GIGALIGHT 6.25Gbps 40km SFP+ Optical Transceiver
GPP-316G-ERC

Features

- Support Multi Rate up to 6.25Gbps
- CPRI/OBSAI Compatible Optical Interface
- Hot Pluggable SFP+ footprint
- 1310nm DFB transmitter, PIN photo-detector
- Transmission distance up to 40km on 9/125μm SMF
- Digital Status monitoring Interface
- Duplex LC connector
- RoHS compliant and Lead Free
- Metal enclosure for lower EMI
- Single 3.3V power supply
- Power dissipation <1W
- Compliant with FC-PI-4 800-Mx-SN-I, SFF-8431 , SFF-8432 and SFF-8472
- Operating case temperature:

  Standard: -5 to +70℃

Applications

- Radio Base Station
- CPRI rates 4.9152Gb/s,2.4576Gb/s and 1.2288Gb/s
- OBSAI rates 6.144Gb/s,3.072Gb/s and 1.563Gb/s
- LTE optical repeater application

Product description

GPP-316G-ERC is a high performance, cost effective modules, which is supporting Multi Rate 1.25-6.25Gbps, and transmission distance up to 40km on SM fiber. The transceiver consists of two sections: The transmitter section incorporates a 1310nm DFB driver and re-timer. The receiver section consists of a PIN photodiode integrated with a transimpedance preamplifier (TIA). The module is hot pluggable into the 20-pin connector. The high-speed electrical interface is base on low voltage logic, with nominal 100 Ohms differential impedance and AC coupled in the module.

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.

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	V_{CC}	0	+3.6	V
Storage Temperature	Tc	-40	+85	°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	-5	25	70	°C
	T_C	-40	25	85	°C
Power Dissipation	PD			1	W
Data Rate	CPRI/OBSAI			6.25	Gbps
Transmission Distance				40	km

LOW Speed Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Power Consumption				1	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

Optical characteristics

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter						
Center Wavelength	λt	1284	1310	1345	nm	Note1
RMS spectral width	Pm	-	-	1	nm	
Average Optical Power	Pavg	-1	-	+4	dBm	Note1
Laser Off Power	Poff			-30	dBm	
Extinction Ratio	ER	3.5	-	-	dB	
Relative Intensity Noise	Rin			-128	dB/Hz	
Optical Eye Mask	Compliant with IEEE 802.3ae					Note2
Single Ended Output Voltage Tolerance		-0.3		4	V	
Common Mode Voltage Tolerance		15			mV	
Tx Input Diff Voltage	VI	180		700	mV	
Data Dependent Input Jitter	DDJ			0.1	UI	
Data Input Total Jitter	TJ			0.28	UI	
Receiver						
Center Wavelength	λr	1260		1360	nm	
Receiver Sensitivity	Psens			-15	dBm	
LOS Assert	LosA	-25			dBm	
LOS De-assert	LosD			-16	dBm	
Los Hysteresis	LosH	0.5			dBm	
Overload	Pin	0.5			dBm	
Stressed Eye Jitter		0.3			UIp-p	

Receiver electrical 3dB upper cutoff frequency				12.3	GHz	
Vertical Eye Closure Penalty		2.2			dB	
Single Ended Output Voltage Tolerance		-0.3		4	V	
Rx Output Diff Voltage	Vo	450		850	mV	
Rx Output Rise and Fall Time	Tr/Tf	30			ps	
Total Jitter	TJ			0.7	UI	
Deterministic Jitter	DJ			0.42	UI	
Stressed Receiver Sensitivity in OMA				-10.3	dBm	
Receiver Reflectance		-	-	-12	dB	Note3

Notes:
[1] Average optical power shall be measured using the methods specified in TIA/EIA-455-95.
[2] Vertical eye closure penalty and stressed eye jitter are the test conditions for measuring stressed receiver sensitivity. They are not the required characteristic of the receiver.

Electrical characteristics

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Data Rate		-		6.25	Gbps	
Power Consumption		-	1200	1500	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	
Receiver						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
Rx Output Diff Voltage	Vo	300		850	mV	
Rx Output Rise and Fall Time	Tr/Tf	30			ps	20% to 80%
Total Jitter	TJ			0.70	UI	
Deterministic Jitter	DJ			0.42	UI	

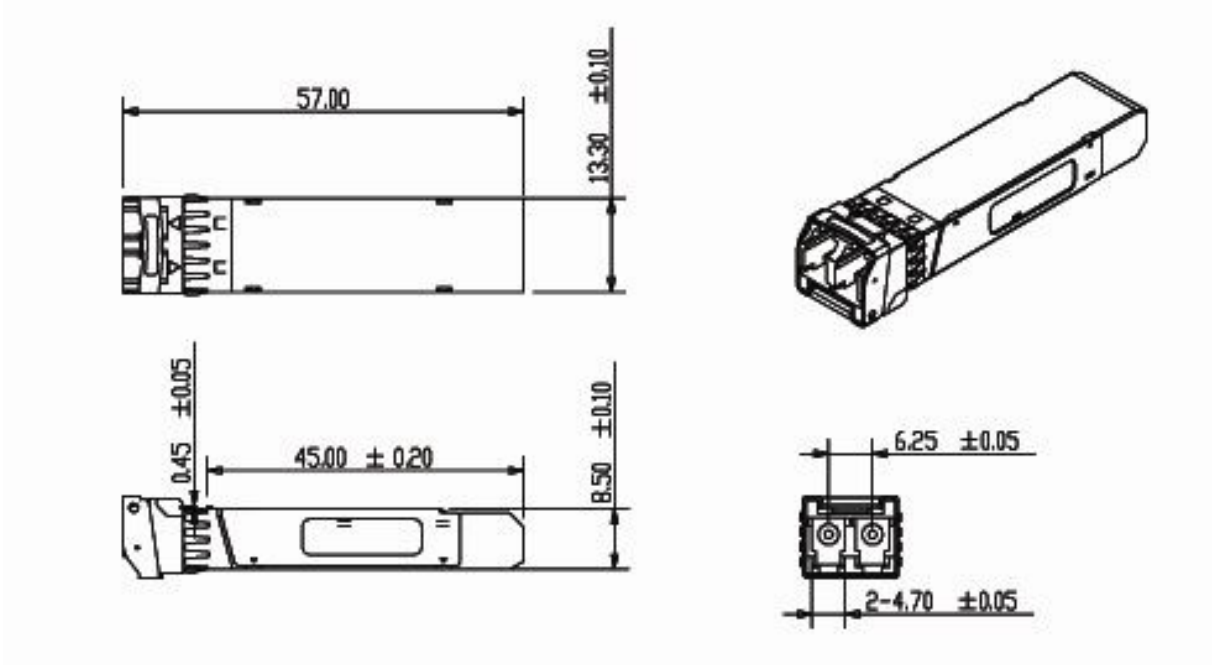
The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Digital Diagnostic Functions

The following digital diagnostic characteristics are defined over the Recommended Operating Environment unless otherwise specified. It is compliant to SFF8472 Rev9.2 with internal calibration mode. For external calibration 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	-3dBm to -12dBm range
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	-5	70	degC	
TX Output optical power	DMI_TX	-9	-1	dBm	
RX Input optical power	DMI_RX	-18	0	dBm	
Transceiver Supply voltage	DMI_VCC	3.0	3.6	V	
Bias current monitor	DMI_Ibias	0	16	mA	

Mechanical



ESD

This transceiver is specified as ESD threshold 2kV for all electrical input pins, tested per MIL-STD-883, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

LASER SAFTY

This is a Class 1 Laser Product according to IEC 60825-1:1993:+A1:1997+A2:2001. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (July 26, 2001)

Ordering information

Part Number	Product Description
GPP-316G-ERC	1310nm, up to 6.25Gbs, 40km, -5ºC ~ +70ºC

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by GIGALIGHT before they become applicable to any particular order or

contract. In accordance with the GIGALIGHT policy of continuous improvement specifications may change without notice.

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