



25Gbps 850nm MMF 100m SFP28 Optical Transceiver with Duplex LC Connector

CM85-25GF-3S-Tx-L



DESCRIPTION

The CM85-25GF-3S-Tx-L SFP28 optical transceivers are designed for use in Ethernet links up to 25.78Gb/s data rate and provide up to 100m transmission distance over multi-mode fiber at nominal wavelength of 850nm. They are compliant with SFF-8472 diagnostic monitoring interface and compatible with SFP+ MSA SFF-8431. The optical transceiver is RoHS compliant.

FEATURES

- Up to 25.78Gb/s data links
- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface
- Duplex LC connector
- 850nm Oxide VCSEL laser transmitter
- RoHS Compliant
- 100m over M5F MMF (50/125um OM4)
- 70m over M5E MMF (50/125um OM3)
- 1W maximum power consumption
- Single power supply 3.3V
- Input/Output: AC/AC

APPLICATIONS

- 25GBASE-SR

PRODUCT OVERVIEW

PART NUMBER	OPERATING TEMPERATURE
CM85-25GF-3S-TC-L	0°C to 70°C
CM85-25GF-3S-TI-L	-40°C to 85°C

DIAGNOSTICS

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Internal Transceiver Temperature	-40 to 95	±3	°C	Internal
Internal Transceiver Voltage	3.1 to 3.5	±0.1	V	
Bias Current	0 to 15	±10%	mA	
TX Power	-8.4 to +2.4	±3	dB	
RX Average Power	-10 to +2.4	±3	dB	

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

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
Case Operating Temperature	T _C	0	70	°C	CM85-25GF-3S-TC-L
		-40	85		CM85-25GF-3S-TI-L
Supply Voltage	V _{CC}	3.14	3.46	V	
Supply Current	I _{TX} + I _{RX}		300	mA	
Power Consumption	P	-	1.0	W	

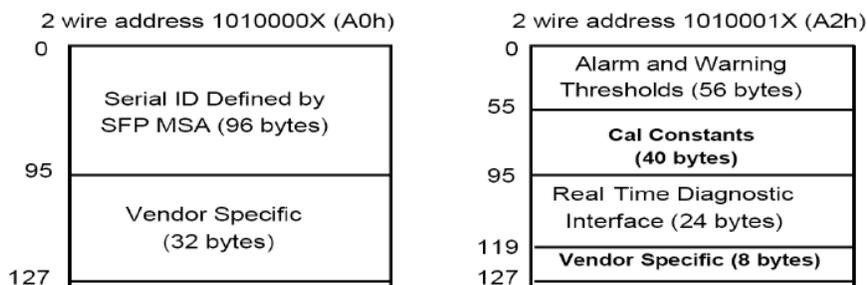
TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.14V to 3.46V, T_C = 0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B	25.5	25.78		Gbps
Output Optical Power (50/125um fiber, NA=0.20) (62.5/125um fiber, NA=0.275)	P _{out}	-8.4	-	2.4	dBm
Optical Modulation Amplitude	OMA	-6.4	-1.5	3	dBm
Extinction Ratio	ER	2			dB
Center Wavelength	λ _C	840	850	860	nm
Spectral Width (RMS)	Δλ	-	-	0.6	nm
Transmitter and Dispersion Penalty	TDP			4.3	dB
Max. P _{out} TX-DISABLE Asserted	P _{OFF}	-	-	-35	dBm
Differential Input Impedance	Z _d		100		Ω
Differential Input Voltage Swing	V _{DIFF}	180		700	mV
Transmit Fault Output-Low	TX_FAULT _L	0.0	-	0.8	V
Transmit Fault Output-High	TX_FAULT _H	2.0	-	V _{CC}	V
TX_DISABLE Assert Time	t _{off}	-	-	100	μs
TX_DISABLE Negate Time	t _{on}	-	-	2	ms
Time to Initialize, include reset of TX_FAULT	t _{init}	-	-	300	ms
TX_FAULT from fault to assertion	t _{fault}	-	-	100	μs
TX_DISABLE Time to start reset	t _{reset}	10	-	-	μs

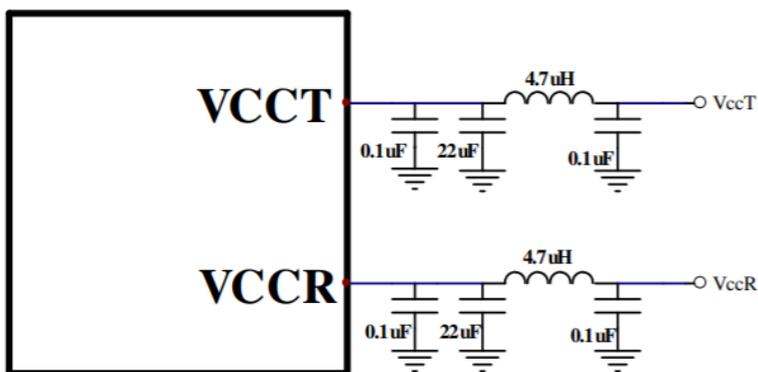
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS ($V_{CC} = 3.14V$ to $3.46V$, $T_C = 0^{\circ}C$ to $70^{\circ}C$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Data Rate	B	25.5	25.78		Gbps	
Damage Threshold		3.4	-	-	dBm	
Receiver Overload	P_{IN}	2.4			dBm	BER<5x10 ⁻⁵
Receiver Sensitivity	P_{IN}	-	-	-10.3	dBm	BER<5x10 ⁻⁵
Stressed Receiver Sensitivity (OMA)	P_{IN}	-	-	-5.2	dBm	BER<5x10 ⁻⁵
Operating Center Wavelength	λ_C	840	-	860	nm	
Optical Return Loss	ORL	12	-	-	dB	
Loss of Signal-Asserted	P_A	-30	-	-	dBm	
Loss of Signal-Deasserted	P_D	-	-	-12	dBm	
Differential Output Impedance	Z_d		100		Ω	
Differential Output Voltage	V_{DIFF}	300	-	800	mV	
Receiver Loss of Signal Output Voltage-Low	RX_LOS _L	0	-	0.8	V	
Receiver Loss of Signal Output-High	RX_LOS _H	2.0	-	V_{CC}	V	
Receiver Loss of Signal Assert Time (off to on)	t_{A,RX_LOS}	-	-	100	μs	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}	-	-	100	μs	

DIGITAL DIAGNOSTIC MEMORY MAP

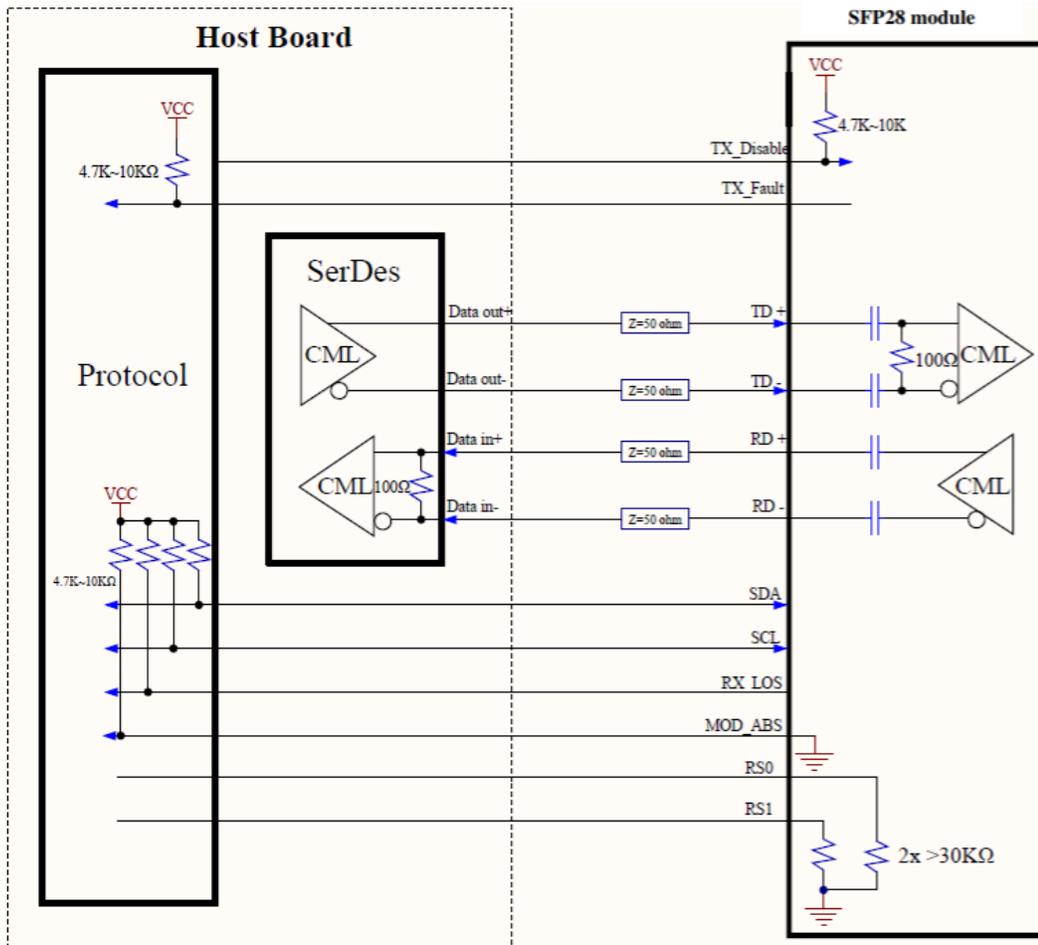


RECOMMENDED INTERFACE CIRCUIT (Part 1)

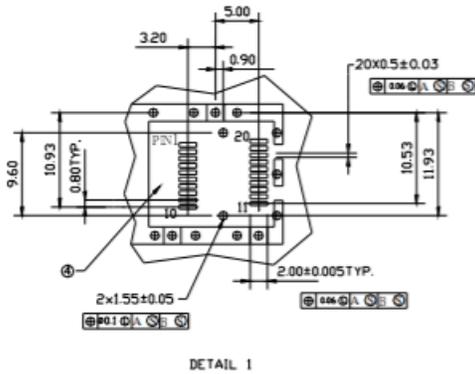
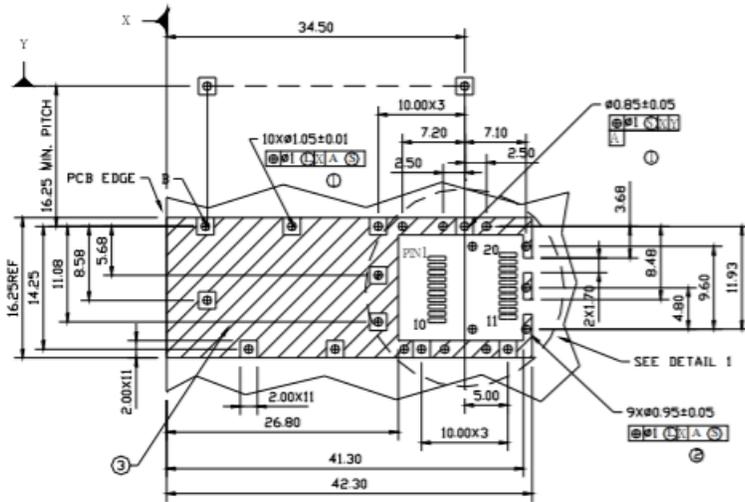


SFP28 module

RECOMMENDED INTERFACE CIRCUIT (Part 2)



SFP HOST BOARD MECHANICAL LAYOUT



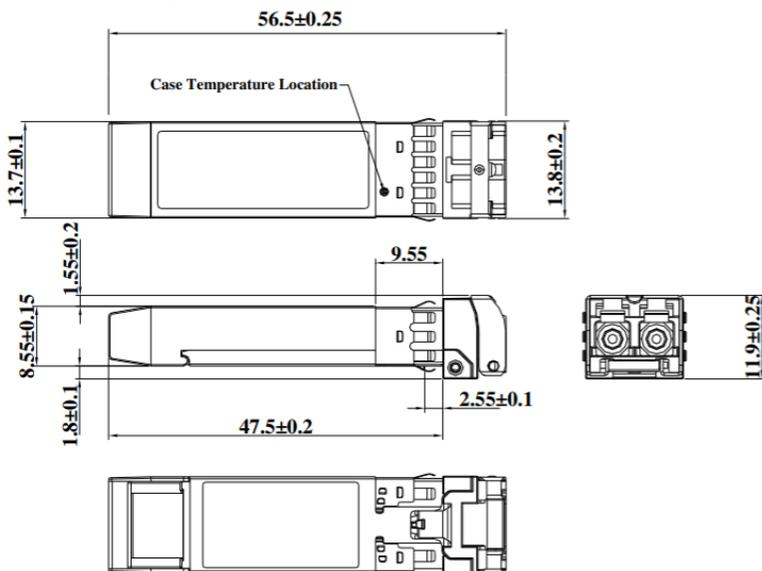
LEGEND

- 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)

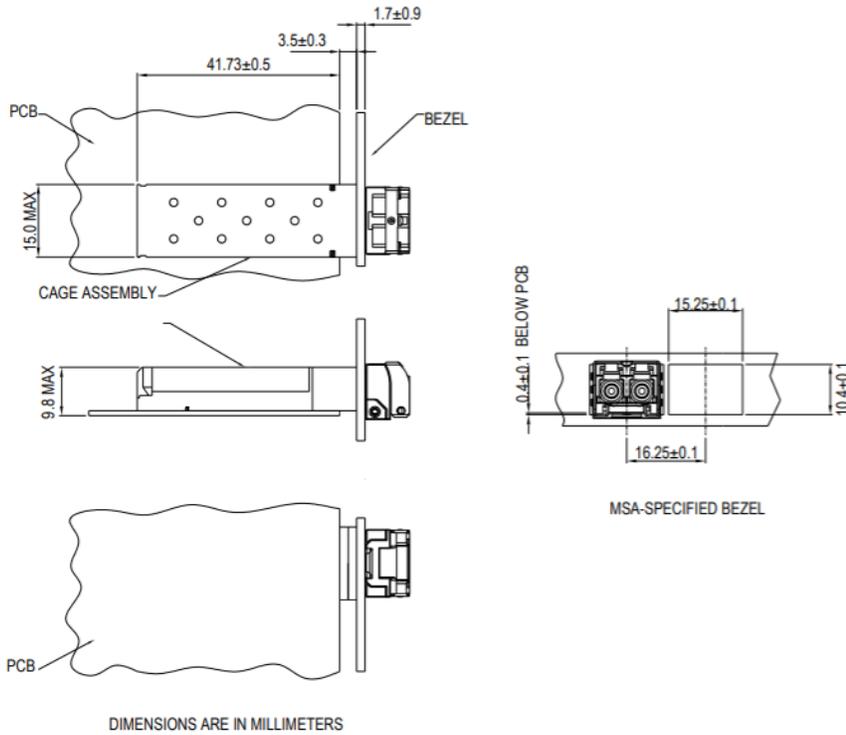
DIMENSIONS ARE IN MILLIMETERS

Unit: mm

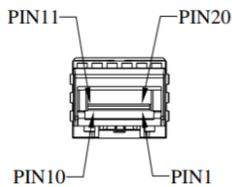
DIMENSIONS (unit: mm)



ASSEMBLY DRAWING



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 out Bar, ac coupled
3	TX_DISABLE	Transmit Disable	13	RX+	Receive Data out, 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)	LVTTTL Low	16	V _{CCT}	Transmitter Power Supply
7	RS0	RX Rate Select, No used	17	T _{GND}	Transmitter Ground
8	RX_LOS	Receiver Loss of Signal, LVTTTL High, open drain	18	TX+	Transmit Data in, ac coupled
9	RS1	TX Rate Select, No used	19	TX-	Transmit Data in Bar, ac coupled
10	R _{GND}	Receiver Ground	20	T _{GND}	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.



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