GPP-T192-ZRC

10Gbps SFP+ Optical Transmitter, 80km Reach

Features

- Support rates up to 10.5Gb/s
- Compliant with SFF-8431 and IEE802.3ae
- Cooled EML transmitter
- link length up to 80km
- -5ºC to 70ºC Operating Case Temperature
- Single 3.3V power supply
- Diagnostic Performance Monitoring of module temperature, supply Voltages, laser bias current, transmit optical power,
- RoHS compliant and lead free

Applications

- 10G Ethernet
- 10G Fiber Channel (with/without FEC)

Product description

Gigalight SFP+ZR Transceiver designed for 8.5G/10G Fiber- Channel and 10GBE applications. The transmitter section incorporates a colded EML laser.. All modules satisfy class I laser safety requirements. Gigalight SFP+ZR 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 and transceiver supply voltage.

Absolute maximum rating

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

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	V_{CC}	0	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Operating Case Temperature	Tc	-5	+70	°C
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	V_{CC}	3.135	3.300	3.465	V
	I_{CC}			300	mA
Operating Case Temperature	T_C	0	25	70	°C
Power Dissipation	P_D			1	W
Data Rate				10.5	Gbps
Transmission Distance				80	km

Low Speed Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Power Consumption				1	W
TX_Fault	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

Optical characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Unit	Values
Operating Reach	Km	80
Transmitter		
Center wavelength (range)	nm	1528 -1565
Side Mode Suppression Ratio (min)	dB	30
Launched power		
maximum	dBm	+0.5
minimum	dBm	-7.2(Notes1)
OMA	dBm	-5.2
OMA-TDP (min)	dBm	-6.2
Transmitter and dispersion penalty	dB	3.2(Notes3)
Average launch power of OFF transmitter (max)	dBm	-30
Extinction ratio (min)	dB	3.5 (Notes2)
RIN12 OMA (max)	dB/Hz	-128
Optical Return Loss Tolerance (min)	dB	12

Notes:
1. The optical power is launched into SMF
2. Measured with a PRBS 2^{31}-1 test pattern@10.3125Gbps
3. In G.652 and G.655(NDSF)

Electrical characteristics

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

Parameter	Symbol	Min	Typical	Max		Unit
Data Rate		-		10.5	Gbps	
Power Consumption		-		1000	mW	
Transmitter						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
C common mode voltage tolerance		15	-	-	mV	
Tx Input Diff Voltage	VI	400		1600	mV	
Tx Fault	VoL	-0.3		0.4	V	At 0.7mA
Data Dependent Input Jitter	DDJ			0.10	UI	
Data Input Total Jitter	TJ			0.28	UI	

Pin definition

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 [5]	Rate Select 0
8	RX_LOS [2]	NC
9	RS1 [5]	Rate Select 1
10	VEER [1]	Ground
11	VEER [1]	Ground
12	RD-	NC
13	RD+	NC
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 in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module 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.

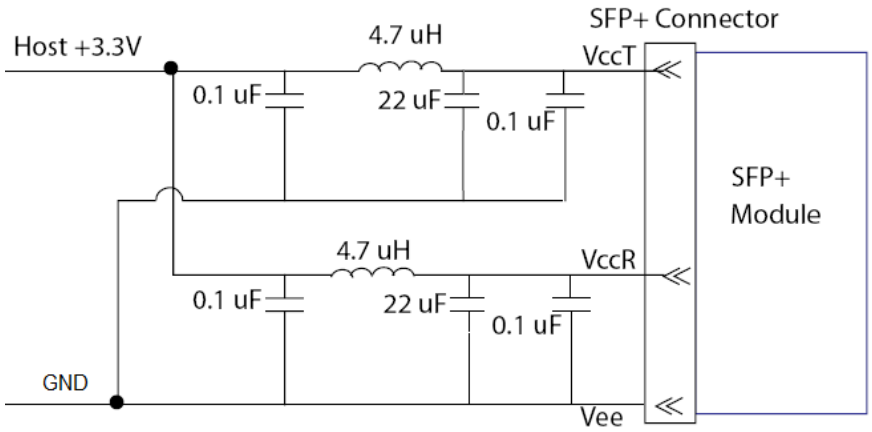

Figure2. Host Board Power Supply Filters Circuit

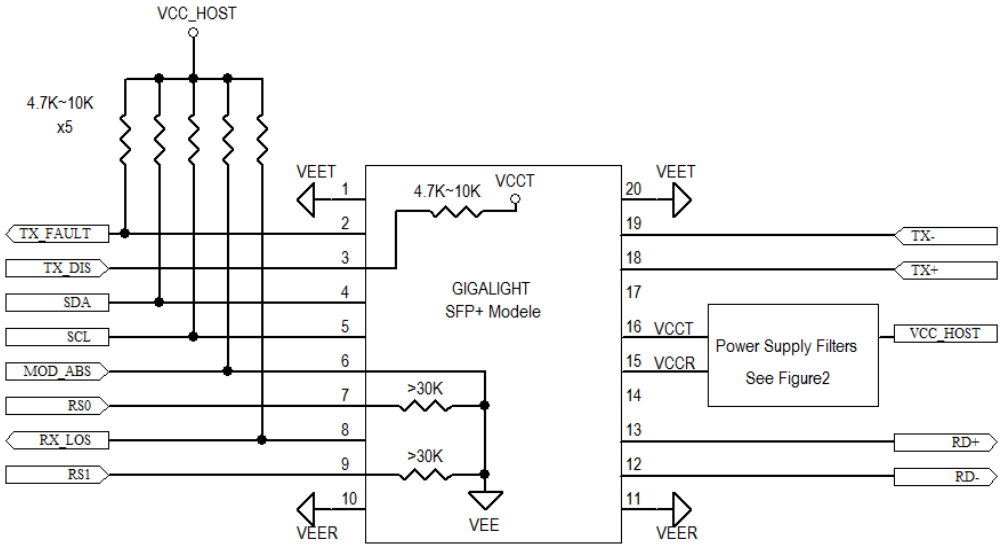

Figure3. Host-Module Interface

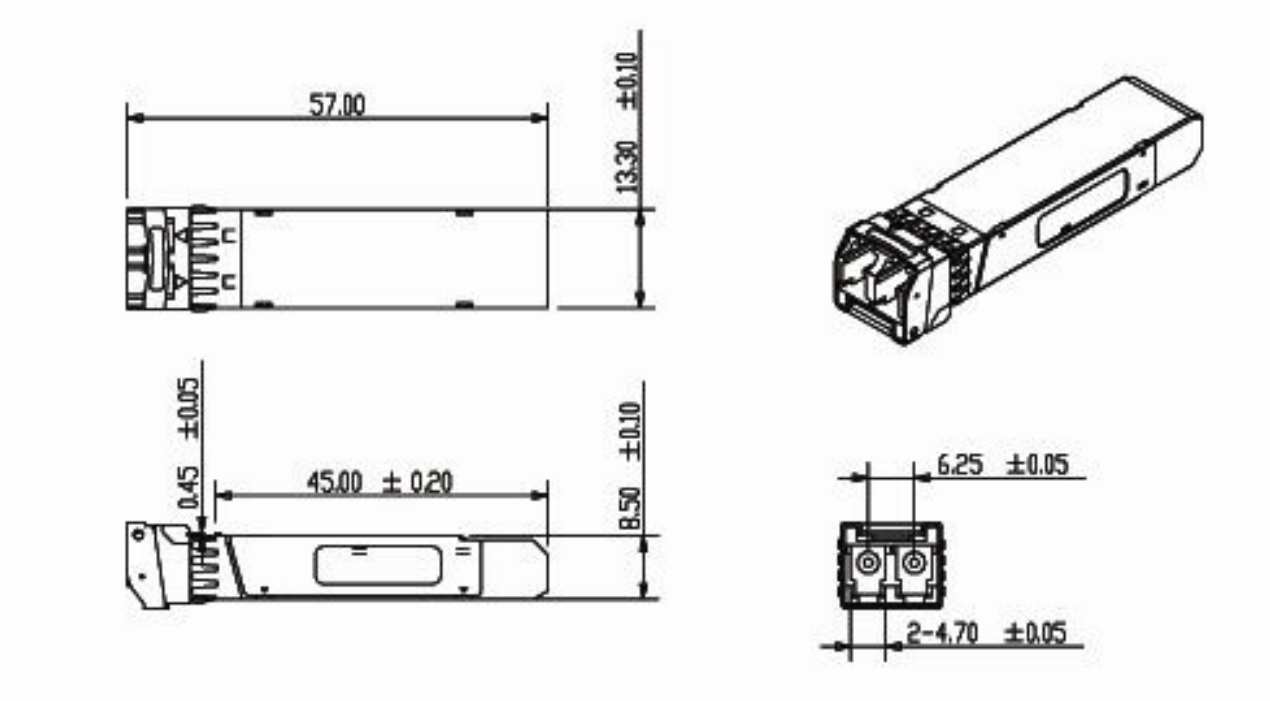

Figure4. Mechanical Specifications

Ordering information

Part Number	Product Description
GPP-T192-ZRC	1550nm, 10Gbps Transmitter, SFP+ 80km, -5ºC ~ +70ºC

References

1. “Specifications for Enhanced Small Form Factor Pluggable Module SFP+”, SFF-8431, Rev 4.1, July 6, 2009.
2. “Improved Pluggable Formfactor”,SFF-8432, Rev 4.2,Apr 18,2007
3. IEEE802.3ae – 2002
4. “Diagnostic Monitoring Interface for Optical Transceivers” SFF-8472, Rev 10.3, Dec 1,2007

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