



25Gbps 1310nm SMF 40km SFP28 Optical Transceiver with Duplex LC Connector

Model No. CS13-25GF-3L-Tx-L

FEATURES

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface
- Duplex LC connector
- Single power supply 3.3V
- Hot pluggable
- EML laser and APD receiver
- Support CPRI line bit rate option 10: 24330.24 Mbit/s
- Class 1 laser product compliant with EN 60825-1
- Link distance up to 40km single mode fiber



DIAGNOSTICS

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Internal Transceiver Temperature	-40 to 85	±3	°C	Internal
Internal Transceiver Voltage	3.14 to 3.46	±0.1	V	
Bias Current	0 to 120	±10%	mA	
TX Power	-1 to +6	±3	dB	
RX Average Power	-5 to -19	±3	dB	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Storage Temperature	T _s	-40	85	°C
Supply Voltage	V _{CC}	-0.4	3.6	V
Operating Relative Humidity	RH	5	85	%

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
Case Operating Temperature	T _c	0	70	°C	CS13-25GF-3L-TC-L
		-40	85		CS13-25GF-3L-TI-L
Supply Voltage	V _{CC}	3.14	3.46	V	CS13-25GF-3L-TC-L
Supply Current @ 3.3V	I _{TX} + I _{RX}		462	mA	CS13-25GF-3L-TI-L
			578		
Power Consumption @ 3.3V	P		1.6	W	CS13-25GF-3L-TC-L
			2		CS13-25GF-3L-TI-L

Lasermate Group, Inc.

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TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS ($V_{CC} = 3.14V$ to $3.46V$, $T_C = 0^{\circ}C$ to $70^{\circ}C$, $-40^{\circ}C$ to $85^{\circ}C$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B	24	25.78	26.5	Gbps
Average Launch Power	P_{IN}	-1	-	+6	dBm
Optical Modulation Amplitude (OMA)	P_{oma}	0		+6	dBm
Extinction Ratio	ER	6.5			dB
Center Wavelength	λ_c	1300	1310	1320	nm
Spectral Width (-20dB)	$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio	SMSR	30			dB
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	-	-	-45	dBm
Transmitter and Dispersion Penalty	TDP			2.7	dB
OMA-TDP		-1			dBm
Differential Input Voltage	V_{DIFF}	200		1000	mV
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}	-	-	100	μs
TX_DISABLE Negate Time	t_{on}	-	-	2	ms
Time to Initialize, include reset of TX_FAULT	t_{init}	-	-	300	ms
TX_FAULT assert for cooled module	t_{fault}	-	-	50	ms
TX_DISABLE Time to start reset	t_{reset}	10	-	-	μs

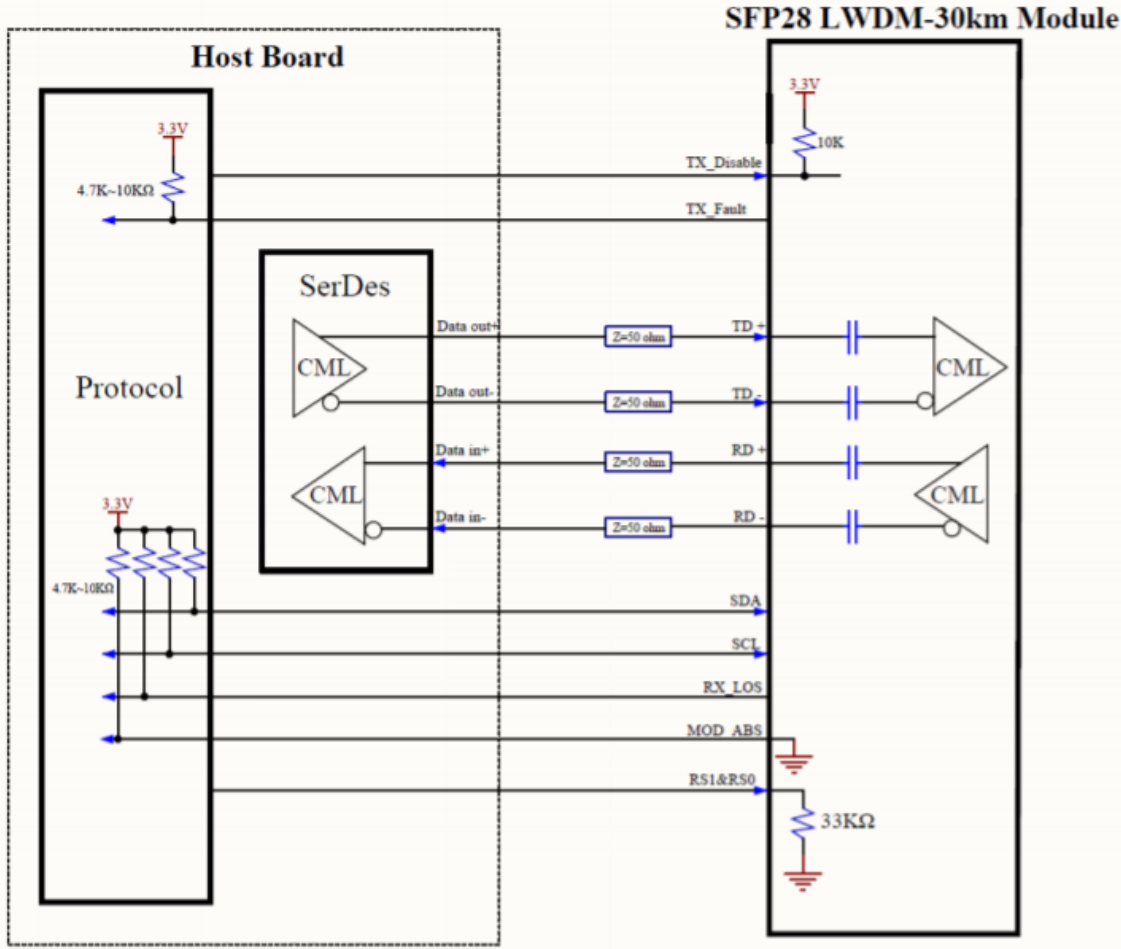
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS ($V_{CC} = 3.14V$ to $3.46V$, $T_C = 0^{\circ}C$ to $70^{\circ}C$, $-40^{\circ}C$ to $85^{\circ}C$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Data Rate	B	24	25.78	26.5	Gbps	
Optical Input Power-Maximum	P_{IN}	-5	-	-	dBm	
Receiver Sensitivity (OMA)	P_{IN}	-	-	-19	dBm	@BER=5E-5
Stressed Receiver Sensitivity (OMA)	P_{IN}	-	-	-6.8	dBm	
Operating Center Wavelength	λ_c	1270	-	1330	nm	
Optical Return Loss	ORL	26	-	-	dB	
Channel Insertion Loss				18	dB	(1)
Loss of Signal-Asserted	P_A	-35	-	-	dBm	
Loss of Signal-Deasserted	P_D	-	-	-20	dBm	
Differential Output Voltage	V_{DIFF}	500	-	1000	mV	
Receiver Loss of Signal Output Voltage-Low	RX_LOS _L	0	-	0.5	V	
Receiver Loss of Signal Output-High	RX_LOS _H	2.4	-	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	
Time to initialize	t_{start_up}			10	s	

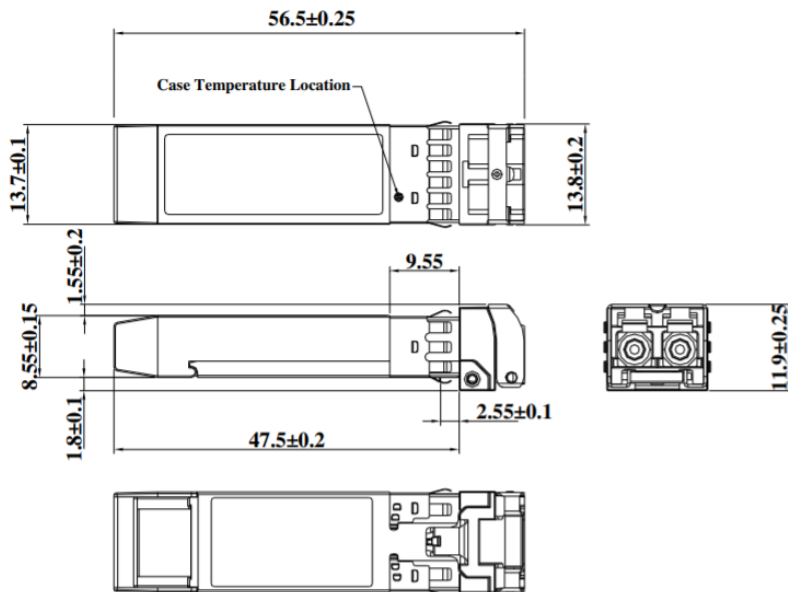
Note (1): Attenuation for such links needs to be less than the worst case for cables containing IEC 60793-2-50 type B1.1, type B1.3, or type B6_a single-mode cabled optical fiber.



BLOCK DIAGRAM OF TRANSCEIVER



DIMENSIONS (unit: mm)



**The bail color is red.

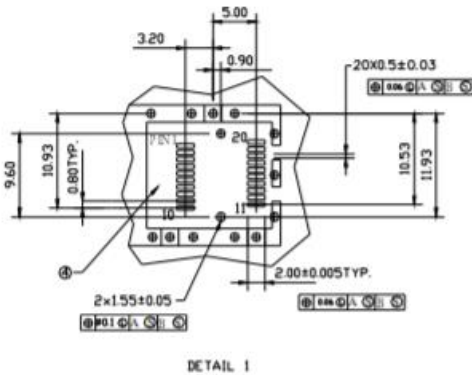
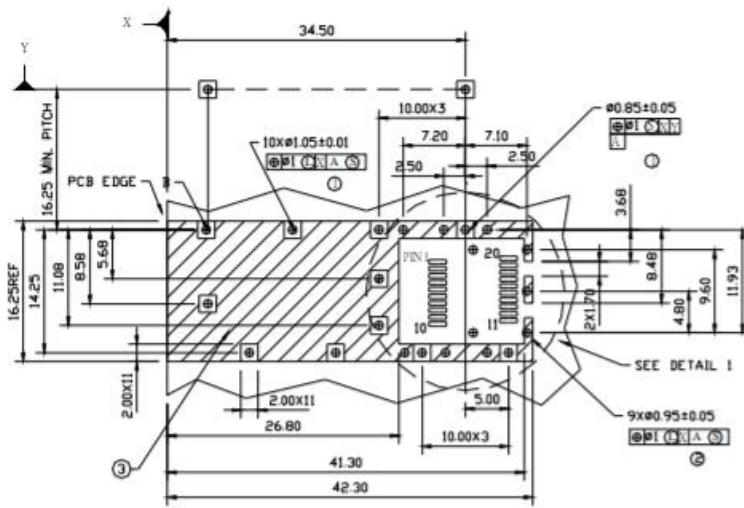
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SFP HOST BOARD MECHANICAL LAYOUT



LEGEND

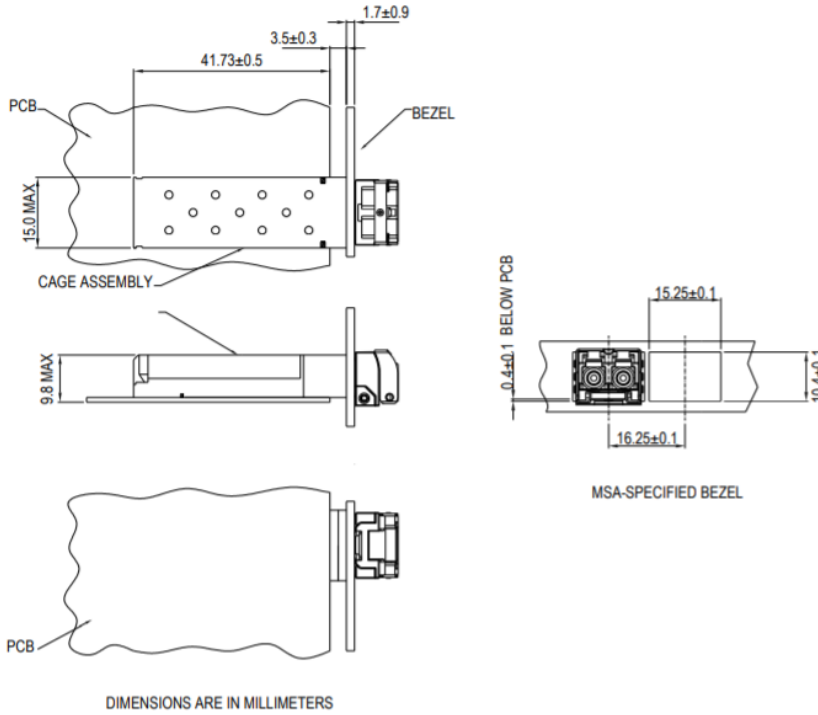
- 1. PADS AND VIAS ARE CHASSIS GROUND
- 2. THROUGH HOLES, PLATING OPTIONAL
- 3. HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT (EXCEPT CHASSIS GROUND)
- 4. AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

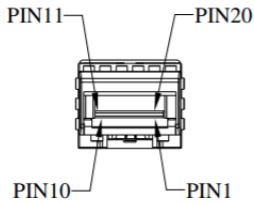
Unit: mm



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 Bar, ac coupled
3	TX_DISABLE	Transmit Disable	13	RX+	Receive Data, ac coupled
4	SDA	SDA Serial Data Signal	14	R _{GND}	Receiver Ground
5	SCL	SCL Serial Clock Signal	15	V _{CCR}	Receiver Power Supply
6	MOD_ABS	Internal connected to ground	16	V _{CCT}	Transmitter Power Supply
7	RS0	Rate select 0, not used (2)	17	T _{GND}	Transmitter Ground
8	RX_LOS	Receiver Loss of Signal, LVTTTL High, open collector	18	TX+	Transmit Data, ac coupled
9	RS1	Rate select 1, not used (2)	19	TX-	Transmit Data Bar, ac coupled
10	R _{GND}	Receiver Ground	20	T _{GND}	Transmitter Ground

Note (2): RS0 and RS1 are module inputs and are pulled low to VeeT with >30kΩ resistors in the module.



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The Friend of Lasers



ORDERING INFORMATION

PART NUMBER	OPERATING TEMPERATURE
CS13-25GF-3L-TC-L	0°C to 70°C
CS13-25GF-3L-TI-L	-40°C to 85°C

Note: The specifications subject to change without notice.

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