

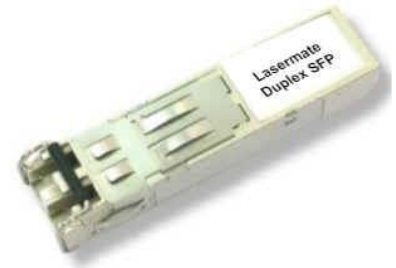


155Mbps 1310nm MMF 2km SFP Optical Transceiver with Duplex LC Connector

Model No. CM13L-03F-3S-Tx-L

FEATURES

- RoHS compliant
- Compliant with Fast ethernet standard
- Compatible with SONET/SDH application
- Industry standard small form pluggable (SFP) package
- Hot pluggable
- Single power supply 3.3V
- Duplex LC optical connection
- Differential LVPECL inputs and outputs
- TTL signal detect indicator
- Class 1 laser product compliant with EN 60825-1
- Input/Output: AC/AC



APPLICATION

- Distributed multi-processing
- Switch to switch interface
- High speed I/O for file server
- Bus extension application
- Channel extender, data storage

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
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	UNIT	NOTES
Case Operating Temperature	T_C	-10	70	°C	CM13L-03F-3S-TC-L
		-40	85		CM13L-03F-3S-TI-L
Supply Voltage	V_{CC}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	-	300	mA	

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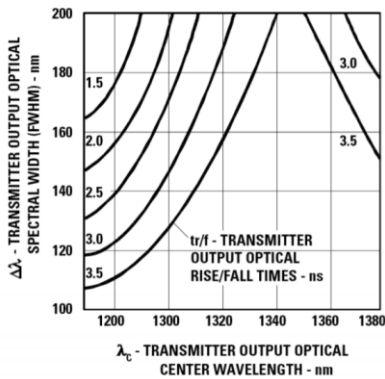
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TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS ($V_{CC} = 3.1V$ to $3.5V$, $T_C = -10^{\circ}C$ to $70^{\circ}C$, $-40^{\circ}C$ to $85^{\circ}C$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B	10	155	200	Mbps
Average Output Optical Power 62.5/125um fiber	P_{out}	-20	-	-14	dBm
Average Output Optical Power 50/125um fiber	P_{out}	-23.5	-	-14	dBm
Extinction Ratio	ER	10	-	-	dB
Center Wavelength	λ_C	1270	1310	1380	nm
Spectral Width (FWHM)	$\Delta\lambda$		Fig 1		nm
Rise/Fall Time (10~90%)	$T_{r,f}$	-	-	3	ns
Differential Input Voltage	V_{DIFF}	0.4	-	2.0	V

Figure 1 – LED spectral width limit



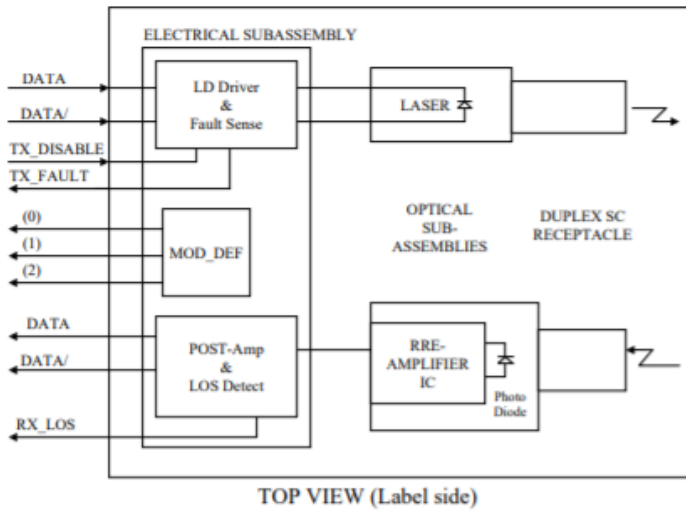
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS ($V_{CC} = 3.1V$ to $3.5V$, $T_C = -10^{\circ}C$ to $70^{\circ}C$, $-40^{\circ}C$ to $85^{\circ}C$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Data Rate	B	10	155	200	Mbps	
Optical Input Power-Maximum	P_{IN}	-8	-	-	dBm	Note 1
Receiver Input Power-Minimum (Sensitivity)	P_{IN}	-	-	-31	dBm	Note 1
Operating Center Wavelength	λ_C	1260	-	1600	nm	
Loss of Signal-Asserted	P_A	-	-	-32	dBm	Average
Loss of Signal-Deasserted	P_D	-47	-	-	dBm	Average
Loss of Signal-Hysteresis	P_A-P_D	1.0	-	-	dB	
Data Output Rise, Fall time (10~90%)	$T_{r,f}$	-	1	2	ns	
Differential Output Voltage	V_{DIFF}	0.5	-	1.8	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, 223-1 PRBS data pattern with 72 “1”s and 72 “0”s inserted per the ITU-T recommendation G.958 Appendix 1. The receiver is guaranteed to provide output data with Bit Error Rate (BER) better than or equal to 1×10^{-10} .



BLOCK DIAGRAM OF TRANSCEIVER



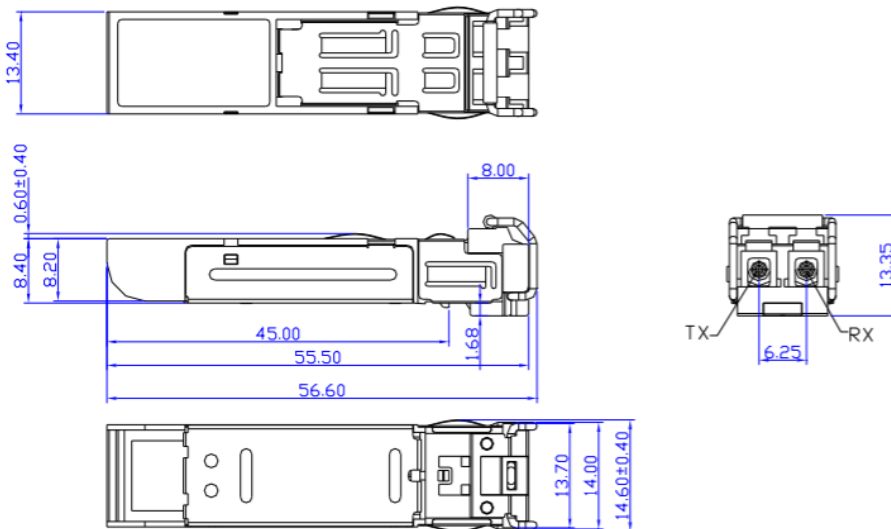
Transmitter Section - The transmitter section consists of a 1310 nm LED in an eye safe optical subassembly (OSA) which mates to the fiber cable. The laser OSA is driven by a LD driver IC which converts differential input LVPECL logic signals into an analog laser driving current.

TX_DISABLE - 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 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.

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 ± 0.2mm UNLESS OTHERWISE SPECIFIED

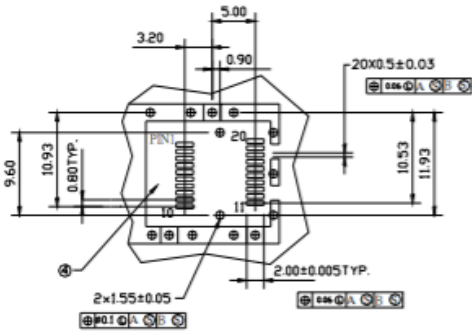
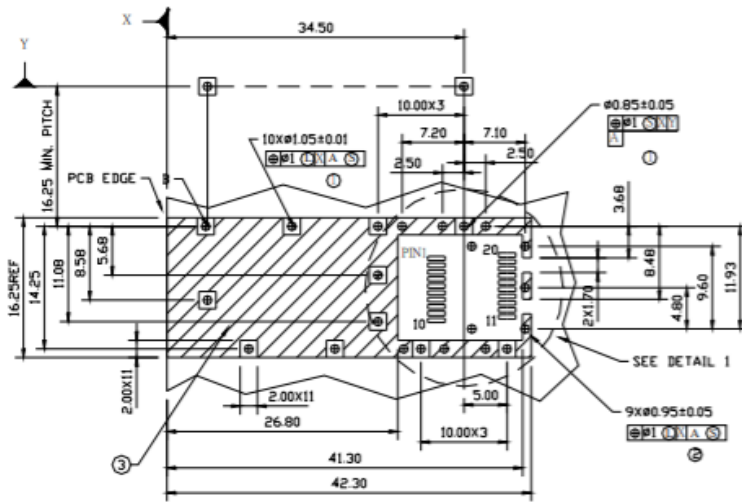
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SFP HOST BOARD MECHANICAL LAYOUT



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

ASSEMBLY DRAWING (unit: mm)



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PIN ASSIGNMENT



PIN	SIGNAL NAME	DESCRIPTION	PIN	SIGNAL NAME	DESCRIPTION
1	T _{GND}	Transmit Ground	11	R _{GND}	Receiver Ground
2	TX_FAULT	Transmit Fault	12	RX-	Receive Data Bar, Differential PECL, ac coupled
3	TX_DISABLE	Transmit Disable	13	RX+	Receive Data, Differential PECL, ac coupled
4	MOD_DEF (2)	SDA Serial Data Signal	14	R _{GND}	Receiver Ground
5	MOD_DEF (1)	SCL Serial Clock Signal	15	V _{CCR}	Receiver Power Supply
6	MOD_DEF (0)	TTL Low	16	V _{CCT}	Transmitter Power Supply
7	RS0	RX Rate Select, no function implemented	17	T _{GND}	Transmitter Ground
8	RX_LOS	Receiver Loss of Signal, TTL High, open collector	18	TX+	Transmit Data, Differential PECL, ac coupled
9	RS1	TX Rate Select, no function implemented	19	TX-	Transmit Data Bar, Differential PECL, ac coupled
10	R _{GND}	Receiver Ground	20	T _{GND}	Transmitter Ground

EYE SAFETY MARK

The multi-mode transceiver is a class 1 LED product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements, the transceiver shall be operated within the Absolute Maximum Ratings.

[Caution] All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

ORDERING INFORMATION

PART NUMBER	OPERATING TEMPERATURE
CM13L-03F-3S-TC-L	-10°C to 70°C
CM13L-03F-3S-TI-L	-40°C to 85°C

Note: The specifications subject to change without notice.