Smart solutions for smart networks

Version 1.0

SFP-STM1-SM40

SFP Module 10/100FX STM1 Budget 40KM

Features

- RoHS compliant
- SFF8472 diagnostic monitoring interface
- Industry standard small form pluggable (SFP)
- Duplex LC connector
- Differential inputs and outputs
- Single power supply 3.3V
- LVTTL LOS indicator
- Hot Pluggable
- Class 1 laser product complies with EN 608825-1

Ordering Information

Part Number	Designation
SFP-STM1-SM40	SFP module 10/100FX and STM-1, single-mode 1310nm, budget for 40km , connector LC, -40C to +85C

CXR
T +33 (0) 237 62 87 90
www.cxr.com

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Absolute Maximun Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	Ts	-40	85	°C	
Supply Voltage	Vcc	-0.5	4.0	V	
Input Voltage	Vin	-0.5	Vcc	V	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case Operating Temperature	Tc	-40	85	°C	
Supply Voltage	Vcc	3.1	3.5	V	
Supply Current	Itx+Irx	—-	300	mA	

Transmitter Electro-optical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	B	10	155	160	Mb/s	
Output Optical Power 9/125 µm fiber	P_{out}	-9	—-	0	dBm	Average
Extinction Ratio	ER	10	—-	—-	dB	
Center Wavelength	λC	1260	1310	1360	Nm	
Spectral Width (RMS)	^λ	—-	—-	4.0	Nm	
Rise/Fall Time (10-90%)	Trf	—-	1	2	Ns	
Max. P_{out} TX-DISABLE Asserted	P_{off}	—-	—-	-45	dBm	
Output Eye	Compliant	with Telcordia	GR-253-CORE	Issue 3	and ITU-T	recommendation G-957
Differential Input Voltage	V_{diff}	0.4	—-	2.0	V	

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Receiver Electro-optical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	B	10	155	160	Mb/s	
Optical Input Power -maximum	P_{in}	0	—-	—-	dBm	Note 1
Optical Input Power -minimum	P_{in}	—-	—-	-34	dBm	Note 1
Operating Center Wavelength	λC	1260	—-	1600	Nm	
Data Output Rise, Fall Time (10-90%)	Trf	—-	1	2	Ns	
Loss of Signal-Asserted	P_A	—-	—-	-34	dBm	
Loss of Signal-Deasserted	P_D	-45	—-	—-	dBm	
Loss of Signal-Hysteresis	P_A-P_D	0.5	—-	—-	dB	
Differential Input Voltage	V_{diff}	0.5	—-	1.2	V	
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	

Note 1: The input data is at 155.52 Mbps, 2_{exp23}–1 PRBS data pattern. The receiver is guaranteed to provide output data with Bit Error Rate (BER) better than or equal to 1 x 10_{exp-10}.

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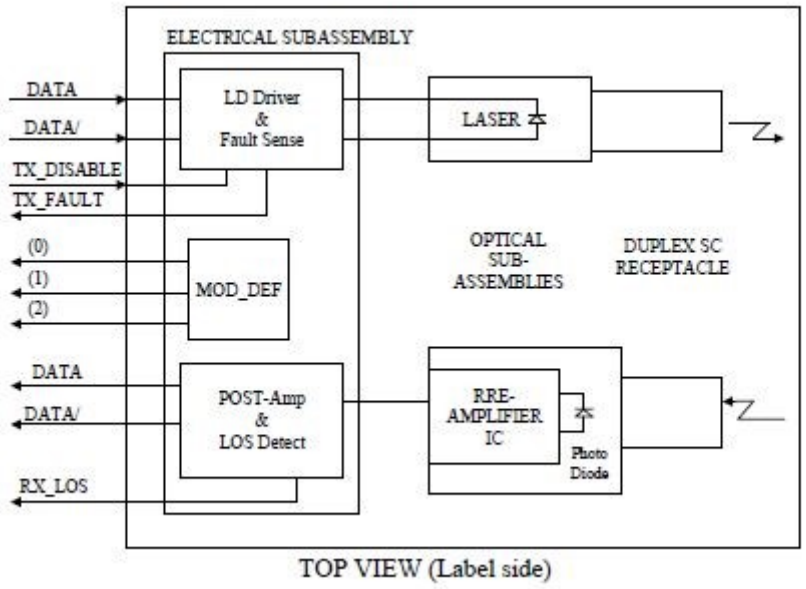
Block Diagram of Transceiver



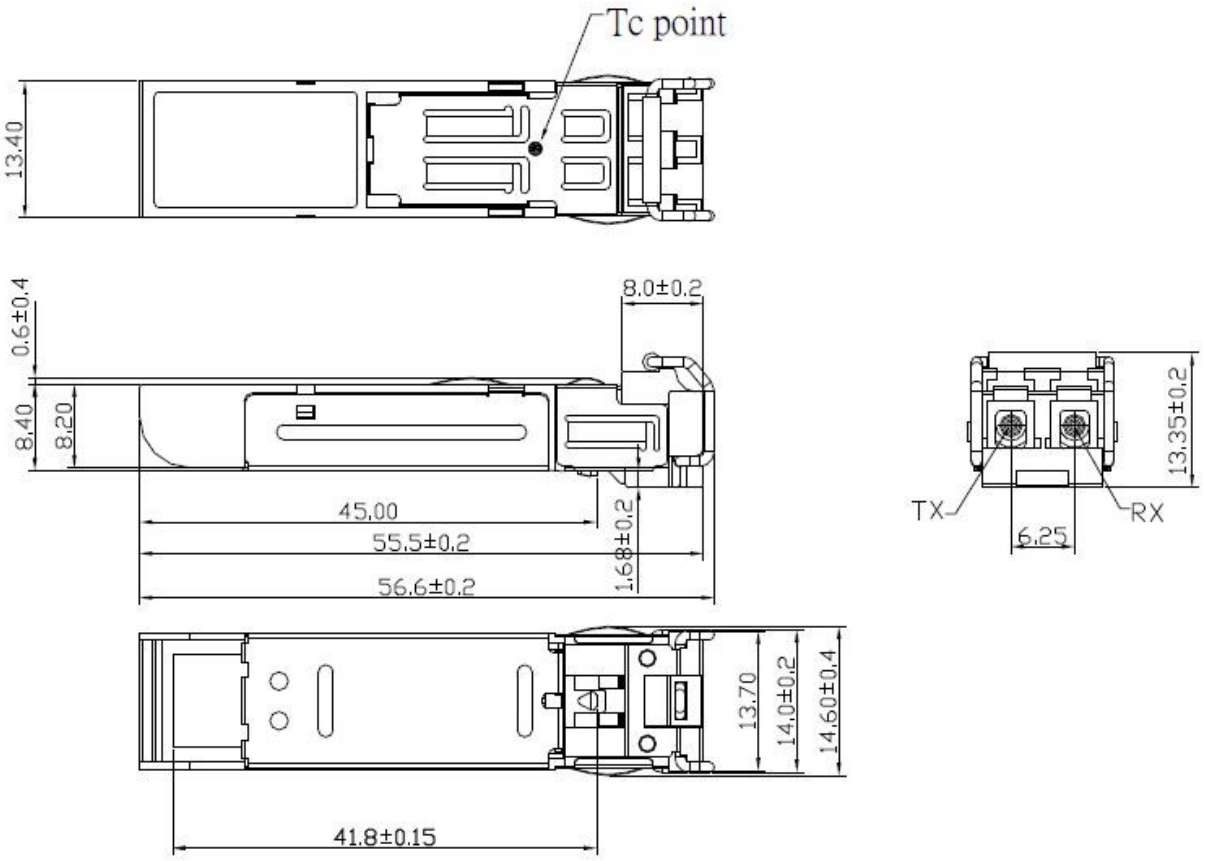
Transmitter Section
The transmitter section consists of a 1310nm InGaAsP laser in an eye safe optical subassembly (OSA) which mates to the fiber cable. The laser OSA is driven by a LD driver IC which converts differentail input LVPECL logic signals into an analog laser driving current.

TX_DISBABLE
The TX_DISABLE signal is high (TTL logic ‘‘1’’) to turn off the laser output. The laser will turn on when TX_DISABLE is low (TTL logic ‘‘0’’)

Receiver Section
The receiver utilizes an InGaAs PIN photodiode monuted 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.

Receive Loss (RX_LOS)
The RX_LOS is high (logic ‘‘1’’) when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Dimensions

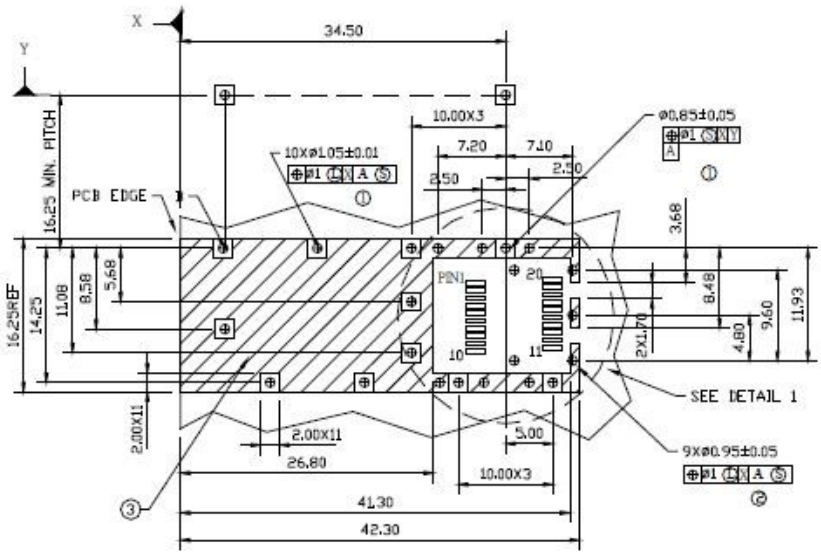


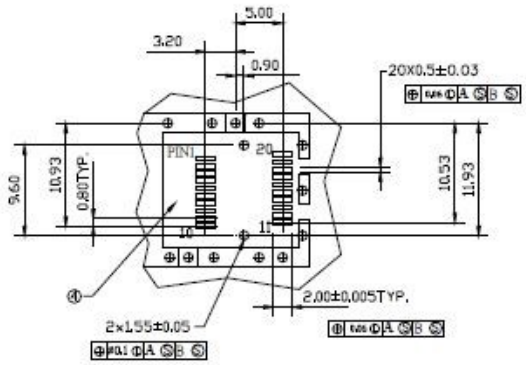
DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.1mm UNLESS OTHERWISE SPECIFIED

Unit: mm

SFP host board mechanical layout





DETAIL 1

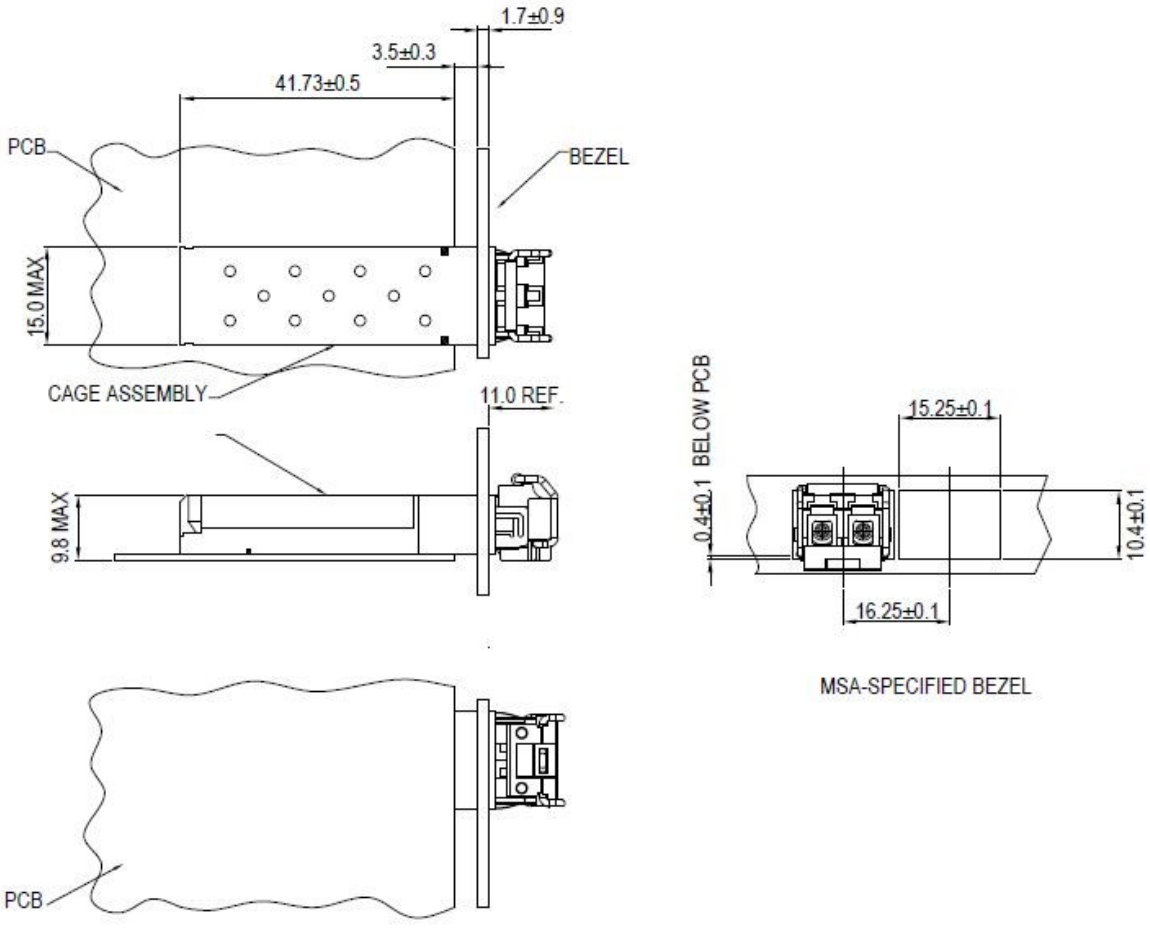
LEGEND

1.PADS AND VIAS ARE CHASSIS GROUND
2.THROUGH HOLES, PLATING OPTIONAL
3.HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
4.AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

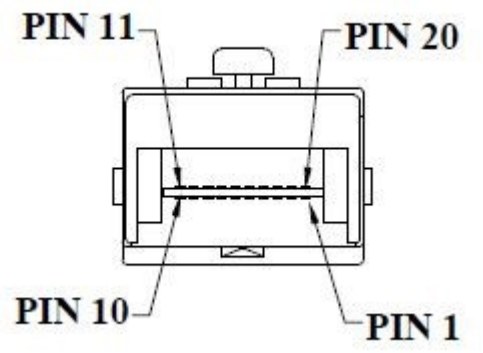
Assembly drawing



Unit: mm

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 Data 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, ac coupled
13	*RX+*	Receive Data, Differential, ac coupled
14	R_{GND}	Receiver Ground
15	V_{CCR}	Receive Power Supply
16	V_{CCT}	Transmitter Power Suply
17	T_{GND}	Transmit Ground
18	*TX+*	Transmit Data, Differential, ac coupled
19	*TX-*	Transmit Data Bar, Differential, ac coupled
20	T_{GND}	Transmit Ground

Note: All information contained in this document is subject to change whitout notice