Spec No.:EAVN05

TECHNICAL SPECIFICATION

ZMLP-1xxLRNC

Version	Date	Prepared Designer	Reviewed Supervisor	Approved Branch manager	Accepted
V1.0	2026-5-25	Yang Ying	Li Huangong	Zheng Qifei	

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1. General

The transceiver is a dual-fiber bidirectional module intended for 10km reach service to 25.78125Gb/s single mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device supports Digital Diagnostic Monitoring (DDM) and is Class I laser safey compliant.The module provides differential termination and reduce differential to common mode conversion for quality signal termination and low EMI.

2. Features

- •Up to 10km transmission distance
- • 25.78125Gb/s data links
- •Single 3.3V Power supply
- •Low DC power consumption
- •Hot-Pluggable SFP28 footprint
- •Duplex LC Connector
- •High performance DML laser
- •High sensitivity PIN/TIA optical receiver
- •Single Mode operation
- •BER < $5X10^{-5}$
- •Built-in CDR
- •Case Operating temperature ranges:0 to 70ºC
- •ROHS compliance

3. Applications

- • 25G BASE Ethernet
- • CPRI 25G

4. Standards

- • Compliant to IEEE 802.3cc
- • Compliant to SFF-8431
- • Compliant to SFF-8472
- • Compliant to SFF-8432

5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature	T_{stg}	-40	85	ºC
Case Operating Temperature	T_C	0	70	ºC
Relative Humidity - Storage	RH_S	5	95	%
Relative Humidity - Operating	RH_O	5	85	%
DC Supply Voltage	V_{CC}	0	3.6	V

6. Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units	Notes
Case Operating Temperature	T_C	0	-	70	°C	C-Temp
DC Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Module Supply Current	I_{CC}	-	-	350	mA	
Maximum Power Dissipation	P_D	-	-	1.5	W	
Two Wire Serial Interface Clock Rate	Rclock	-	-	400	kHz	

7. Transmitter And Low Speed Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Notes
Differential Data Input Amplitude	V_{IN}	-	-	900	mVpp	
Tx Differential Input Impendence	Z_{IN}	-	100	-	Ω	
Tx_Fault, Rx_LOS	V_{OL}	-0.3	-	0.4	V	
	I_{OH}	-50	-	37.5	μA	
Tx_Disable, RS0, RS1	V_{IL}	-0.3	-	0.8	V	
	V_{IH}	2.0	-	V_{CC}T+0.3	V	

8. Receiver Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Notes
Differential Data Output Amplitude	V_{OUT}	-	-	900	mVpp	
Rx Differential Output Impendence	Z_{OUT}	-	100	-	Ω	

9. Transmitter Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Signaling rate	DR	25.78125 ± 100 ppm			Gbps	
Optical Modulation Amplitude (OMA)	Po	-1	-	+6	dBm	1
Center wavelength	λ	1264.5	1271	1277.5	nm	ZMLP-127LRNC
		1284.5	1291	1297.5		ZMLP-129LRNC
		1304.5	1311	1317.5		ZMLP-131LRNC
		1324.5	1331	1337.5		ZMLP-133LRNC
		1344.5	1351	1357.5		ZMLP-135LRNC
		1346.5	1371	1377.5		ZMLP-137LRNC
Extinction Ratio	ER	3.5	-	-	dB	2
Spectral width(-20dB)	Δλ	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Optical Return Loss Tolerance	ORLT	-	-	20	dB	
Average launch power of OFF transmitter	Poff	-	-	-30	dBm	1
$RIN_{20}OMA$	RIN	-	-	-130	dB/Hz	
Eye Mask {X1, X2, X3, Y1, Y2, Y3}	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					

Notes :

1. The optical power is launched into SMF.

2. Measured with a PRBS31 test pattern @25.78125Gbps.

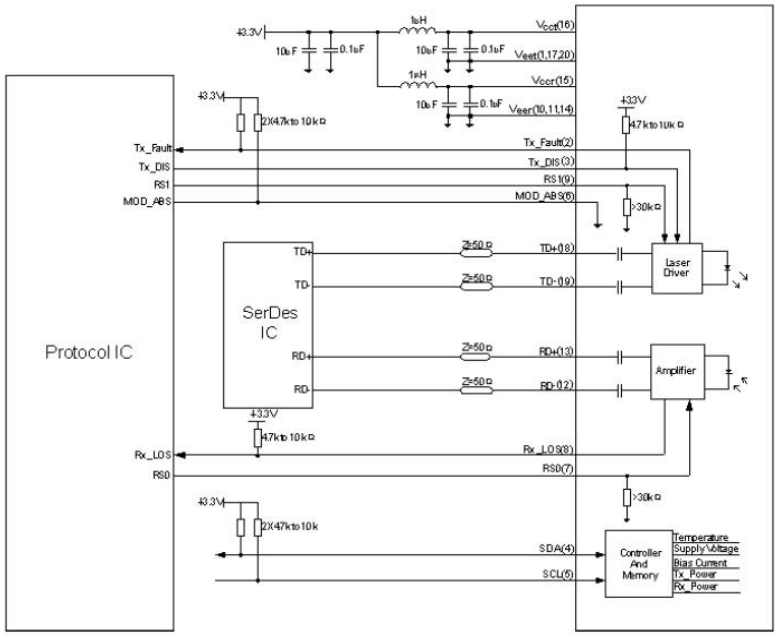
10. Receiver Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Signaling rate	DR	25.78125 ± 100 ppm			Gbps	
Center Wavelength	λ	1260	-	1620	nm	
Receiver Sensitivity (OMA)	Sen	-	-	-14.4	dBm	1
Optical Power Overload	PIN	2	-	-	dBm	
Damage threshold	P_D	3	-	-	dBm	
LOS De-Assert	LOS_D	-	-	-15	dBm	
LOS Assert	LOS_A	-30	-	-	dBm	
LOS Hysteresis	-	0.5	-	5	dB	

Notes :

1.Measured at 25.78125Gb/s with PRBS31 NRZ test pattern for BER < $5x10^{-5}$;

11. Typical Application Circuit



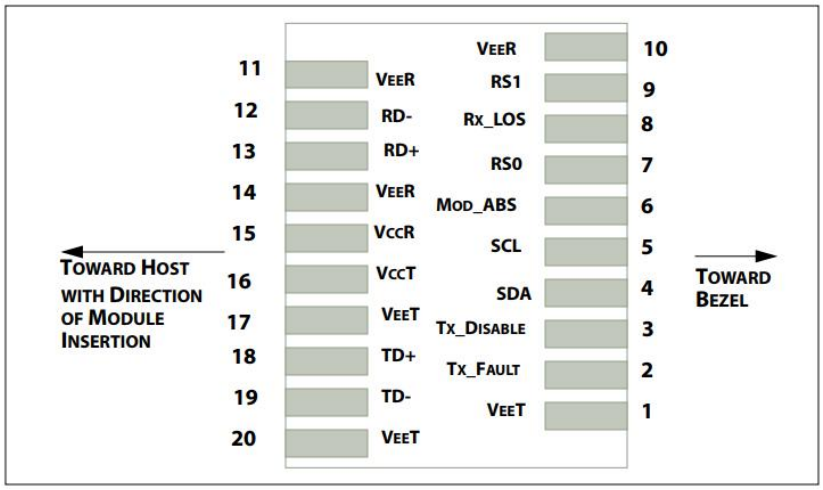
Recommended Application Interface Block Diagram

12. Pin Description

Pin	Name	Function/Description	Notes
1	VeeT	Transmitter Ground	
2	Tx_Fault	Transmitter Fault Indication	1
3	Tx_Disable	Transmitter Disable-Module disables on high or open	
4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	
6	Mod_ABS	Module Absent, connected to VEET	
7	RS0	Rx Rate Select	2
8	Rx_LOS	Loss of Signal indication. Logic 0 indicates normal operation.	1
9	RS1	Tx Rate Select	2
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
12	RD-	Receiver Inverted DATA out	3
13	RD+	Receiver Non-inverted DATA out	3
14	VeeR	Receiver Ground	
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	
18	TD+	Transmitter Non-Inverted DATA in	4
19	TD-	Transmitter Inverted DATA in	4
20	VeeT	Transmitter Ground	

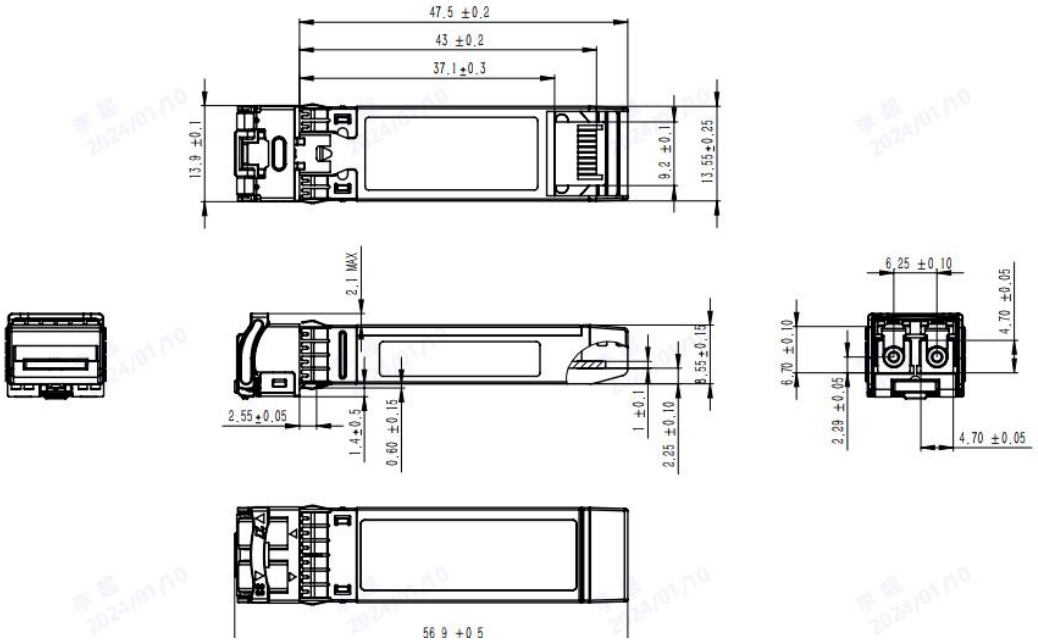
Notes:

1. Shall be pulled up with 4.7kΩ-10kΩ to a voltage between 3.15V and 3.6V on the host board.
2. The pins are pulled low to VEET with a >30k resistor in the module.
3. The 100Ω differential Rx Data output is internally AC coupled and terminated.
4. The 100Ω differential Tx Data input is internally AC coupled and terminated.



SFP28 pad assignment top view

13. Mechanical Dimensions(Unit: mm)



Outline Drawing

Notes:

1. Tolerance: +/-0.1mm.
2. Light port according with fiber connector SPEC.
3. The housing is made of zinc alloy, and the pull ring is made of stainless steel.

14. Ordering Information

Part Number	Specifications						
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	Rx	Sen (dBm)	Tc (℃)
ZMLP-127LRNC	SFP28	25.78125	1271	-1~+6	PIN/TIA	<-14.4	0~+70
ZMLP-129LRNC	SFP28	25.78125	1291	-1~+6	PIN/TIA	<-14.4	0~+70
ZMLP-131LRNC	SFP28	25.78125	1311	-1~+6	PIN/TIA	<-14.4	0~+70
ZMLP-133LRNC	SFP28	25.78125	1331	-1~+6	PIN/TIA	<-14.4	0~+70
ZMLP-135LRNC	SFP28	25.78125	1351	-1~+6	PIN/TIA	<-14.4	0~+70
ZMLP-137LRNC	SFP28	25.78125	1371	-1~+6	PIN/TIA	<-14.4	0~+70

15. Revision History

Revision	Date	Change information
V1.0	2026-5-25	New Release

16. Warnings

Handing Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Please follow guidelines according to proper ESD procedures.

Laser Safety:

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

Notice:

The information provided on this page contains the product target specifications which are subject to change without notice. For more information ,please check with your ZTT Sales Office for product updates, changes in specifications, sample availability and products release dates.