



Product Specification

10Gbps CWDM BiDi SFP+ Transceiver

PLSFP10GBDxxyyB07

PLSFP10GBDxxyyB14

V20150104

Product Features

- | Up to 10.3Gbps data links
- | 9/125µm SMF*1
- | CWDM DFB laser
- | Power Budget *1
- | **Simplex LC Connector**
- | Hot-pluggable SFP+ footprint
- | Single 3.3V power supply
- | Operating temperature: -5°C to 70°C
- | RoHS
- | Digital Diagnostic Monitor (DDM)

Applications

- √ 10GBASE CWDM

*1 Table

P/N	LASER	DISTANCE & POWER BUDGET	TEMP.
PLSFP10GBDxxyyB07	DFB/PIN	Min=2KM SMF Power Budget= 7dBm	-5°C to 70°C
PLSFP10GBDxxyyB14	DFB/PIN	Min=10KM SMF Power Budget= 14dBm	-5°C to 70°C



1. Product Description

The PLSFP10GBDxxyyB07; PLSFP10GBDxxyyB14 are 10Gbps CWDM BIDI enhanced small form factor pluggable SFP+ transceivers compatible with 10G ETHERNET. It is suitable for single-mode fiber (SMF) communications.

PART NUMBER	CLASP COLOR
PLSFP10GBDxxyyB07/14 If “xx”<”yy” Clasp Color is BLUE	BLUE
PLSFP10GBDxxyyB07/14 If “xx”>”yy” Clasp Color is GREEN	GREEN

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	Vcc	-0.5	4	V
Storage Temperature	Ts	-40	85	°C
Operating Case Temperature	Tc	-5	70	°C
Power Received Max	Pmax		6	dBm

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	-5		70	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			450	mA
Data Rate			10		GBps
Max Link Length on 9/125µm SMF	Lmax	2		40	KM



5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	-10	1xx0	+10	nm
Spectral Width (RMS)	σ			3	nm
Average Output Power PLSFP10GBDxxyyB07	P _{out}	-3		5	dBm
Average Output Power PLSFP10GBDxxyyB14	P _{out}	-2		5	dBm
Extinction Ratio PLSFP10GBDxxyyB07	ER	3			dB
Extinction Ratio PLSFP10GBDxxyyB14	ER	4			dB
Average Launch Power of Off Transmitter	P _{off}			-25	dBm
Receiver					
Centre Wavelength	λ_c	-8	1yy0	+8	nm
Receiver Sensitivity PLSFP10GBDxxyyB07	P _{IN}			-7	dBm
Receiver Sensitivity PLSFP10GBDxxyyB14	P _{IN}			-14	dBm
Power Received Max	P _{max}			6	dBm
LOS De-Assert PLSFP10GBDxxyyB07	LOS _D			-9	dBm
LOS De-Assert PLSFP10GBDxxyyB14	LOS _D			-16	dBm
LOS Assert	LOS _A	-25			dBm
LOS Hysteresis		0.5		4.5	dB

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	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
Receiver					
Data Output Swing Differential	Vout	250		800	mV
Rx-Los Fault	Vlf	2.0		VcCHOST	V
Rx-Los Normal	Vln	0		0+0.8	V
Output rise and fall time	Tr, Tf	30			ps

7. Pin Descriptions

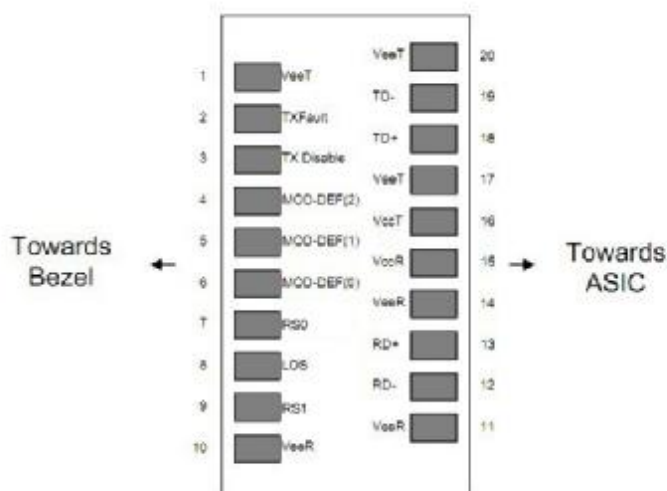


Diagram of Host Board Connector Block Pin Numbers and Names

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	02/0A	2/10km
15	1	Length (9um) km	00/64	
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

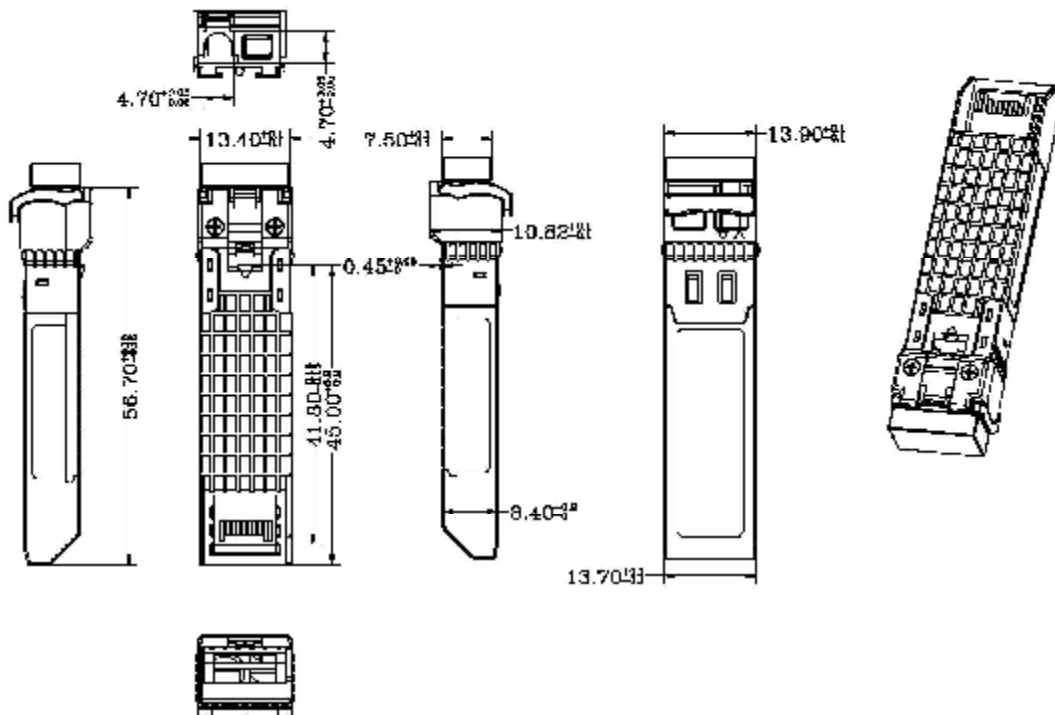
PLSFP10GBDxxyyB07

	Low Alarm	Low Warn	High Warn	High Alarm
Temperature	-10°C	-5°C	70°C	75°C
Voltage	2.9V	3V	3.6V	3.7V
Tx Bias	15mA	20mA	80mA	85mA
Tx Power	-5dBm	-4dBm	5dBm	6dBm
Rx Power	-10dBm	-8dBm	5dBm	6dBm

PLSFP10GBDxxyyB14

	Low Alarm	Low Warn	High Warn	High Alarm
Temperature	-10°C	-5°C	70°C	75°C
Voltage	2.9V	3V	3.6V	3.7V
Tx Bias	15mA	20mA	80mA	85mA
Tx Power	-4dBm	-3dBm	5dBm	6dBm
Rx Power	-17dBm	-16dBm	5dBm	6dBm

9. Mechanical Specifications





10. LABEL

TINOUT offers label OEM design and print.
 Label barcode supports code128 and 2D barcode
 SIZE: 30mm*10mm



Ordering Information

Part No.	Data Rate	DDM	Wave (nm)	Fiber Type	Power Budget	Temp.	Optical Interface
PLSFP10GBDxxyyB07	10Gbps	yes	Tx:1xx0 Rx:1yy0	SMF	7dBm	-5~70°C	BiDi LC
PLSFP10GBDxxyyB14	10Gbps	yes	Tx:1xx0 Rx:1yy0	SMF	14dBm	-5~70°C	BiDi LC

*"1xx0" "1yy0" = 1270, 1290.....1590, 1610nm

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20150104	20150104	

NOTICE:

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

CONTACT:

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