



# 155Mbps 850nm MMF 2km SFP Optical Transceiver with Duplex LC Connector

**CM85V-03F-3S-Tx-LD**



## DESCRIPTION

The CM85V-03F-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 155 Mb/s. The SFP transceiver module provides 2km transmission distance over multi-mode fiber at nominal wavelength of 850nm. The optical transceiver is RoHS compliant.

## FEATURES

- RoHS compliant
- Compliant with SFF8472 diagnostic monitoring interface
- Industry standard small form pluggable (SFP) package
- Single power supply 3.3V
- Duplex LC optical connection
- Class 1 laser product compliant with EN 60825-1
- Input/Output: AC/AC
- Signal Detect: TTL
- Up to 2km over multi-mode fiber

## APPLICATIONS

- Fast Ethernet

## PRODUCT OVERVIEW

PART NUMBER	OPERATING TEMPERATURE
CM85V-03F-3S-TC-LD	0°C to 70°C
CM85V-03F-3S-TM-LD	-10°C to 85°C
CM85V-03F-3S-TI-LD	-40°C to 85°C

**DIAGNOSTICS**

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Temperature	-40 to 95	±3	°C	External
Voltage	3.0 to 3.6	±0.1	V	
Bias Current	0 to 20	±10%	mA	
TX Power	-9.5 to -4	±3	dB	
RX Power	-18 to -4	±3	dB	

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	MIN	MAX	UNIT
Storage Temperature	T <sub>S</sub>	-40	85	°C
Supply Voltage	V <sub>CC</sub>	-0.5	4.0	V
Input Voltage	V <sub>IN</sub>	-0.5	V <sub>CC</sub>	V

**RECOMMENDED OPERATING CONDITIONS**

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
Case Operating Temperature	T <sub>C</sub>	0	70	°C	CM85V-03F-3S-TC-LD
		-10	85		CM85V-03F-3S-TM-LD
		-40	85		CM85V-03F-3S-TI-LD
Supply Voltage	V <sub>CC</sub>	3.1	3.5	V	
Supply Current	I <sub>TX</sub> + I <sub>RX</sub>		200	mA	

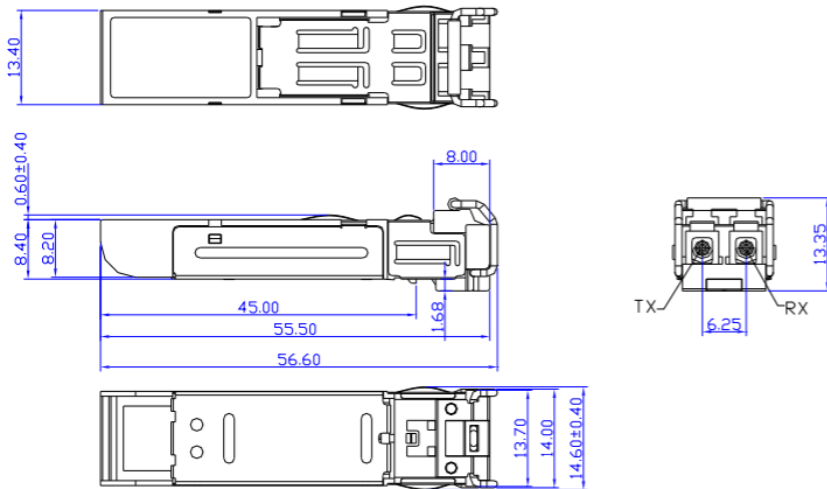
**TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V<sub>CC</sub> = 3.1V to 3.5V, T<sub>C</sub> = 0°C to 70°C, -10°C to 85°C, -40°C to 85°C)**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B		125		Mbps
Average Output Optical Power 62.5/125, 50/125um fiber	P <sub>out</sub>	-9.5	-	-4	dBm
Extinction Ratio	ER	9	-	-	dB
Center Wavelength	λ <sub>C</sub>	830	850	860	nm
Spectral Width (RMS)	Δλ	-	-	0.85	nm
Rise/Fall Time (10~90%)	T <sub>r,f</sub>	-	-	2	ns
Max. P <sub>out</sub> TX-DISABLE Asserted	P <sub>OFF</sub>	-	-	-45	dBm
Differential Input Voltage	V <sub>DIFF</sub>	0.4	-	2.0	V

**RECEIVER ELECTRO-OPTICAL CHARACTERISTICS (V<sub>CC</sub> = 3.1V to 3.5V, T<sub>C</sub> = 0°C to 70°C, -10°C to 85°C, -40°C to 85°C)**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Data Rate	B		125		Mbps	
Optical Input Power-Maximum	P <sub>IN</sub>	-4	-	-	dBm	PRBS7, BER<10 <sup>-10</sup>
Receiver Input Power-Minimum (Sensitivity)	P <sub>IN</sub>	-	-	-18	dBm	PRBS7, BER<10 <sup>-10</sup>
Operating Center Wavelength	λ <sub>C</sub>	770	-	860	nm	
Optical Return Loss	ORL	12	-	-	dB	
Signal Detect-Asserted	P <sub>A</sub>	-	-	-18	dBm	
Signal Detect-Deasserted	P <sub>D</sub>	-35	-	-	dBm	
Data Output Rise, Fall time (20~80%)	T <sub>r,f</sub>	-	-	0.35	ns	
Differential Output Voltage	V <sub>DIFF</sub>	0.5	-	1.2	V	
Receiver Loss of Signal Output Voltage-Low	RX_LOS <sub>L</sub>	0	-	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS <sub>H</sub>	2.4	-	V <sub>CC</sub>	V	

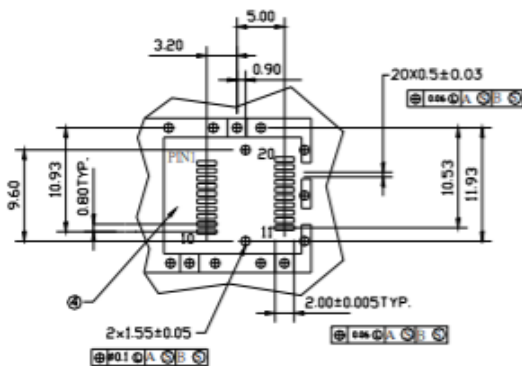
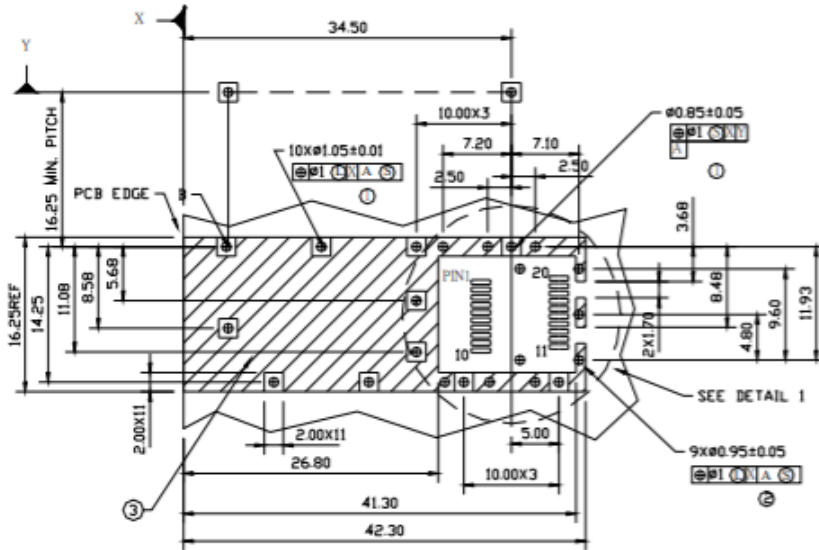
**DIMENSIONS**



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

**SFP HOST BOARD MECHANICAL LAYOUT**

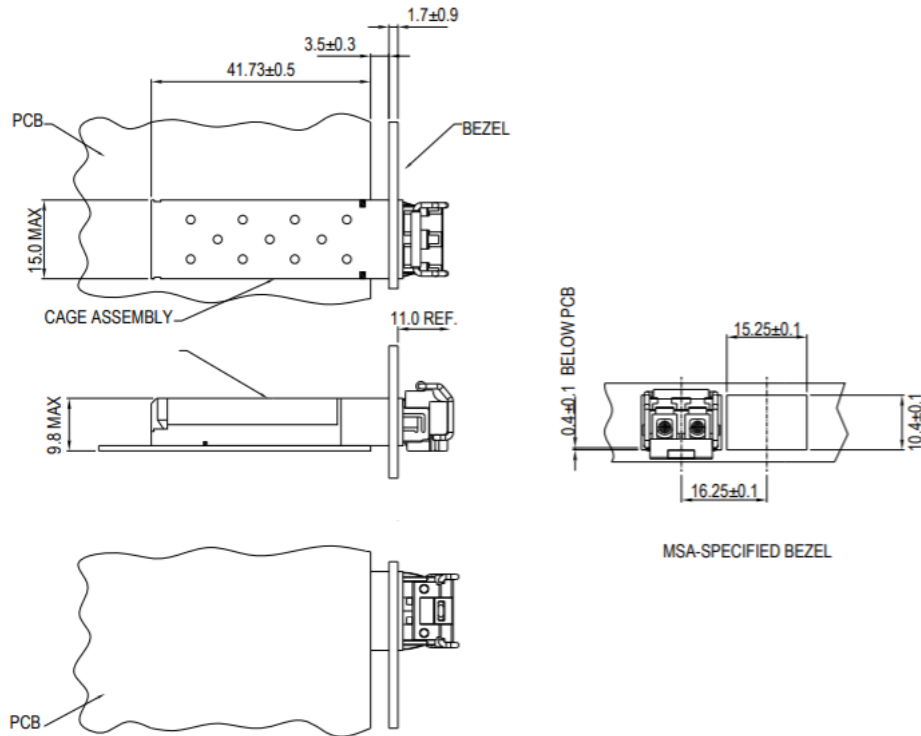


**LEGEND**

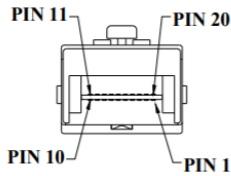
- 1.PADS AND VIAS ARE CHASSIS GROUND
- 2.THROUGH HOLES, PLATING OPTIONAL
- 3.HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
- 4.AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

**ASSEMBLY DRAWING (unit: mm)**



**PIN ASSIGNMENT**



PIN	SIGNAL NAME	DESCRIPTION	PIN	SIGNAL NAME	DESCRIPTION
1	T <sub>GND</sub>	Transmit Ground	11	R <sub>GND</sub>	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 <sub>GND</sub>	Receiver Ground
5	MOD_DEF (1)	SCL Serial Clock Signal	15	V <sub>CCR</sub>	Receiver Power Supply
6	MOD_DEF (0)	TTL Low	16	V <sub>CCT</sub>	Transmitter Power Supply
7	RS0	RX Rate Select, no function implemented	17	T <sub>GND</sub>	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 <sub>GND</sub>	Receiver Ground	20	T <sub>GND</sub>	Transmitter Ground

**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.



**Lasermate Group, Inc.**  
19608 Camino De Rosa  
Walnut, CA 91789 USA  
Tel: (909)718-0999  
Fax: (909)718-0998  
[sales@lasermate.com](mailto:sales@lasermate.com)  
[www.lasermate.com](http://www.lasermate.com)