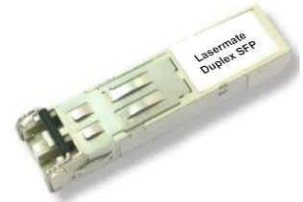




4.25Gbps 850nm MMF 150m SFP Optical Transceiver with Duplex LC Connector

CM85V-96F-3S-Tx-LD



DESCRIPTION

The CM85V-96F-3S-Tx-LD duplex SFP (Small Form Pluggable) optical transceivers are high performance, cost effective optical transceiver modules for serial optical data communications application specified for a data rate of 4.25Gb/s. The SFP transceiver module provides 150m transmission distance over multi-mode fiber at nominal wavelength of 850nm. The optical transceiver is RoHS compliant.

FEATURES

- Compliant with 4.25G Fiber Channel 400-M5-SN-I and 400-M6-SN-I standard
- Compliant with 2.125G Fiber Channel 200-M5-SN-I and 200-M6-SN-I standard
- Compliant with 1.0625G Fiber Channel 100-M5-SN-I and 100-M6-SN-I standard
- Compliant with IEEE802.3z Gigabit Ethernet standard
- Compliant with SFF8472 diagnostic monitoring interface
- Hot pluggable
- Single power supply 3.3V
- Duplex LC connector
- Differential LVPECL inputs and CML outputs
- TTL signal detect indicator
- Class 1 laser product compliant with EN 60825-1
- Input/Output: AC/AC
- Up to 150m over multi-mode fiber

APPLICATIONS

- 1X, 2X, 4X Fiber Channel
- 1000Base-SX

PRODUCT OVERVIEW

PART NUMBER	OPERATING TEMPERATURE
CM85V-96F-3S-TC-LD	-10 to 70°C
CM85V-96F-3S-TM-LD	-20 to 85°C
CM85V-96F-3S-TI-LD	-40 to 85°C

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	CM85V-96F-3S-TC-LD
		-20	85		CM85V-96F-3S-TM-LD
		-40	85		CM85V-96F-3S-TI-LD
Supply Voltage	V _{CC}	3.1	3.5	V	
Supply Current	I _{TX} + I _{RX}	-	200	mA	

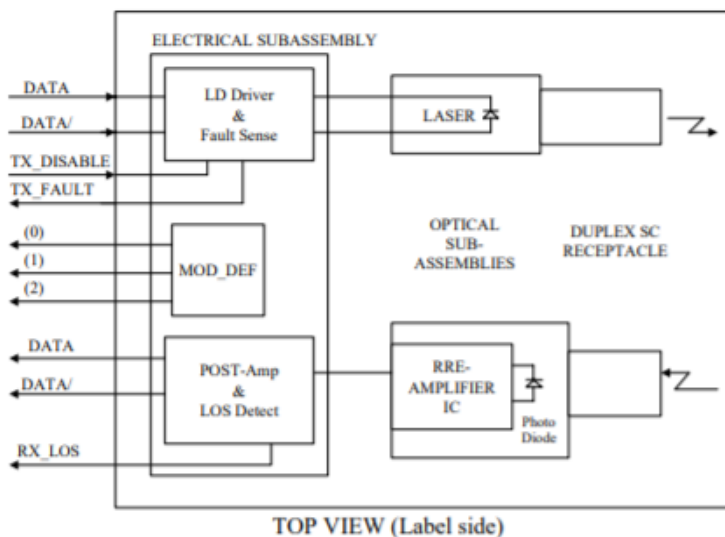
TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.1V to 3.5V, T_C = -10 to 70°C, -20 to 85°C, -40 to 85°C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Output Optical Power (50/125um fiber, NA=0.20) (62.5/125um fiber, NA=0.275)	P _{out}	-9	-	-3	dBm	
Extinction Ratio	ER	6	-	-	dB	
Optical Modulation Amplitude @4.25Gb/s	OMA	247			uW	
Optical Modulation Amplitude @2.125Gb/s	OMA	196			uW	
Optical Modulation Amplitude @1.0625Gb/s	OMA	156			uW	
Center Wavelength	λ _C	830	850	860	nm	
Spectral Width (RMS)	Δλ	-	-	0.85	nm	
Relative Intensity Noise	RIN	-	-	-118	dB/Hz	
Output Eye	Compliant with IEEE802.3z and fiber channel 4x					
Max. P _{out} TX-DISABLE Asserted	P _{OFF}	-	-	-35	dBm	
Differential Input Voltage	V _{DIFF}	0.35	-	2.0	V	
Transmit Fault Output-Low	TX_FAULT _L	0.0	-	0.5	V	
Transmit Fault Output-High	TX_FAULT _H	2.4	-	V _{CC}	V	
TX_DISABLE Assert Time	t _{off}	-	-	10	us	
TX_DISABLE Negate Time	t _{on}	-	-	1	ms	
Time to initialize, include reset of TX_FAULT	t _{init}	-	-	300	ms	
TX_FAULT from fault to assertion	t _{fault}	-	-	100	us	
TX_DISABLE time to start reset	t _{reset}	10	-	-	us	

RECEIVER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.1V to 3.5V, T_C = -10 to 70°C, -20 to 85°C, -40 to 85°C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Optical Input Power-Maximum	P _{IN}	0	-	-	dBm	BER<10 ⁻¹²
RX Sensitivity @4.25Gbps	P _{IN}	-	-	-15	dBm	BER<10 ⁻¹²
RX Sensitivity @2.125Gbps	P _{IN}	-	-	-18	dBm	BER<10 ⁻¹²
RX Sensitivity @1.25Gbps	P _{IN}	-	-	-20	dBm	BER<10 ⁻¹²
RX Sensitivity @1.0625Gbps	P _{IN}	-	-	-20	dBm	BER<10 ⁻¹²
Operating Center Wavelength	λ _C	770	-	860	nm	
Optical Return Loss	ORL	12	-	-	dB	
Signal Detect-Asserted	P _A	-20	-	-	dBm	
Signal Detect-Deasserted	P _D	-	-	-30	dBm	
Differential Output 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	
Receiver Loss of Signal Assert Time (off to on)	t _{A,RX_LOS}	-	-	100	us	
Receiver Loss of Signal Assert Time (on to off)	t _{D,RX_LOS}	-	-	100	us	

BLOCK DIAGRAM OF TRANSCEIVER



Transmitter Section - The transmitter section consists of a 850 nm VCSEL 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.

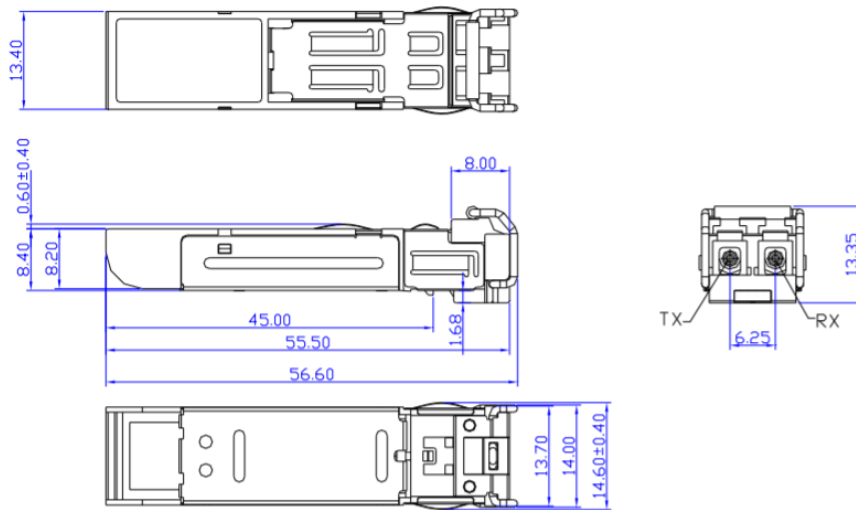
TX_FAULT - When sensing an improper power level in the laser driver, the SFP set this signal high and turns off the Laser. TX_FAULT can be reset with the TX_DISABLE line. The signal is in TTL level.

TX_DISABLE - The TX_DISABLE signal is high (TTL logic “1”) to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic “0”).

Receiver Section - The receiver utilizes a MSM detector integrated with a trans-impedance preamplifier 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.

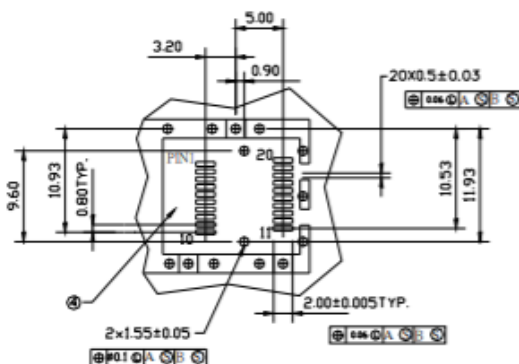
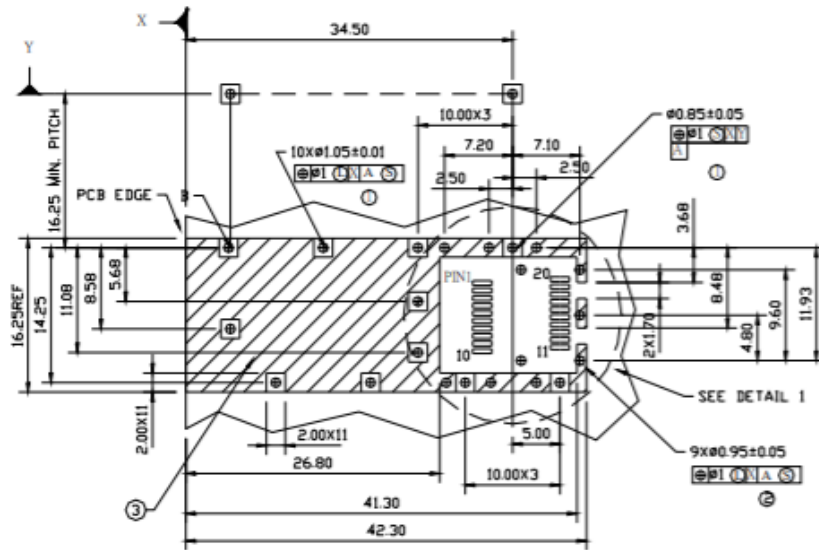
DIMENSIONS



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

SFP HOST BOARD MECHANICAL LAYOUT

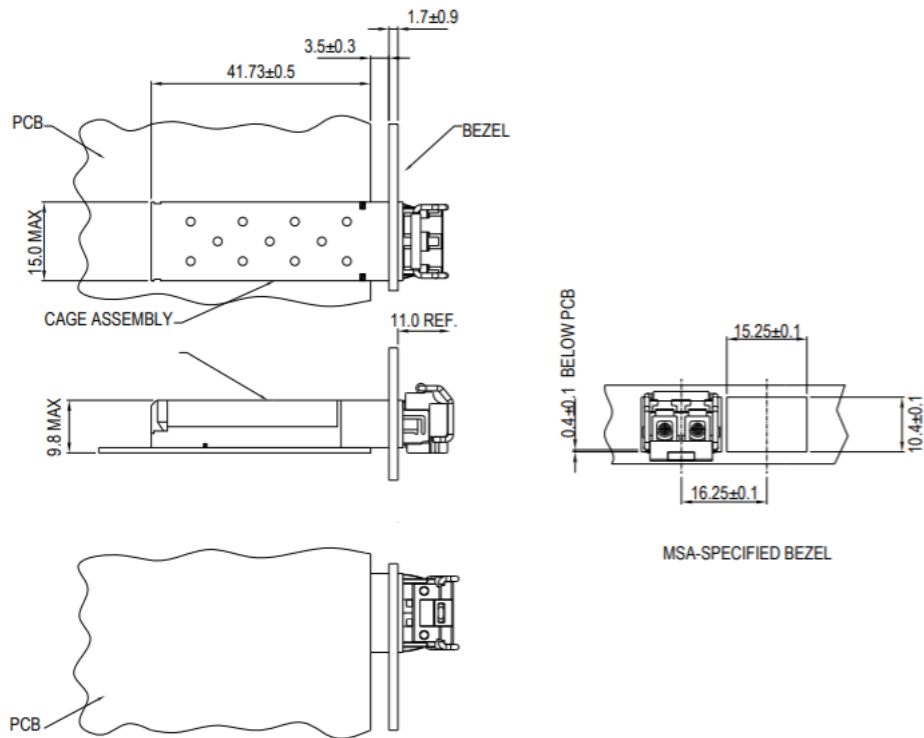


LEGEND

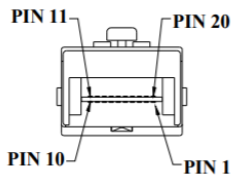
- 1. PADS AND VIAS ARE CHASSIS GROUND
- 2. THROUGH HOLES, PLATING OPTIONAL
- 3. HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT (EXCEPT CHASSIS GROUND)
- 4. AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

ASSEMBLY DRAWING (unit: mm)



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	RATE SELECT	Open Circuit	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	R _{GND}	Receiver Ground	19	TX-	Transmit Data Bar, Differential PECL, ac coupled
10	R _{GND}	Receiver Ground	20	T _{GND}	Transmitter Ground

EYE SAFETY MARK

The multimode transceiver is a class 1 laser 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.

Required Mark

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

[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.

ADDITIONAL NOTES

- Avoid eye or skin exposure to laser radiations.
- The device is sensitive to electro-static discharge (ESD). The device should be handled with ESD proof tools. To assemble the device on PCB, proper grounding is required to prevent ESD.
- Specifications are subject to change without notice.



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