



# Product Specification

## 10Gbps 1310nm 20~40KM SFP+ Transceiver

### PLSFPP1310GLR20

### PLSFPP1310GLR40

**V20140818**

## Product Features

- | Up to 10Gbps data links
- | 20km 40km with 9/125μm SMF
- | 1310nm DFB laser
- | Duplex LC Connector
- | Hot-pluggable SFP+ footprint
- | Single 3.3V power supply
- | Operating temperature: -5°C to 85°C
- | RoHS
- | Digital Diagnostic Monitor compatible
- | Power Consumption < 0.8W

## Applications

- √ 10GBASE-LR/LW 10G Ethernet
- √ 1200-SM-LL-L 10G FC

## 1. Product Description

The PLSFPP1310GLR20/ PLSFPP1310GLR40 is a 10Gbps enhanced small form factor pluggable SFP+ transceiver compatible with 10GBASE-LR/LW and 10G Fiber Channel 1200-SM-LL-L. It is suitable for single-mode fiber (SMF) communications in 10Gbps Ethernet and 10G Fiber Channel.

## 2. Regulatory Compliance

TINOUT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of



EN 60950.

### 3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V <sub>CC</sub>	-0.5	4	V
Storage Temperature	T <sub>s</sub>	-40	85	°C
Operating Case Temperature	T <sub>c</sub>	-5	85	°C

### 4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T <sub>c</sub>	-5		85	°C
Power Supply Voltage	V <sub>CC</sub>	3.15	3.3	3.45	V
Power Supply Current	I <sub>CC</sub>			200	mA
Data Rate			10		GBps
Max Link Length on 9/125µm SMF	PLSFPP1310GLR20	L <sub>max</sub>		20	km
	PLSFPP1310GLR40			40	

### 5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
<b>Transmitter</b>					
Centre Wavelength	λ <sub>c</sub>	1260	1310	1360	nm
Spectral Width (RMS)	σ			3	nm
Average Output Power PLSFPP1310GLR20	P <sub>out</sub>	-4.5		0	dBm
Average Output Power PLSFPP1310GLR40	P <sub>out</sub>	-1		4	dBm
Extinction Ratio	ER	3.5			dB
Average Launch Power of Off Transmitter	P <sub>off</sub>			-30	dBm
<b>Receiver</b>					
Centre Wavelength	λ <sub>c</sub>	1200	1310	1600	nm
Receiver Sensitivity	P <sub>IN</sub>			-14	dBm



PLSFPP1310GLR20					
Receiver Sensitivity PLSFPP1310GLR20	P <sub>IN</sub>			-16	dBm
Receiver Overload	P <sub>max</sub>	2.5			dBm
LOS De-Assert	LOS <sub>D</sub>			-20	dBm
LOS Assert	LOS <sub>A</sub>	-25			dBm
LOS Hysteresis		0.5		4.5	dB

## 6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
<b>Transmitter</b>					
Input Differential Impedance	Z <sub>in</sub>	90	100	110	Ω
Data Input Swing Differential	V <sub>in</sub>	250		1200	mV
Tx-Dis Disable	V <sub>d</sub>	2.0		V <sub>cc</sub>	V
Tx-Dis Enable	V <sub>en</sub>	0		0.8	V
<b>Receiver</b>					
Data Output Swing Differential	V <sub>out</sub>	250		800	mV
Rx-Los Fault	V <sub>lf</sub>	2.0		V <sub>ccHOST</sub>	V
Rx-Los Normal	V <sub>ln</sub>	0		0+0.8	V
Output rise and fall time	Tr, Tf	30			ps

## 7. Pin Descriptions

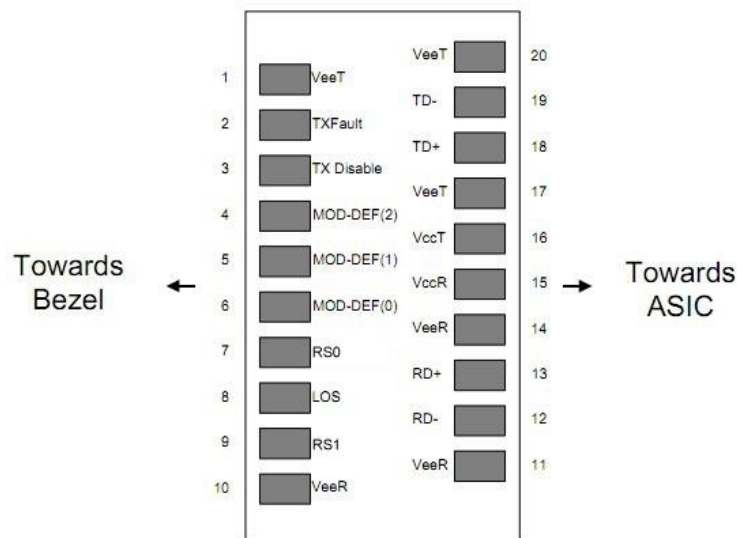


Diagram of Host Board Connector Block Pin Numbers and Names



Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	7.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	7.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	7.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	7.3
7	RS0	Rate Select0, optionally controls SFP+ module receiver. When high input signaling rate > 4.25 GBd and when low input signaling rate < 4.25 GBd	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	7.4
9	RS1	Rate Select1, optionally controls SFP+ module receiver. When high input signaling rate > 4.25 GBd and when low input signaling rate < 4.25 GBd	
10	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
11	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
12	RD-	Receiver Inverted DATA out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	7.1

Notes:

7.1 Circuit ground is internally isolated from chassis ground.

7.2 Laser output disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V.

7.3 Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. MOD\_DEF(0) pulls line low to indicate module is plugged in.

7.4 LOS is open collector output. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

## 8. EEPROM & DDM THRESHOLD



## 8.1 EEPROM

### 2 wire address 1010000X (A0h)

0~95
Serial ID Defined by SFP MSA (96 bytes)
96~127
Vendor Specific (32 bytes)
128~255
Reserved (128 bytes)

### EEPROM Serial ID Memory Contents

Add.	Size (Bytes)	Name of Field	Hex	Description
<b>BASE ID FIELDS</b>				
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	SFP function is defined by serial ID only
2	1	Connector	07	LC
3-10	8	Transceiver	20 00 00 00 00 00 00 00	Transmitter Code
11	1	Encoding	06	64B/66B
12	1	BR, Nominal	67	10.3Gbps
13	1	Reserved	00	
14	1	Length (9um) km	XX	20km/40km
15	1	Length (9um) km	XX	
16	1	OM2 Length (50um) m	00	
17	1	OM1 Length (62.5um) m	00	
18	1	Length (Copper)	00	
19	1	OM3 Length (50um) m	00	
20-35	16	Vendor Name	43 2D 4C 49 47 48 54 20 20 20 20 20 20 20 20 20	TINOUT * OEM available
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	* OEM available
40-55	16	Vendor PN	xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	* OEM available
56-59	4	Vendor Rev	30 31 20 20	01
60-61	2	Wavelength	05 1E	1310nm
62	1	Reserved	00	
63	1	CC_BASE	xx	Check Code for Base ID Field
<b>EXTENDED ID FIELDS</b>				
64-65	2	Options	00 1A	Loss/ TX_Fault/ TX_Disable
66	1	BR, Max	00	



67	1	BR, Min	00	
68-83	16	Vendor SN	43 4C xx xx xx xx xx xx xx xx xx 20 20 20 20 20	SN of Transceiver (ASCII). Exp. "CLXXXXXXXXXX"
84-91	8	Date Code	xx xx xx xx xx xx 20 20	YY/MM/DD Exp. 120727
92	1	Diagnostic Monitoring	68	
93	1	Enhanced Options	F0	
94	1	SFF_8472 Compliance	03	
95	1	CC_EXT	checksum	Checksum for Extended ID
<b>VENDOR SPECIFIC ID FIELDS</b>				
96-127	32	Vendor Specific	20 20 20.....	Depends on Customer Info
128-255	128	Reserved	FF FF FF.....	Depends on Customer Info

### 8.1 DDM THRESHOLD

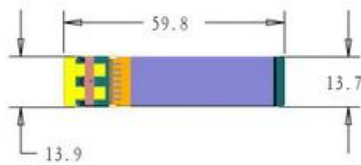
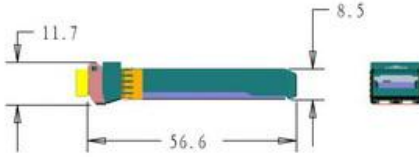
#### PLSFPP1310GLR20

	Low Alarm	Low Warn	High Warn	High Alarm
Temperature	-13°C	-8°C	85°C	88°C
Voltage	2.9V	3V	3.6V	3.7V
Tx Bias	15mA	20mA	80mA	85mA
Tx Power	-7dBm	-6dBm	1dBm	2dBm
Rx Power	-17dBm	-15dBm	1dBm	2dBm

#### PLSFPP1310GLR40

	Low Alarm	Low Warn	High Warn	High Alarm
Temperature	-13°C	-8°C	85°C	88°C
Voltage	2.9V	3V	3.6V	3.7V
Tx Bias	15mA	20mA	80mA	85mA
Tx Power	-3dBm	-2dBm	5dBm	6dBm
Rx Power	-18dBm	-17dBm	5dBm	6dBm

## 9. Mechanical Specifications



## 10. LABEL

TINOUT offers label OEM design and print.

Label barcode supports code128 and 2D barcode

SIZE: 1) Front 35mm\*10.5mm 2)Back 26mm\*10.5mm



## Ordering Information

Part No.	Data Rate	DDM	Wave	Fiber Type	Dist.	Temp.	Optical Interface
PLSFPP1310GLR20	10Gbps	yes	1310nm	SMF	20km	-5~85°C	LC
PLSFPP1310GLR40	10Gbps	yes	1310nm	SMF	40km	-5~85°C	LC

## VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20140818	20140818	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated

**NOTICE:**

TINOUT reserves the right to make changes to this product in this specification without notice, in order to improve product performance.

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