



Product Specification

10Gbps SFP+ CWDM Transceiver

PLSFPP10GCWB10-xx

PLSFPP10GCWB16-xx

PLSFPP10GCWB24-xx

V20140814

Product Features

- | Up to 10Gbps data links
- | 40km to 80km with 9/125 μ m SMF *1
- | DFB laser for 18 CWDM waves *1
- | Duplex LC Connector
- | Hot-pluggable SFP+ footprint
- | Single 3.3V power supply
- | Operating temperature: 0 $^{\circ}$ C to 70 $^{\circ}$ C
- | RoHS
- | Digital Diagnostic Monitor(DDM)
- | Power Consumption:1.5W~2.5W *1

Applications

- √ CWDM 10GBase SFP+
- √ 10GFC

*1 Notice

Part No.	Laser	Power Budget	Power Consumption
PLSFPP10GCWB10-XX	DFB/PIN	10dB	1.5W



PLSFPP10GCWB16-XX	DFB/PIN	16dB	1.5W
PLSFPP10GCWB24-XX	EML/APD	24dB	2.5W

1. Product Description

The **PLSFPP10GCWB10-XX/PLSFPP10GCWB16-XX/PLSFPP10GCWB24-XX** is a 10Gbps enhanced small form factor pluggable SFP+ transceiver compatible with 10GBASE-CWDM/10GFC. It is suitable for 40km single-mode fiber (SMF) communications in 10Gbps Ethernet.

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 _{cc}	-0.5	4	V
Storage Temperature	T _s	-40	85	°C
Operating Case Temperature	T _c	0	70	°C

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _c	0		70	°C
Power Supply Voltage	V _{cc}	3.15	3.3	3.45	V
Power Supply Current	I _{cc}			350	mA
Data Rate			10		GBps



Max Link Length on 9/125 μ m SMF	Lmax	Ref *1 Notice
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5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
PLSFPP10GCWBXX-XX Centre Wavelength	λ_c	1XX0-8	1XX0	1XX0+8	nm
Centre Wavelength Spacing			0.8		nm
Spectral Width (RMS)	σ			0.3	nm
Average Output Power PLSFPP10GCWB10-XX XX=(27,29,31.....43)	Pout	-4.5		4	dBm
Average Output Power PLSFPP10GCWB16-XX/ PLSFPP10GCWB24-XX XX=(45,47,49.....61)	Pout	-1		5	dBm
Extinction Ratio PLSFPP10GCWB10-XX XX=(27,29,31.....43)	ER	4			dB
Extinction Ratio PLSFPP10GCWB16-XX/ PLSFPP10GCWB24-XX XX=(45,47,49.....61)	ER	5			dB
Average Launch Power of Off Transmitter	Poff			-30	dBm
Relative Intensity Noise	RIN			-130	dB/Hz
Receiver					
PLSFPP10GCWBXX-XX Centre Wavelength	λ_c	1XX0-8	1XX0	1XX0+8	nm
Receiver Sensitivity/Overload PLSFPP10GCWB10-XX XX=(27,29,31.....43)	P _{IN}			-14	dBm
	P _{max}	5			dBm
Receiver Overload/Overload PLSFPP10GCWB16-XX XX=(45,47,49.....61)	P _{IN}			-16	dBm
	P _{max}	5			dBm



Receiver Overload/Overload PLSFPP10GCWB24-XX XX=(45,47,49.....61)	P _{IN}			-24	dBm
	P _{max}	-7			dBm
LOS De-Assert	LOS _D			-28	dBm
LOS Assert	LOS _A	-32			dBm
LOS Hysteresis		0.5		4.5	dB

*1. X= Center Wavelength. Wavelength stability is achieved within 60 seconds of power up

6. Electrical Characteristics

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

7. Pin Descriptions

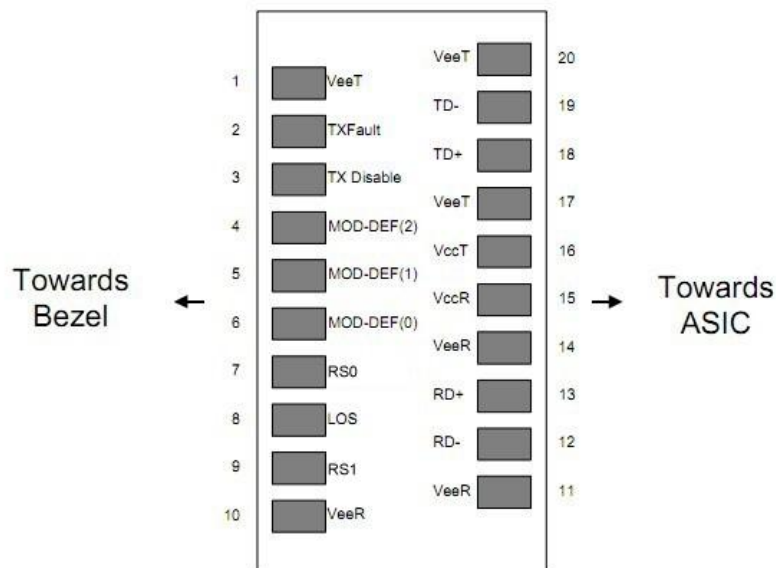


Diagram of Host Board Connector Block Pin Numbers and Names



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
BASE ID FIELDS				
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	80 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	28	40km
15	1	Length (9um) km	FF	
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	xx xx	Center Wavelength
62	1	Reserved	00	



63	1	CC_BASE	xx	Check Code for Base ID Field
EXTENDED ID FIELDS				
64-65	2	Options	02 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
VENDOR SPECIFIC ID FIELDS				
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

PLSFPP10GCWB10-XX

	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	-8dBm	-7dBm	5dBm	6dBm
Rx Power	-18dBm	-15dBm	5dBm	6dBm

PLSFPP10GCWB16-XX

	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	-5dBm	-3dBm	5dBm	6dBm
Rx Power	-18dBm	-16dBm	5dBm	6dBm

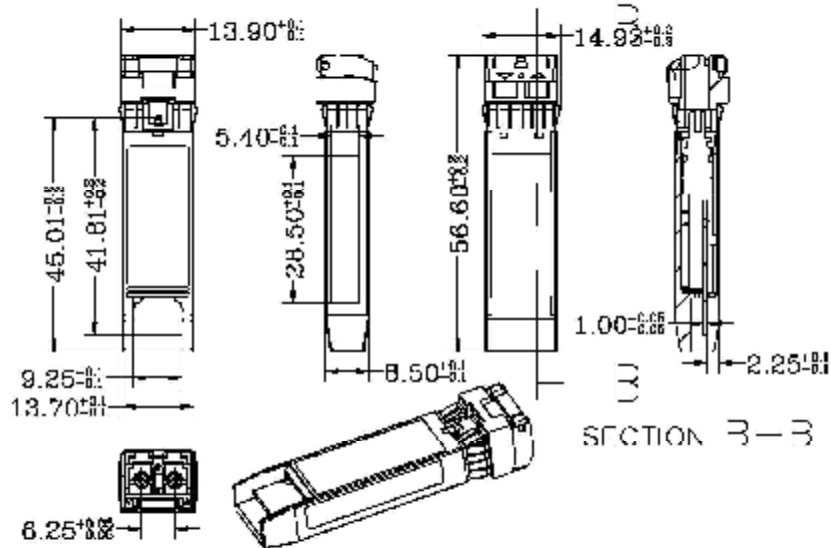
PLSFPP10GCWB24-XX

	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	-1dBm	0dBm	5dBm	6dBm
Rx Power	-20dBm	-18dBm	-7dBm	-6dBm

9. Mechanical Specifications



10. LABEL

TINOUT offers label OEM design and print.
 Label barcode supports code128 and 2D barcode
 SIZE: 26mm*10.5mm





Ordering Information

Part No.	Data Rate	DDM	Wave	Fiber Type	Power Budget.	Temp.	Optical Interface
PLSFPP10GCWB10-XX	10Gbps	yes	*3	SMF	10dB	0~70°C	LC
PLSFPP10GCWB16-XX	10Gbps	yes	*4	SMF	16dB	0~70°C	LC
PLSFPP10GCWB24-XX	10Gbps	yes	*4	SMF	23dB	0~70°C	LC

*3

Wave=1270nm,1290nm,1310nm,1330nm,1350nm,1370nm,1390nm,1410nm,1430nm

*4

Wave=1450nm,1470nm,1490nm,1510nm,1530nm,1550nm,1570nm,1590nm,1610nm

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20131010	20131010	<ol style="list-style-type: none"> 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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