



1.25Gbps TX:1310nm/RX:1550nm MMF 550m BiDi SFP LC Optical Transceiver

CM3T5-24H-3S-Tx-L



DESCRIPTION

The CM3T5-24H-3S-Tx-L is a high-performance BiDi SFP optical transceiver designed for duplex data communication over multimode fiber (MMF). It supports a data rate of 1.25Gbps with a 1310nm transmitter (TX) and 1550nm receiver (RX), enabling up to 550 meters of transmission distance. Housed in a standard SFP package with an LC simplex connector, this module offers low power consumption and high reliability, making it ideal for Fast Ethernet and Gigabit Ethernet applications in networking and data center environments.

FEATURES

- Industry standard small form pluggable (SFP) package
- Simplex LC connector
- Single power supply 3.3V
- Differential LVPECL inputs and outputs
- TTL signal detect indicator
- Hot pluggable
- Class 1 laser product compliant with EN 60825-1
- Input/Output: AC/AC
- Signal Detect: TTL
- LD Type: 1310 FP

APPLICATIONS

- Multi-mode core fiber backbone links up to 550m
- 1000Base Bidi

PRODUCT OVERVIEW

PART NUMBER	OPERATING TEMPERATURE
CM3T5-24H-3S-TC-L	0°C to 70°C
CM3T5-24H-3S-TI-L	-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 90	±10%	mA	
TX Power	-10 to +2	±3 dB	dBm	
RX Power	-18 to 0	±3 dB	dBm	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
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	CM3T5-24H-3S-TC-L
		-40	85		CM3T5-24H-3S-TI-L
Supply Voltage	V _{CC}	3.1	3.5	V	
Supply Current	I _{TX} + I _{RX}		250	mA	

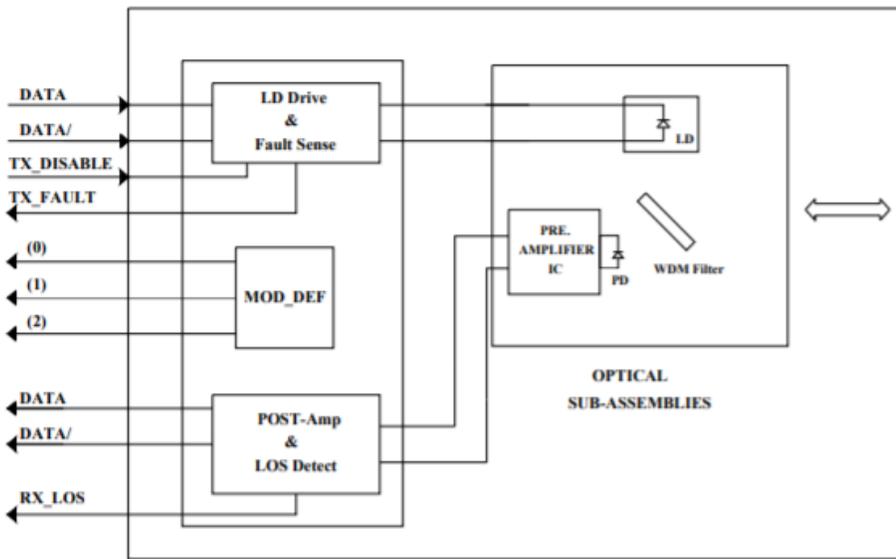
TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.1V to 3.5V, T_C = 0°C to 70°C, -40°C to 85°C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Output Optical Power 62.5/125um fiber	P _{out}	-8	-	0	dBm	Average
Extinction Ratio	ER	9	-	-	dB	
Center Wavelength	λ _c	1260	1310	1360	nm	
Spectral Width (RMS)	Δλ	-	-	4.0	nm	
Rise/Fall Time (20%~80%)	T _{r,f}	-	-	260	ps	
Total Jitter	TJ	-	-	227	ps	
Output Eye	Compliant with IEEE802.3z					
Max. P _{out} TX-DISABLE Asserted	P _{OFF}	-	-	-45	dBm	
Differential Input Voltage	V _{DIFF}	0.4	-	2.0	V	

RECEIVER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.1V to 3.5V, T_C = 0°C to 70°C, -40°C to 85°C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Optical Input Power-Maximum	P _{IN}	0	-	-	dBm	BER<10 ⁻¹²
Optical Input Power-Minimum (Sensitivity)	P _{IN}	-	-	-18	dBm	BER<10 ⁻¹²
Operating Center Wavelength	λ _C	1480	-	1580	nm	
Optical Return Loss	ORL	14	-	-	dB	λ=1480~1580nm
Optical Isolation	ISO	-	-	-40	dB	λ=1260~1360nm
Loss of Signal-Asserted	P _A	-	-	-18	dBm	
Loss of Signal-Deasserted	P _D	-35	-	-	dBm	
Differential Output Voltage	V _{DIFF}	0.5	-	1.2	V	
Data Output Rise, Fall Time (20%~80%)	T _{r,f}	-	-	0.35	ns	
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	

BLOCK DIAGRAM OF TRANSCEIVER

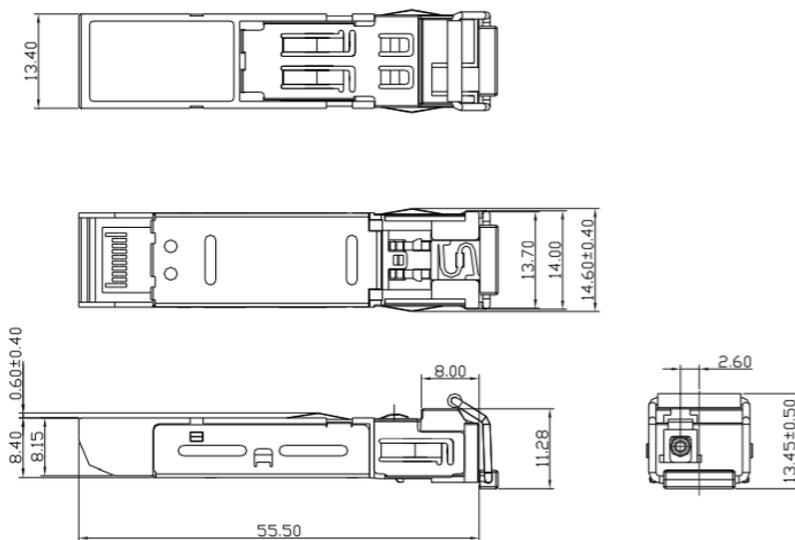


Transmitter and Receiver Optical Sub-Assembly Section - A 1310 nm InGaAsP laser and an InGaAs PIN photodiode integrate with an WDM filter to form a bi-directional single fiber optical subassembly (OSA). The laser of OSA is driven by a LD driver IC which converts differential input LVPECL logic signals into an analog laser driving current. The photodiode of OSA is connected to a circuit providing post-amplification quantization, and optical signal detection.

TX_DISABLE - The TX_DISABLE signal is high (TTL logic “1”) to turn off the laser output.

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.

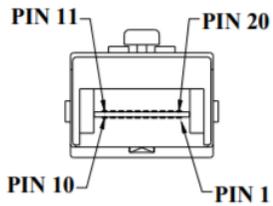
DIMENSIONS



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

PIN ASSIGNMENT



Pin	Signal Name	Description
1	T_{GND}	Transmit Ground
2	TX_FAULT	Transmit Fault
3	$TX_DISABLE$	Transmit Disable
4	$MOD_DEF (2)$	SDA Serial Data Signal
5	$MOD_DEF (1)$	SCL Serial Clock Signal
6	$MOD_DEF (0)$	TTL Low
7	$RATE_SELECT$	Open Circuit
8	RX_LOS	Receiver Loss of Signal, TTL High, open collector
9	R_{GND}	Receiver Ground
10	R_{GND}	Receiver Ground
11	R_{GND}	Receiver Ground
12	$RX-$	Receive Data Bar, Differential PECL, ac coupled
13	$RX+$	Receive Data, Differential PECL, ac coupled
14	R_{GND}	Receiver Ground
15	V_{CCR}	Receiver Power Supply
16	V_{CCT}	Transmitter Power Supply
17	T_{GND}	Transmitter Ground
18	$TX+$	Transmit Data, Differential PECL, ac coupled
19	$TX-$	Transmit Data Bar, Differential PECL, ac coupled
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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