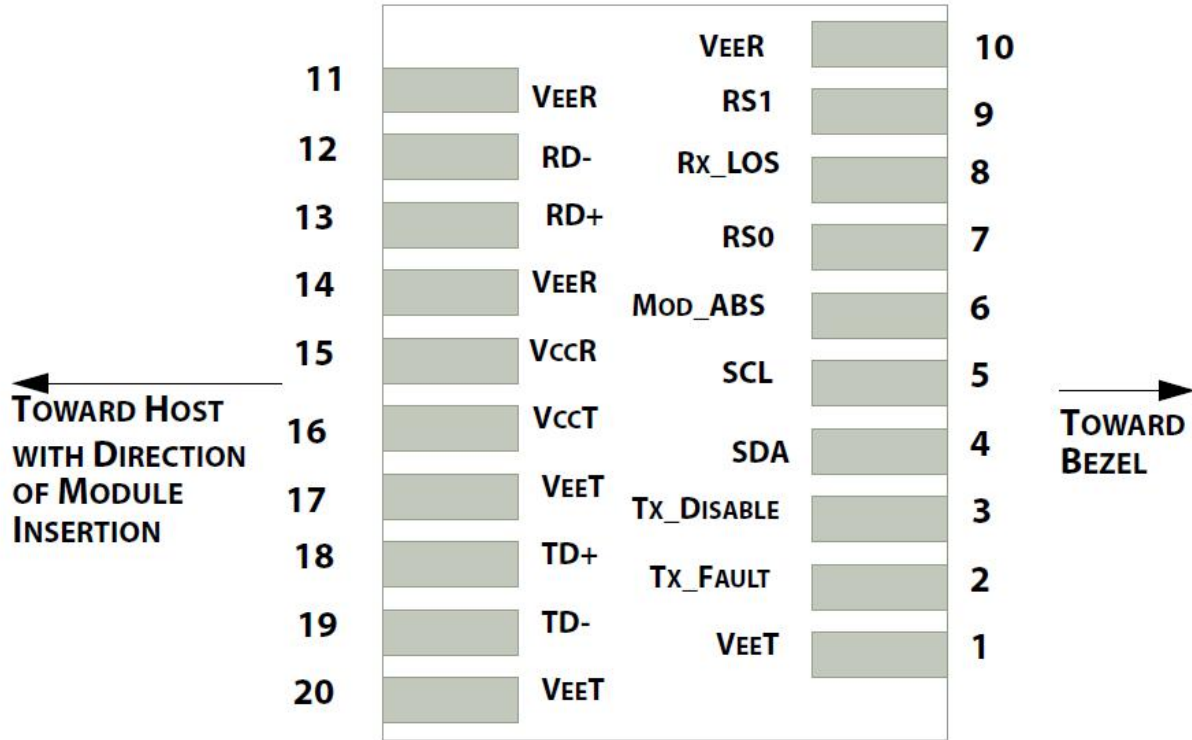
Figure 1 Host PCB SFP pad assignment top view

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TOWARD HOST WITH DIRECTION OF MODULE INSERTION

BOTTOM OF BOARD AS VIEWED FROM TOP THROUGH BOARD

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TOP VIEW OF BOARD
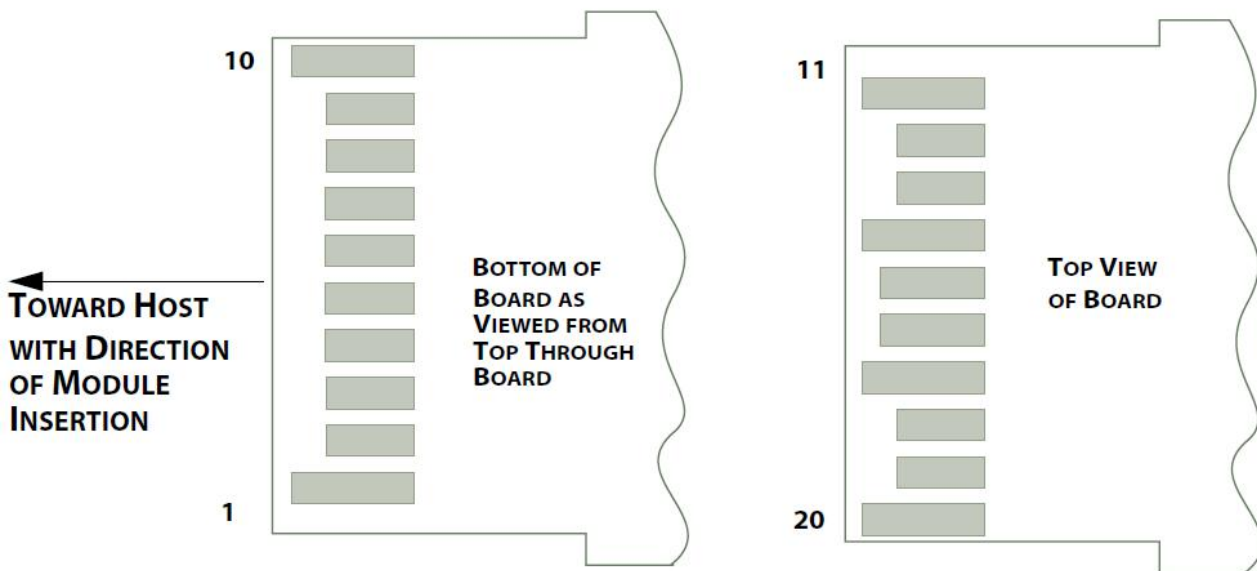
Figure 2 SFP module contact assignment

Pin Descriptions

Pin	Symbol	Name/Description
1	VEET[1]	Transmitter Ground
2	Tx_FAULT[2]	Transmitter Fault Indication
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[5]	Rate Select 0
8	RX_LOS[2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1[5]	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 SFP module. The host may pull this contact up to Vcc_Host with a resistor inthe range 4.7 kΩ to10 kΩ.Mod_ABS is asserted "High" when the SFPmodule is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.
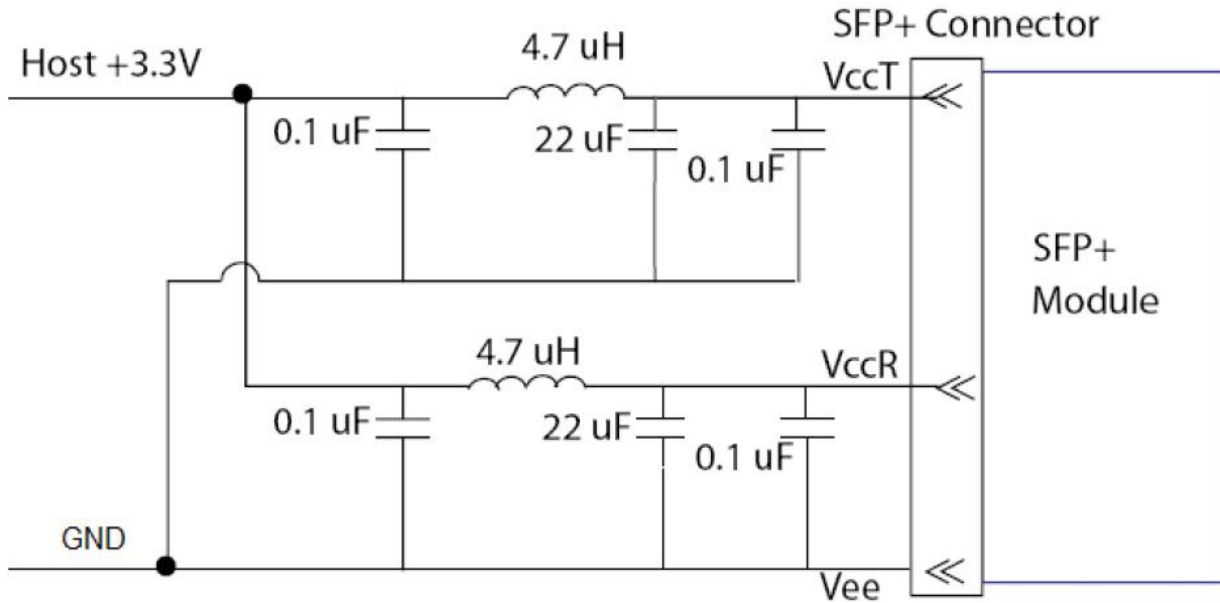
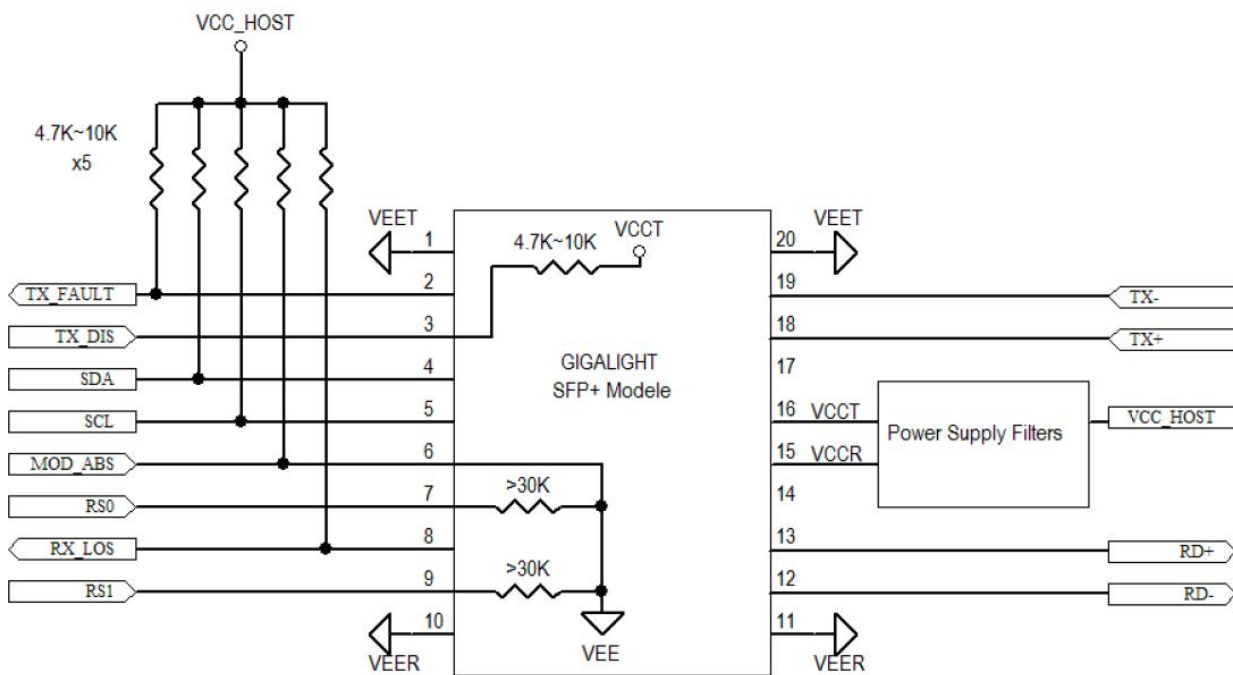**Figure3. Host Board Power Supply Filters Circuit**
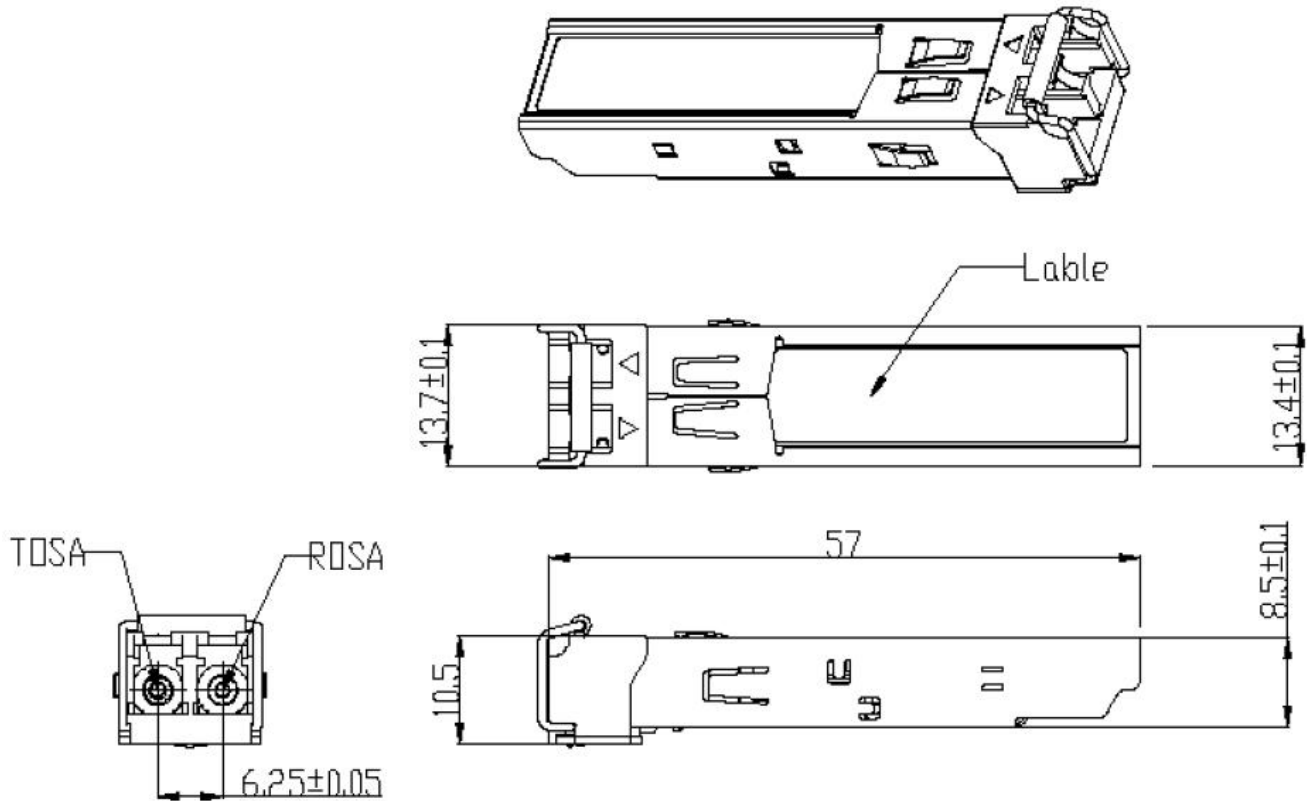

Figure4. Host-Module Interface

Figure5. Mechanical Specifications

Ordering information

Part Number	Name/Description
GP-315G-L2TI	SFP CPRI 1310nm, 4.9Gbps, SFP 20km, -40ºC ~ +85ºC

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must bespecifically confirmed in writing by GIGALIGHT before they become applicable to any particular order orcontract. In accordance with the GIGALIGHT policy of continuous improvement specifications may changewithout notice.

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