



Product Specification

10Gbps SFP+ BiDi CWDM Transceiver

PLSFPP10GBDXXXXB10

PLSFPP10GBDXXXXB16

PLSFPP10GBD XXXXB23

V20140812

Product Features

- | Up to 10Gbps data links
- | 10km to 60km with 9/125μm SMF *1
- | CWDM/CWDM DFB laser*1
- | **Simplex LC Connector**
- | Hot-pluggable SFP+ footprint
- | Single 3.3V power supply
- | Operating temperature: -5°C to 75°C
- | RoHS
- | Digital Diagnostic Monitor (DDM)

Applications

- √ 10GBase-CWDM Ethernet
- √ 10G FC

*1 Notice

PART NUMBER	Power Budget	LASER
PLSFPP10GBDXXXXB10	10dB	DFB/PIN
PLSFPP10GBDXXXXB16	16dB	DFB/PIN
PLSFPP10GBDXXXXB23	23dB	DFB/APD



1. Product Description

The PLSFPP10GBDXXXXBXX is a 10Gbps enhanced small form factor pluggable SFP+ transceiver compatible with 10GBASE Ethernet and 10G Fiber Channel. It is suitable for single-mode fiber (SMF) communications in 10Gbps Ethernet and 10G Fiber Channel by single fiber.

PART NUMBER	CLASP COLOR
PLSFPP10GBDXXXXBXX-A *2	BLUE
PLSFPP10GBDXXXXBXX-B *2	GREEN

*2. FOR EXAMPLE:

IF PLSFPP10GBD5157B16-A CLASP COLOR = BLUE, PLSFPP10GBD5751B16-B CLASP COLOR = 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	V _{CC}	-0.5	4	V
Storage Temperature	T _s	-40	85	°C
Operating Case Temperature	T _c	-5	85	°C

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _c	-5		85	°C
Power Supply Voltage	V _{CC}	3.15	3.3	3.45	V
Power Supply Current	I _{CC}			300	mA
Data Rate			10		GBps
Max Link Length on 9/125μm SMF	L _{max}	Ref. *1 Notice			



5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
PLSFPP10GBDXXXXBX Centre Wavelength	λ_c	1XX0-8	1XX0	1XX0+8	nm
Spectral Width (RMS)	σ			3	nm
Average Output Power PLSFPP10GBDXXXXB10 XX=(27,29,31.....43)	P _{out}	-4.5		4	dBm
Average Output Power PLSFPP10GBDXXXXB16/ PLSFPP10GBDXXXXB23 XX=(45,47,49.....61)	P _{out}	-1		5	dBm
Extinction Ratio PLSFPP10GBDXXXXB10 XX=(27,29,31.....43)	ER	4			dB
Extinction Ratio PLSFPP10GBDXXXXB16/ PLSFPP10GBDXXXXB23 XX=(45,47,49.....61)	ER	5			dB
Average Launch Power of Off Transmitter	P _{off}			-30	dBm
Receiver					
PLSFPP10GBDXXXXBX Centre Wavelength	λ_c	1XX0-8	1XX0	1XX0+8	nm
Receiver Sensitivity/Overload PLSFPP10GBDXXXXB10 XX=(27,29,31.....43)	P _{IN}			-14	dBm
	P _{max}	5			dBm
Receiver Sensitivity/Overload PLSFPP10GBDXXXXB16 XX=(45,47,49.....61)	P _{IN}			-16	dBm
	P _{max}	5			dBm
Receiver Sensitivity/Overload PLSFPP10GBDXXXXB23 XX=(45,47,49.....61)	P _{IN}			-24	dBm
	P _{max}	-7			dBm
LOS De-Assert	LOS _D			-27	dBm
LOS Assert	LOS _A	-30			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics



Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	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

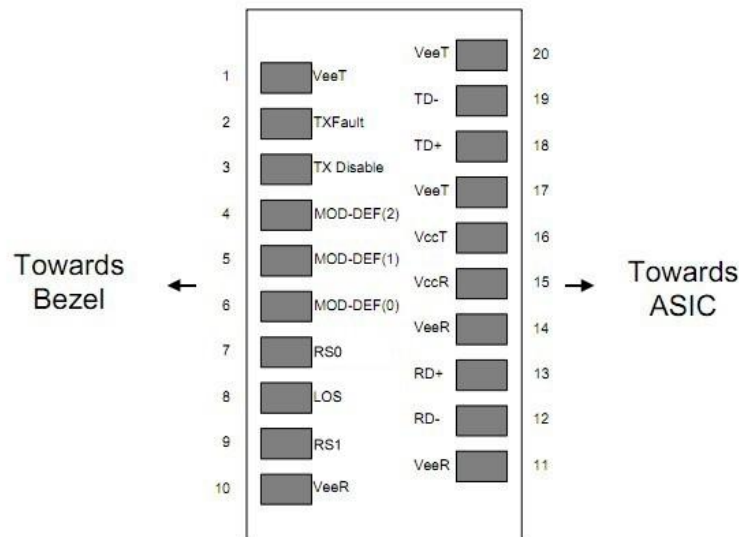


Diagram of Host Board Connector Block Pin Numbers and Names

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	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	14	20km
15	1	Length (9um) km	C8	
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	04 F6/ 05 32	1270nm/ 1330nm
62	1	Reserved	00	
63	1	CC_BASE	xx	Check Code for Base ID Field
EXTENDED ID FIELDS				
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
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

PLSFPP10GBDXXXXB10

	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

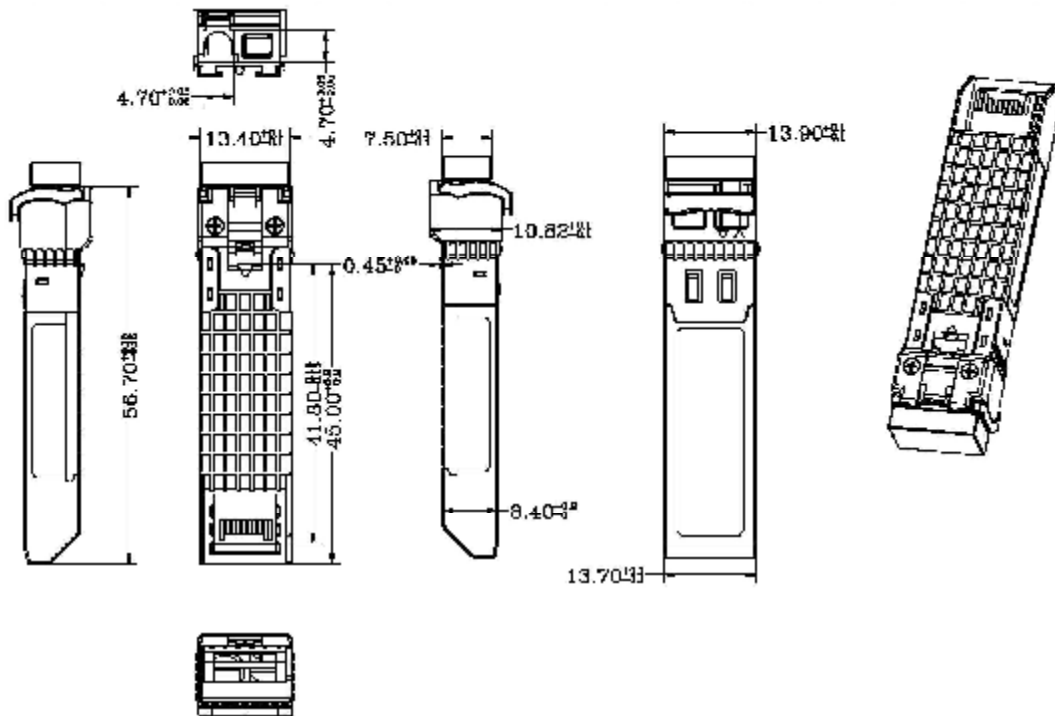
PLSFPP10GBDXXXXB16

	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

PLSFPP10GBDXXXXB23

	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: 30mm*10mm



Ordering Information

WWW.TINOUT.COM



Part No.	Data Rate	DDM	Wave	Fiber Type	Power Budget.	Temp.	Optical Interface
PLSFPP10GBDXXXXB10	10Gbps	yes	*3	SMF	10dB	-5~85°C	BiDi LC
PLSFPP10GBDXXXXB16	10Gbps	yes	*4	SMF	16dB	-5~85°C	BiDi LC
PLSFPP10GBDXXXXB23	10Gbps	yes	*4	SMF	23dB	-5~85°C	BiDi 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
V20140818	20140818	1. NEW PUBLISHED

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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