

FYSFB-5312-10B**1.25Gb/s BIDI 1550/1310nm SFP Transceiver****Ordering information**

Product Code	Part Number	Product Description
95.101210-103	FYSFB-5312-10B	Single mode fiber, 1.25 G, 10 km, Tx1550 / Rx1310nm, LC interface

Product Features

- Up to 1.25Gb/s data links
- 1310nm FP laser and PIN receiver
- 1550nm DFB laser and PIN receiver
- PIN photo-detector
- Up to 10km on 9/125µm SMF
- Hot-pluggable SFP footprint
- BIDI LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature
- Commercial: 0°C to +70°C
Extended: -10°C to +80°C
Industrial: -40°C to +85°C

Applications

- Switch to Switch Interface
- Gigabit Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

Product Description

Flyin's FYSFB-5312-10B Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of five sections: the LD driver, the 1310nm FP laser(the 1550nm DFB laser) and the PIN photo-detector. The module data link up to 10KM in 9/125um single mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner.

Ordering information

Product part Number	Data Rate (Gbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range (Tcase) (°C)	
FYSFB-5312-10B	1.25	Single mode fiber	1550/1310nm	10	0~70	commercial
FYSFB-5312-10E	1.25	Single mode fiber	1550/1310nm	10	-10~80	extended
FYSFB-5312-10I	1.25	Single mode fiber	1550/1310nm	10	-40~85	industrial

Pin Descriptions

Pin	Symbol	Name/Description	NOTE
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF (2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	Receiver Ground (Common with Transmitter Ground)	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	Receiver Ground (Common with Transmitter Ground)	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)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	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)	1

Notes:

- Circuit ground is internally isolated from chassis ground.
- Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- 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.
- This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber

Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:

- Low (0 – 0.8V): Reduced Bandwidth
- (>0.8, < 2.0V): Undefined
- High (2.0 – 3.465V): Full Bandwidth
- Open: Reduced Bandwidth

5. 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.

Pin Definitions and Pin Diagram

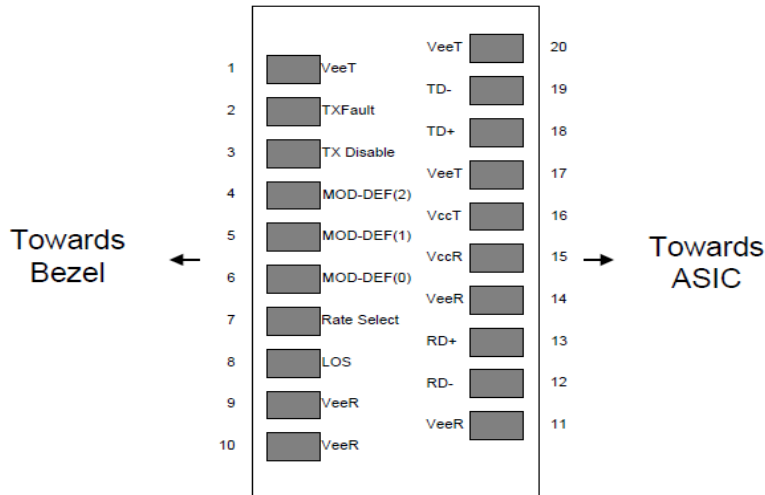


Figure2. Pin out of Connector Block on Host Board

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Relative Humidity	RH	5		95	%	
Power Supply Voltage	VCC	-0.5		4	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		+5			dBm	

Recommended Operating Conditions

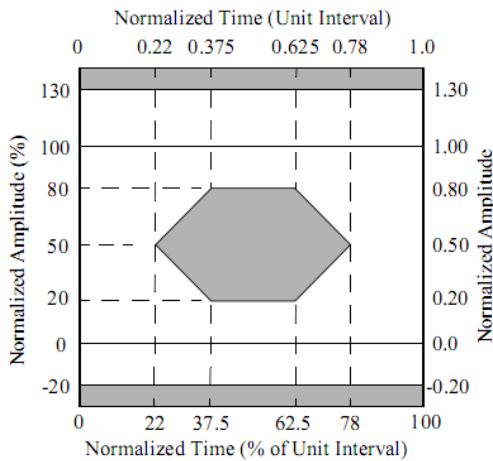
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note	
Case Operating Temperature	Tcase	0		70	°C	FYSFB-5312-10B	
		-10		80		FYSFB-5312-10E	
		-40		85		FYSFB-5312-10I	
Power Supply Voltage	VCC	3.13	3.3	3.47	V		
Power Supply Current	ICC			280	mA		
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz	
Data Rate			1.25/1.25		Gbps	TX Rate/RX Rate	
Transmission Distance				10	KM		
Coupled Fiber		Single mode fiber					9/125um SMF

Specification of Transmitter

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Output Power	POUT	-11		-3	dBm	Note (1)
Extinction Ratio	ER	9			dB	
Center Wavelength	λ_C	1290	1310	1330	nm	FYSFB-3512-10B
		1530	1550	1570		FYSFB-5312-10B
Side Mode Suppression Ratio	SMSR	30			dB	DFB Laser
Spectrum Bandwidth (RMS)	σ			3.5	nm	FP Laser
Transmitter OFF Output Power	POff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					Note (2)

Notes:

1. Measure at 2⁷-1 NRZ PRBS pattern
2. Transmitter eye mask definition



Specification of Receiver

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λ_{IN}	1290	1310	1330	nm	FYSFB-3512-10B
		1530	1550	1570		FYSFB-5312-10B
Receiver Sensitivity	PIN			-20	dBm	Note (1)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA	-35			dBm	
Los Of Signal De-assert	PD			-22	dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	

Notes:

1. Measured with Light source 1310/1550nm, ER=9dB; BER = 10^{-12} @ PRBS=2⁷-1 NRZ
2. When LOS de-asserted, the RX data+/- output is High-level (fixed)

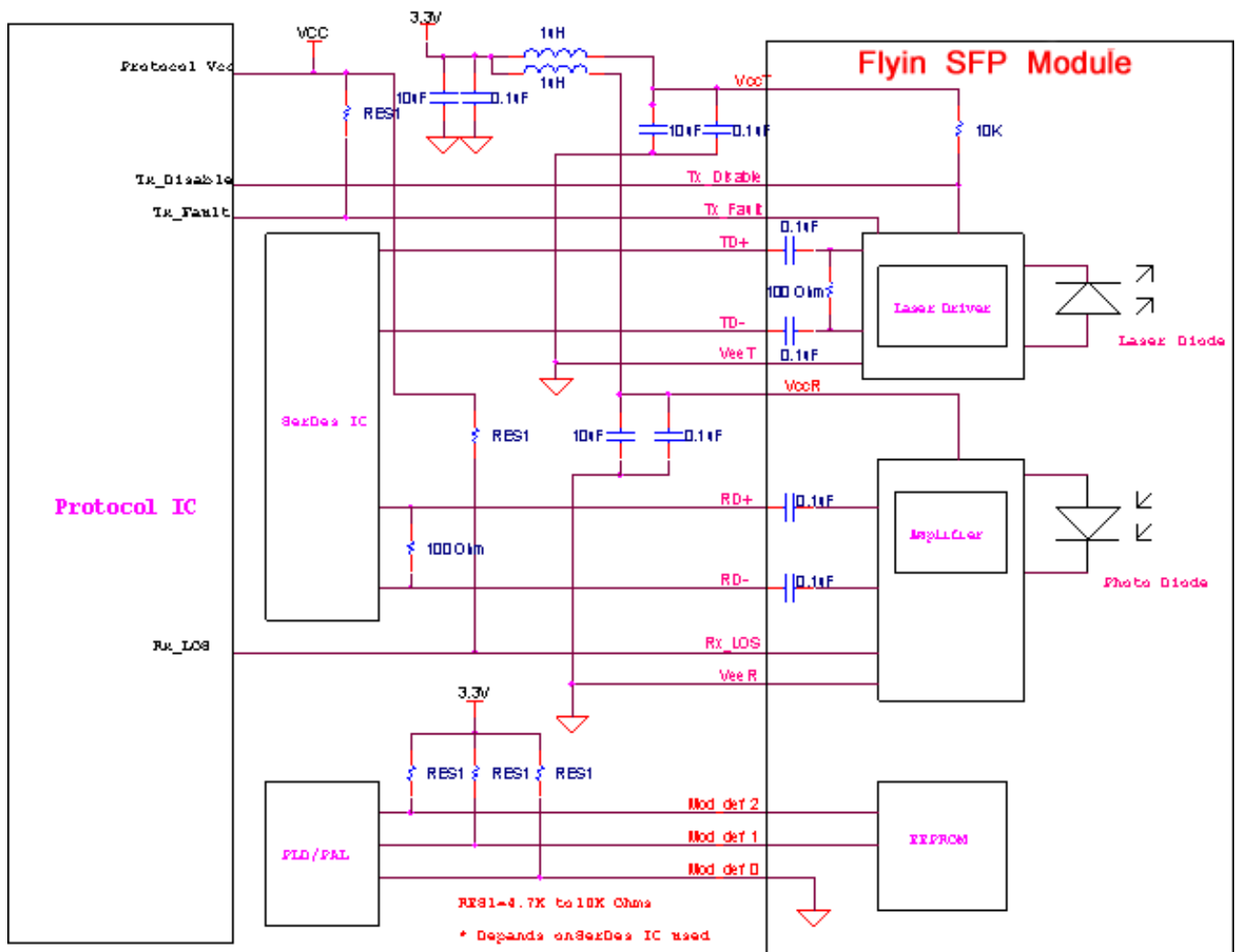
Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Total Supply Current	ICC			A	mA	Note (1)
Transmitter Disable Input-High	VDISH	2		V _{CC} +0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		V _{CC} +0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Receiver						
Total Supply Current	ICC			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		V _{CC} +0.3	V	LVTTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

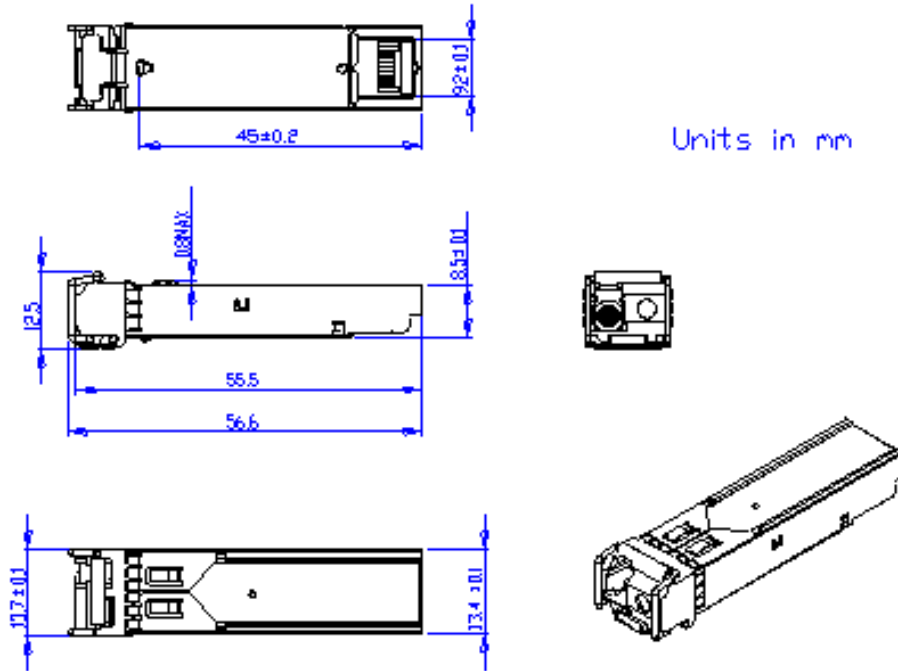
Notes:

1. A (TX) + B (RX) = 280mA (Not include termination circuit)

Recommend Circuit Schematic



Mechanical Specifications (Unit: mm)



Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950 , UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

文件分发/ File Distribution

分发部门	光模块	OQC
份数	1	1

版本记录/Revision History

Revision	Notes	Authors	Checked	Approval	Date
Rev A0	产品命名及编码/Product naming code	CaiPeihao	JiYundong	LIANGGuangzhi	2022.07.08