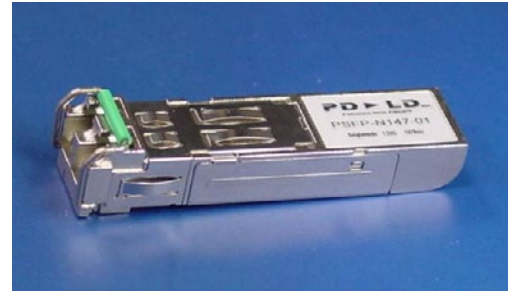


1.25 Gbps Single Mode SFP Transceiver PSFP1.2

PD-LD Inc. offers single mode laser based fiber optic transceiver modules in convenient industry standard Small-Form-factor-Pluggable (SFP) packages. The PSFP series modules are designed to comply with IEEE802.3 Gigabit Ethernet standards for 1.25 Gbps operation over 9/125um single mode optical fiber.



The transmitter section consists of a 1310nm or 1550nm laser in an eye safe optical subassembly (OSA) which mates to the fiber cable. A LD driver IC that converts differential input LVPECL logic signals into an analog laser driving current drives the laser of OSA. The receiver utilizes an InGaAs or APD photodiode mounted together with a trans-impedance preamplifier IC in an OSA. This OSA is connected to a circuit providing post-amplification quantization, and optical signal detection

Features

- 1.25Gbps data rate operation
- 1310nm or 1550nm single mode laser
- Compliant with IEEE802.3z Gigabit Ethernet Standard
- Compliant with Fiber Channel 100-SM-LL-L standard
- Compliant with SFF8472 diagnostic monitoring interface
- Duplex LC connector
- Differential LVPECL inputs and outputs
- Single power supply 3.3V
- TTL signal detect indicator
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1
- RoHS compliant

Ordering Information

Part Number	Data Rate	TX Output Power	RX Sensitivity	Temperature
PSFP1.2-S01		1310 nm FP, -3 to -9 dBm	1310 nm, -20 dBm	0°C to 70°C
PSFP1.2-S02				-40°C to 85°C
PSFP1.2-L01	1.25Gbps	1310 nm DFB, +1 to -4 dBm	1310 nm, -24 dBm	0°C to 70°C
PSFP1.2-L02				-40°C to 85°C
PSFP1.2-X01		1550 nm DFB, +5 to 0 dBm	1550 nm, -24 dBm	0°C to 70°C
PSFP1.2-X02				-40°C to 85°C

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Note
Storage Temperature	T_s	-40	85	°C	
Supply Voltage	V_{CC}	-0.5	4.0	V	
Input Voltage	V_{IN}	-0.5	V_{CC}	V	
Output Current	I_o	---	50	mA	
Operating Current	I_{OP}	---	400	mA	

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Case Operating Temperature	T_c	0 -40	70 85	°C	PSFP1.2-x01 PSFP1.2-x02
Supply Voltage	V_{CC}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	

Transmitter Electro-optical Characteristics $V_{CC} = 3.1 \text{ V to } 3.5 \text{ V}$

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Optical Power (into 9/125 μ m fiber)	P_{out}	0	---	+5	dBm	PSFP1.2-X
		-4	---	+1		PSFP1.2-L
		-9	---	-3		PSFP1.2-S
Center Wavelength	λ_c	1530	1550	1570	nm	PSFP1.2-X
		1280	1310	1355		PSFP1.2-L
		1270	1310	1355		PSFP1.2-S
Extinction Ratio	ER	7	---	---	dB	PSFP1.2-X
		7	---	---		PSFP1.2-L
		9	---	---		PSFP1.2-S
Spectral Width (-20dB)	$\Delta\lambda$	---	---	0.8	nm	PSFP1.2-X
		---	---	1		PSFP1.2-L
		---	---	2.5		PSFP1.2-S
Rise/Fall Time, (20–80%)	$T_{r,f}$	---	---	260	ps	
Relative Intensity Noise	RIN	---	---	-120	dB/Hz	
Total Jitter	TJ	---	---	227	ps	
Output Eye						Compliant with IEEE802.3z
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-45	dBm	
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	

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Receiver Electro-optical Characteristics $V_{CC} = 3.1\text{ V to }3.5\text{ V}$

Parameter	Symbol	Min.	Typ.	Max.	Units.	Note
Optical Input Power-maximum (BER < 10^{-12})	P_{IN}	-1	---	---	dBm	PSFP1.2-X
		-3	---	---		PSFP1.2-L
		-3	---	---		PSFP1.2-S
Optical Input Power-minimum (Sensitivity, BER < 10^{-12})	P_{IN}	---	-26	-24	dBm	PSFP1.2-X
		---	-26	-24		PSFP1.2-L
		---	-24	-20		PSFP1.2-S
Operating Center Wavelength	λ_C	1260	---	1610	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	P_A	---	---	-24	dBm	PSFP1.2-X
		---	---	-24		PSFP1.2-L
		---	---	-20		PSFP1.2-S
Signal Detect-Deasserted	P_D	-35	---	---	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)	$T_{r,f}$	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low	RX_LOS_L	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS_H	2.4	---	V_{CC}	V	

Diagnostics

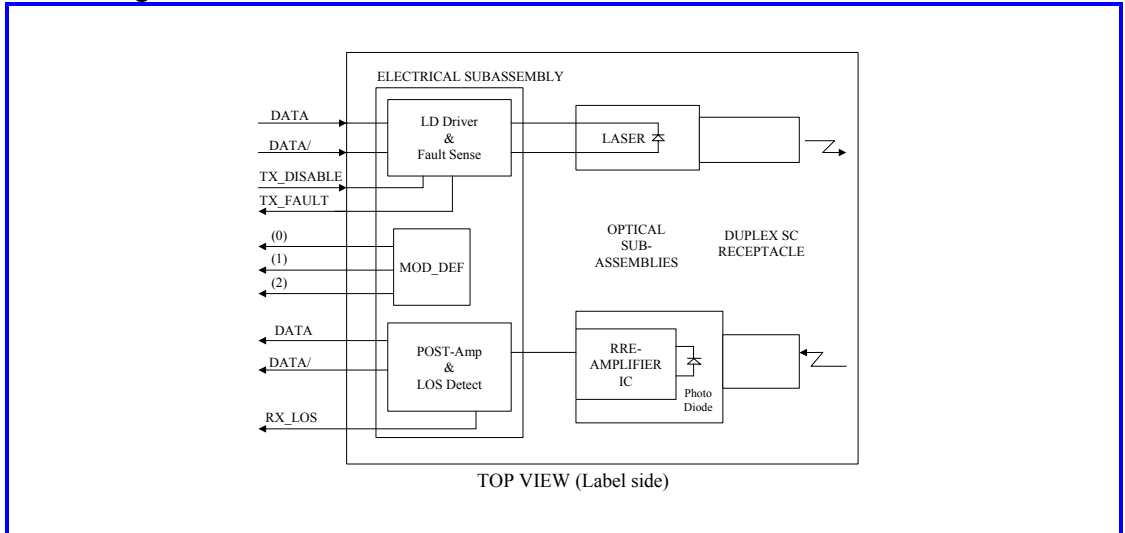
Parameter	Ranges	Accuracy	Units	Calibration	
Temperature	-40 to 95	± 3	$^{\circ}\text{C}$		
Voltage	0 to V_{CC}	± 0.1	V		
Bias Current	0 to 120	± 5	mA		
TX Power	(PSFP1.2-X)	-4 to +7	$\pm 3\text{ dB}$	dBm	External
	(PSFP1.2-L)	-4 to +7			
	(PSFP1.2-S)	-9 to +5			
RX Power	(PSFP1.2-X)	-24 to -3	$\pm 3\text{ dB}$	dBm	
	(PSFP1.2-L)	-24 to -3			
	(PSFP1.2-S)	-24 to -3			

Specifications Subject to Change

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1.25 Gbps Single Mode SFP Transceiver PSFP1.2

Block Diagram of Transceiver

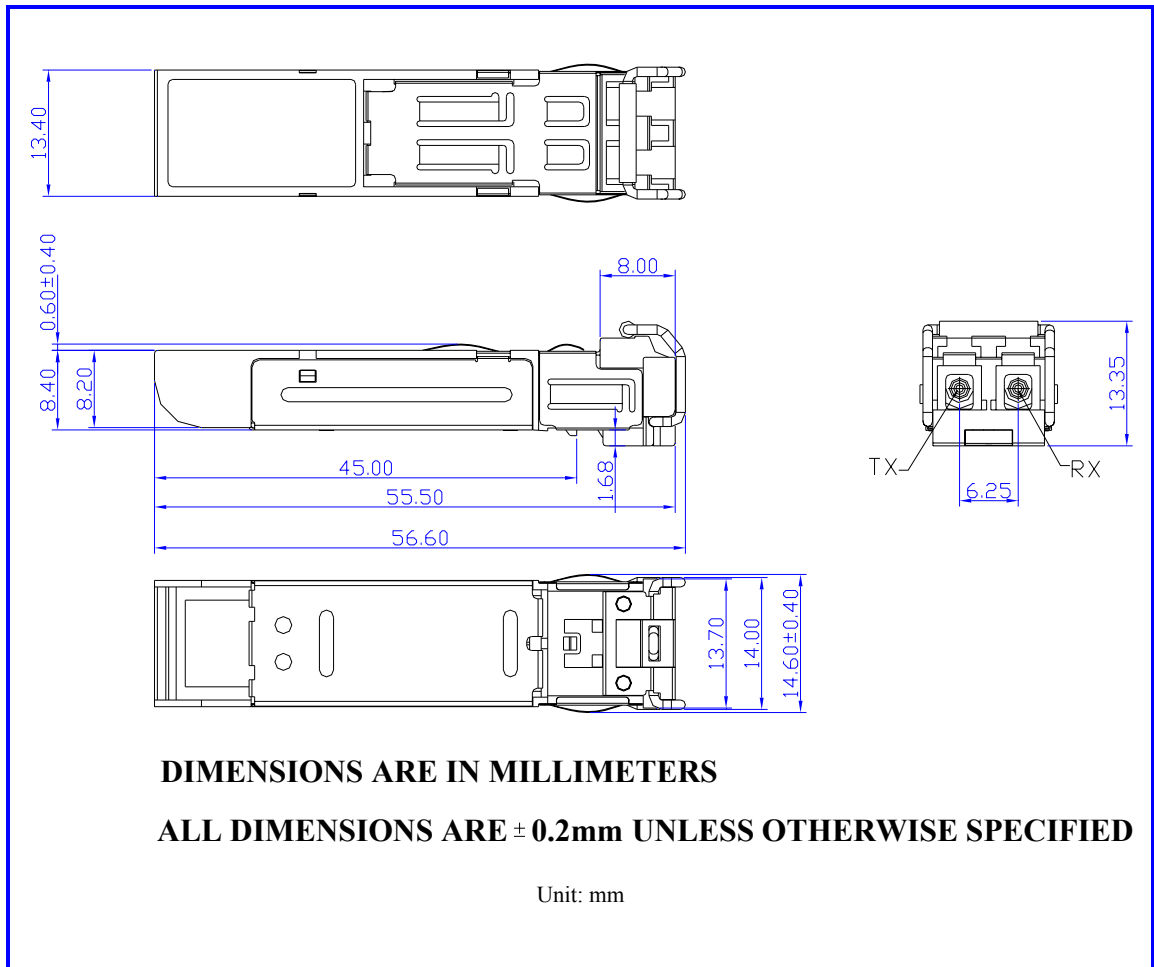


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Dimensions

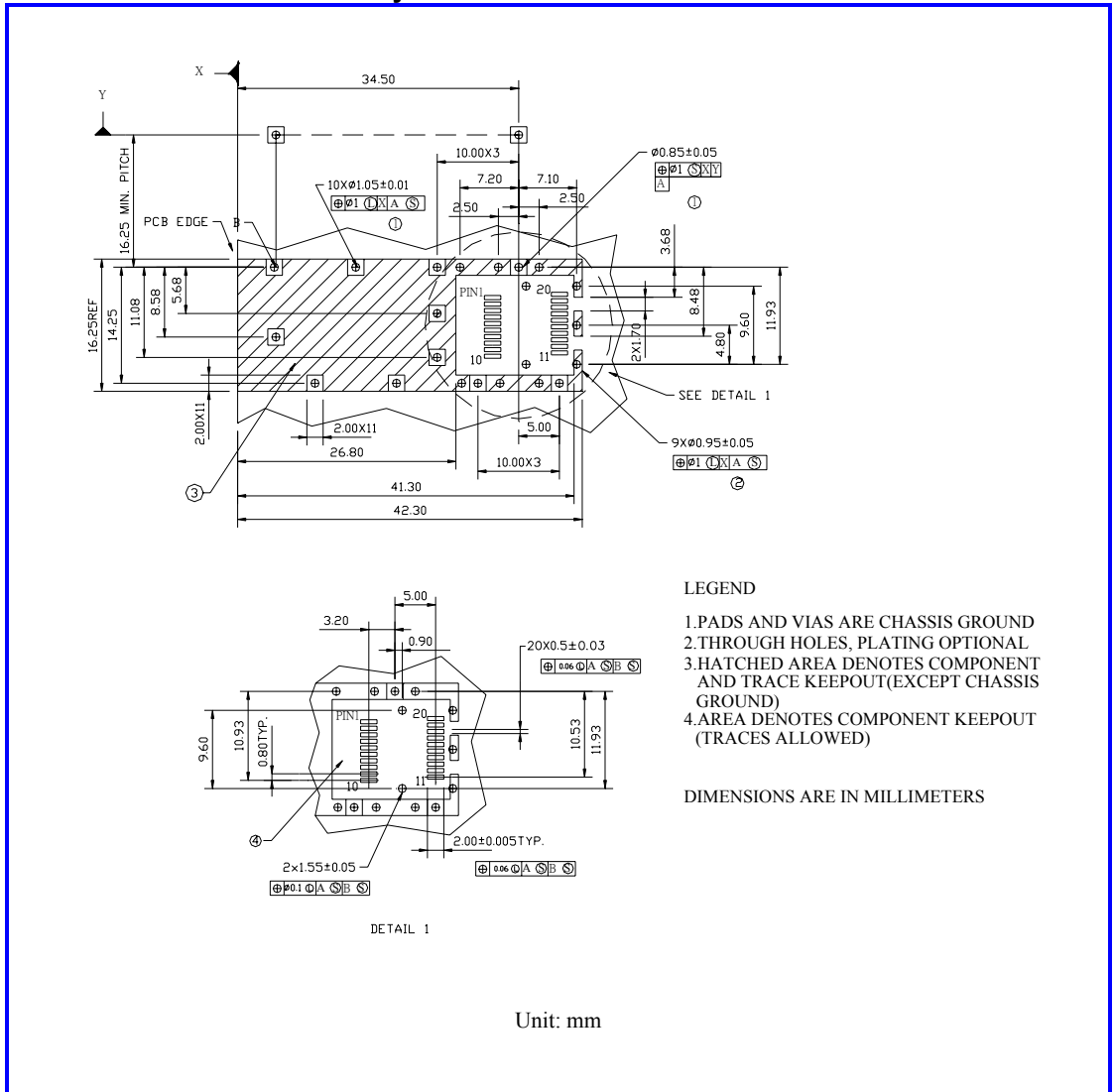


Specifications Subject to Change

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SFP host board mechanical layout

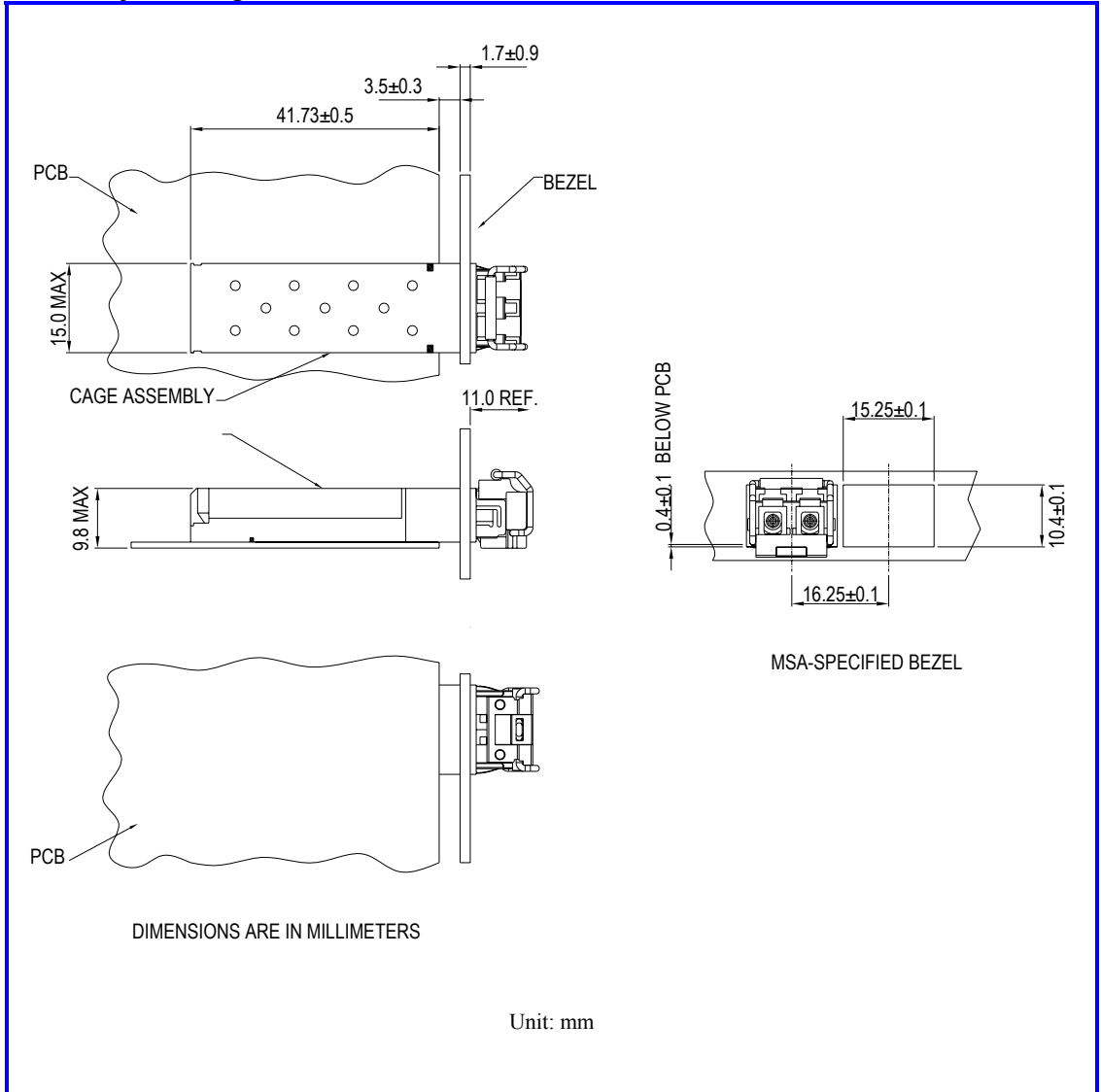


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Assembly Drawing



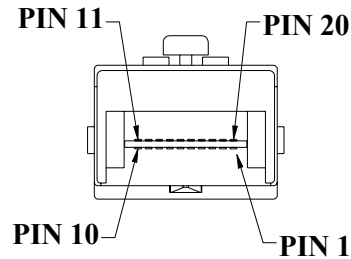
Specifications Subject to Change

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Pin Assignment

Pin-Out



Pin	Signal Name	Description
1	T_{GND}	Transmit Ground
2	TX_FAULT	Transmit Fault
3	$TX_DISABLE$	Transmit Disable
4	$MOD_DEF (2)$	SDA Serial Data Signal
5	$MOD_DEF (1)$	SCL Serial Clock Signal
6	$MOD_DEF (0)$	TTL Low
7	$RATE_SELECT$	Open Circuit
8	RX_LOS	Receiver Loss of Signal, TTL High, open collector
9	R_{GND}	Receiver Ground
10	R_{GND}	Receiver Ground
11	R_{GND}	Receiver Ground
12	$RX-$	Receive Data Bar, Differential PECL, AC coupled
13	$RX+$	Receive Data, Differential PECL, AC coupled
14	R_{GND}	Receiver Ground
15	V_{CCR}	Receiver Power Supply
16	V_{CCT}	Transmitter Power Supply
17	T_{GND}	Transmitter Ground
18	$TX+$	Transmit Data, Differential PECL, AC coupled
19	$TX-$	Transmit Data Bar, Differential PECL, AC coupled
20	T_{GND}	Transmitter Ground

Specifications Subject to Change

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