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Data Sheet
Rev 01.1220

25Gbps 1310nm SMF 10km SFP28 Optical Transceiver with Duplex LC Connector

CS13-25GF-3S-Tx-L

DESCRIPTION

The CS13-25GF-3S-Tx-L SFP28 optical transceivers are designed for use in Ethernet links up to 25.78Gb/s data rate and provide up to 10km transmission distance over single-mode fiber at nominal wavelength of 1310nm. 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 25.78 Gb/s data links
- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface
- Duplex LC connector
- Single power supply 3.3V
- Hot pluggable
- Link distance up to 10km over single mode fiber
- Input/Output: AC/AC

APPLICATIONS

- 25GBASE-LR

PRODUCT OVERVIEW

PART NUMBER	OPERATING TEMPERATURE
CS13-25GF-3S-TC-L	0°C to 70°C
CS13-25GF-3S-TI-L	-20°C to 85°C

DIAGNOSTICS

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Internal Transceiver Temperature	-20 to 85	±3	°C	Internal
Internal Transceiver Voltage	3.1 to 3.5	±0.1	V	
Bias Current	0 to 30	±10%	mA	
TX Power	-4 to +2	±3	dB	
RX Average Power	-12 to +0	±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	CS13-25GF-3S-TC-L
		-20	85		CS13-25GF-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	

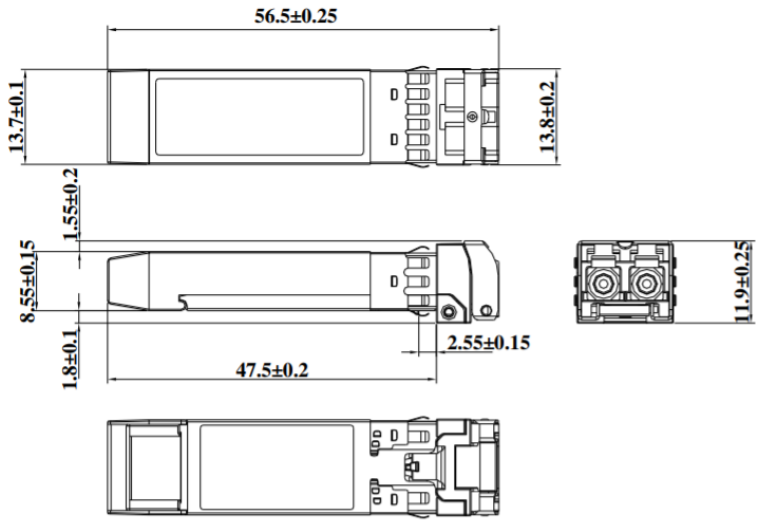
TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.14V to 3.46V, T_C = 0°C to 70°C (T_C = -20°C to 85°C))

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B	25.5	25.78		Gbps
Average Output Optical Power	P_{out}	-4	-	+2	dBm
Extinction Ratio	ER	3.5			dB
Center Wavelength	λ_C	1290	1310	1330	nm
Spectral Width (RMS)	$\Delta\lambda$	-	-	1	nm
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

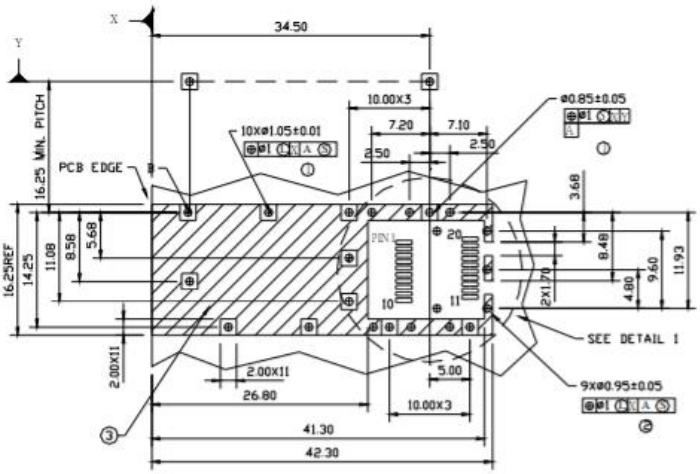
RECEIVER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.14V to 3.46V, T_C = 0°C to 70°C (T_C = -20°C to 85°C))

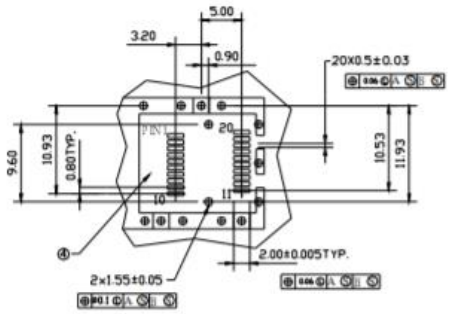
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Data Rate	B	25.5	25.78		Gbps
Receiver Sensitivity (OMA)	P_{IN}	-	-	-11.5	dBm
Stressed Receiver Sensitivity (OMA)	P_{IN}	-	-	-6.8	dBm
Operating Center Wavelength	λ_C	1260	-	1360	nm
Optical Return Loss	ORL	12	-	-	dB
Loss of Signal-Asserted	P_A	-25	-	-	dBm
Loss of Signal-Deasserted	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

DIMENSIONS (unit: mm)



SFP HOST BOARD MECHANICAL LAYOUT





DETAIL 1

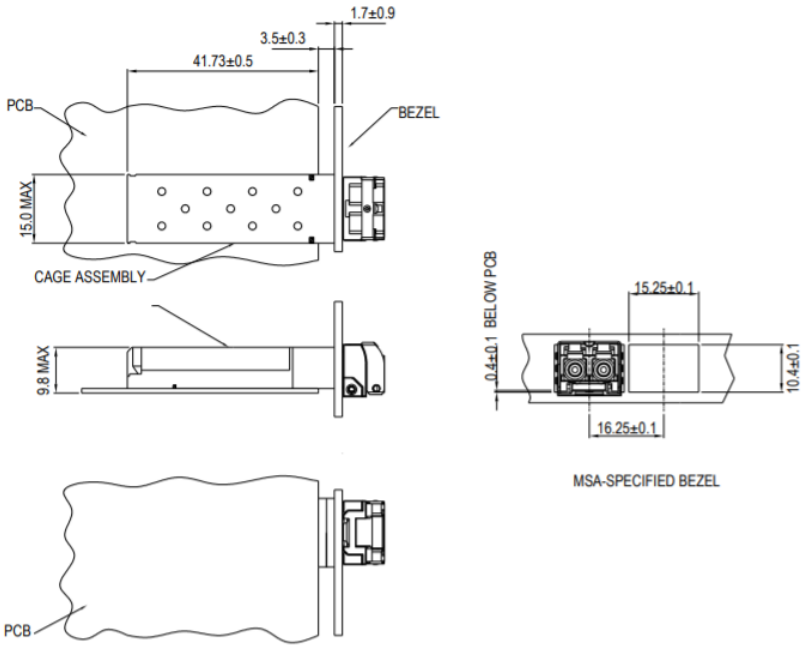
LEGEND

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

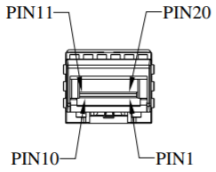
ASSEMBLY DRAWING



MSA-SPECIFIED BEZEL

DIMENSIONS ARE IN MILLIMETERS

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)	TTL 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, TTL High, open collector	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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