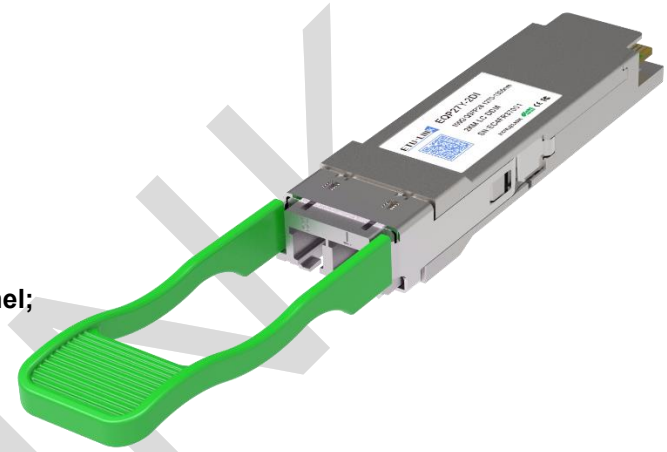
EQP27Y-2D(I)-D

QSFP28 100Gb/s Single-mode 2km DDM Transceiver



PRODUCT FEATURES

- Support line rates from 103.125 Gbps;
- Transmission data rate up to25.78（NRZ） per channel;
- Up to 2km transmission on single mode fiber;
- High speed I/O electrical interface (CAUI-4);
- I2C interface with integrated Digital Diagnostic monitoring;
- QSFP28 MSA package with duplex LC connector;
- Single +3.3V power supply; Dissipation:

  Commercial(0~70)：< 4W

  Industrial(-40~85)：<5W
- Complies with EU Directive 2015/863/EU;

APPLICATIONS

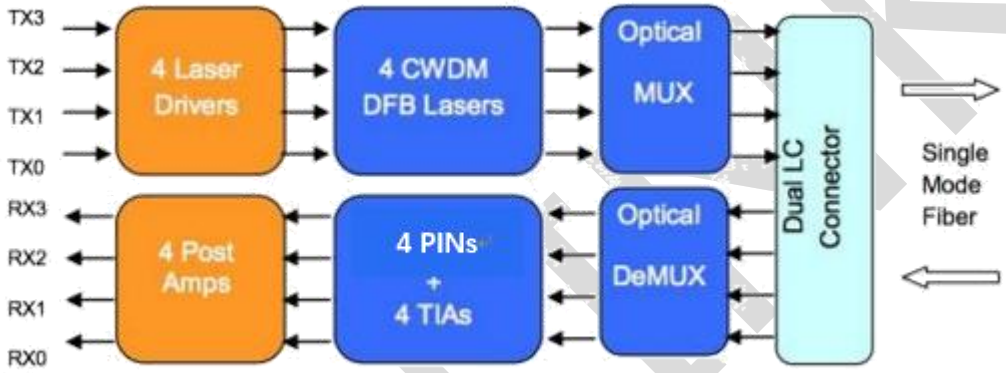
- 100GBASE- CWDM4 Ethernet
- 100G Datacom& Telecom connections

ETU-LINK

DESCRIPTIONS

100G QSFP LR4 Transceiver is designed for 2km optical communication applications. This module contains 4-lane optical transmitter, 4-lane optical receiver and module management block including 2 wire serial inter-face. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector.

Module Block Diagram



Ordering Information

Part No.	Data Rate(optical)	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI	Latch Color
EQP27Y-2D-D	103.125	DML	SMF	2km	LC	0~70	Yes	Green
EQP27Y-2DI-D	103.125	DML	SMF	2km	LC	-40~85	Yes	Green

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Maximum Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity	RH		85	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case	Top	0		+70	°C	EQP27Y-2D-D

Temperature		-40		+85		EQP27Y-2DI-D
Power Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Power Supply Current	I_{CC}			1.21	A	EQP27Y-2D-D
				1.51	A	EQP27Y-2DI-D
Maximum Power Dissipation	P_D			4	W	EQP27Y-2D-D
				5		EQP27Y-2DI-D
Aggregate Bit Rate	BR_{AVE}		103.125		Gb/s	
Lane Bit Rate	BR_{LANE}		25.78125		Gb/s	
Transmission Distance	TD			2	km	
Coupled fiber	Single mode fiber					9/125um SMF

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter (Module Input)						
Data Rate, each lane			25.78125		Gbps	
Differential Voltage pk-pk	Vpp			900	mV	1
Common Mode Voltage	Vcm	-350		2850	mV	
Transition time	Trise/Tfall	10			ps	2
Receiver (Module Output)						
Data Rate, each lane			25.78125		Gbps	
Common Mode Noise, RMS	Vrms			17.5	mV	
Differential output voltage swing	Vout, pp			900	mV	
Eye width	EW15	0.57			UI	
Eye height	EH15	228			mV	
Differential Termination Resistance Mismatch				10	%	1
Transition time	Trise/Tfall	12			ps	

Notes:

1. At 1 MHz.
2. 20%~80%.

Optical and Characteristics

Specifications for 100Gbase-LR4

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane			25.78125		Gbps	

Lane Wavelength	L0	1264.5	1271	1277.5	nm	
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	
Total Average Launch Power	P_T			10.5	dBm	1
Average Launch Power per Lane,	Pavg	-4.3		4.5	dBm	1
OMA, each Lane	P_{OMA}	-1.3		4.5	dBm	1
Difference in launch power between any two lanes(Average and OMA) between any Two Lanes (OMA)	Ptx,diff			3	dB	
Average Output Power (Laser Turn off)	P_{off}			-30	dBm	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	4			dB	
$RIN_{20}OMA$	RIN			-130	dB/Hz	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter Reflectance	R_T			-12	dB	
Optical Eye Mask	{0.25,0.4, 0.45, 0.25, 0.28, 0.4}				%	2
Receiver						
Signaling rate, each lane			25.78125		Gbps	
Center Wavelength Lane 0	λ0	1264.5	1271	1277.5	nm	
Center Wavelength Lane 1	λ1	1284.5	1291	1297.5	nm	
Center Wavelength Lane 2	λ2	1304.5	1311	1317.5	nm	
Center Wavelength Lane 3	λ3	1324.5	1331	1337.5	nm	
Damage threshold , each lane	Pdamage	5.5			dBm	
Average Receive Power, each lane		-10.6		4.5	dBm	
Receiver Sensitivity (OMA) per Lane	SEN			-8.6	dBm	3
Los Assert	LosA	-30			dBm	
Los De-assert	LosDA			-12	dBm	
Los Hysteresis	LosH	0.5			dB	

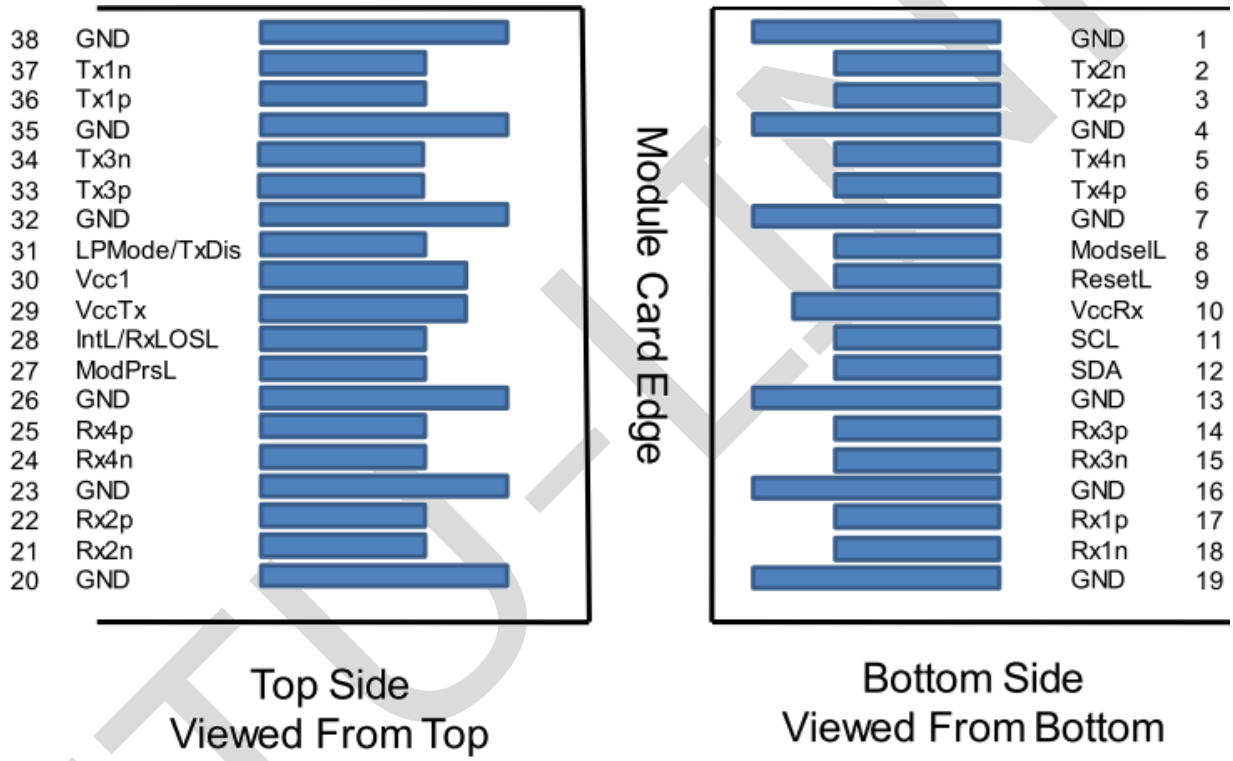
Note:

1. The optical power is launched into SMF.
2. Measured with a PRBS 231-1 test pattern @25.78125, Hit ratio≤5E-5.
3. Measured with a PRBS 231-1 test pattern @25.78125 Gb/s, BER≤1E-12.

Digital Diagnostics

Parameter	Range	Unit	Accuracy	Calibration
Temperature	-40 to +85	°C	±3°C	Internal / External
Voltage	3.0 to 3.6	V	±3%	Internal / External
Bias Current	30 to 100	mA	±10%	Internal / External
TX Power	-4.3 to 4.5	dBm	±3dB	Internal / External
RX Power	-10.6 to 4.5	dBm	±3dB	Internal / External

Pin Diagram



Pin Definitions

PIN	Logic	Symbol	Description	Plug Seq.	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	

6	CML-I	Tx4p	Transmitter Non-Inverted Data output	3	
7		GND	Ground	1	1
8	LVTLL-I	ModSelL	Module Select	3	
9	LVTLL-I	ResetL	Module Reset	3	
10		VccRx	+ 3.3V Power Supply Receiver	2	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock	3	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data	3	
13		GND	Ground	1	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	1
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL/Rx_LOS	Interrupt/Rx_LOS	3	
29		VccTx	+3.3 V Power Supply transmitter	2	2
30		Vcc1	+3.3 V Power Supply	2	2
31	LVTTL-I	LPMode/TxDIS	Low Power Mode/Tx_Disable	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Output	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Output	3	
38		GND	Ground	1	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in MSA. The connector pins are each rated for a maximum current of 1000 mA.

Recommended Interface Circuit

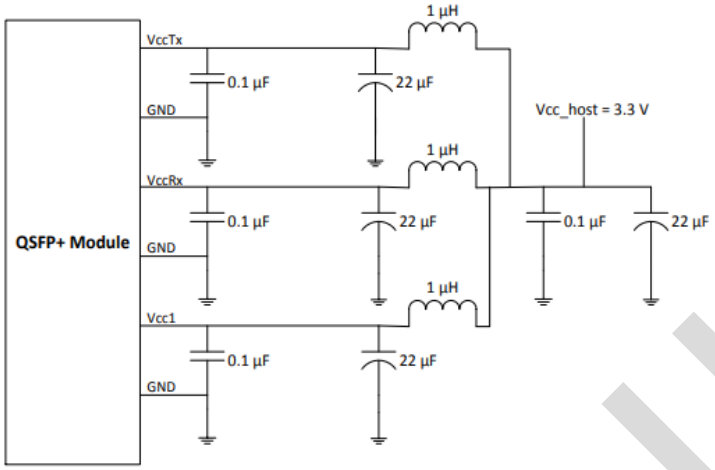
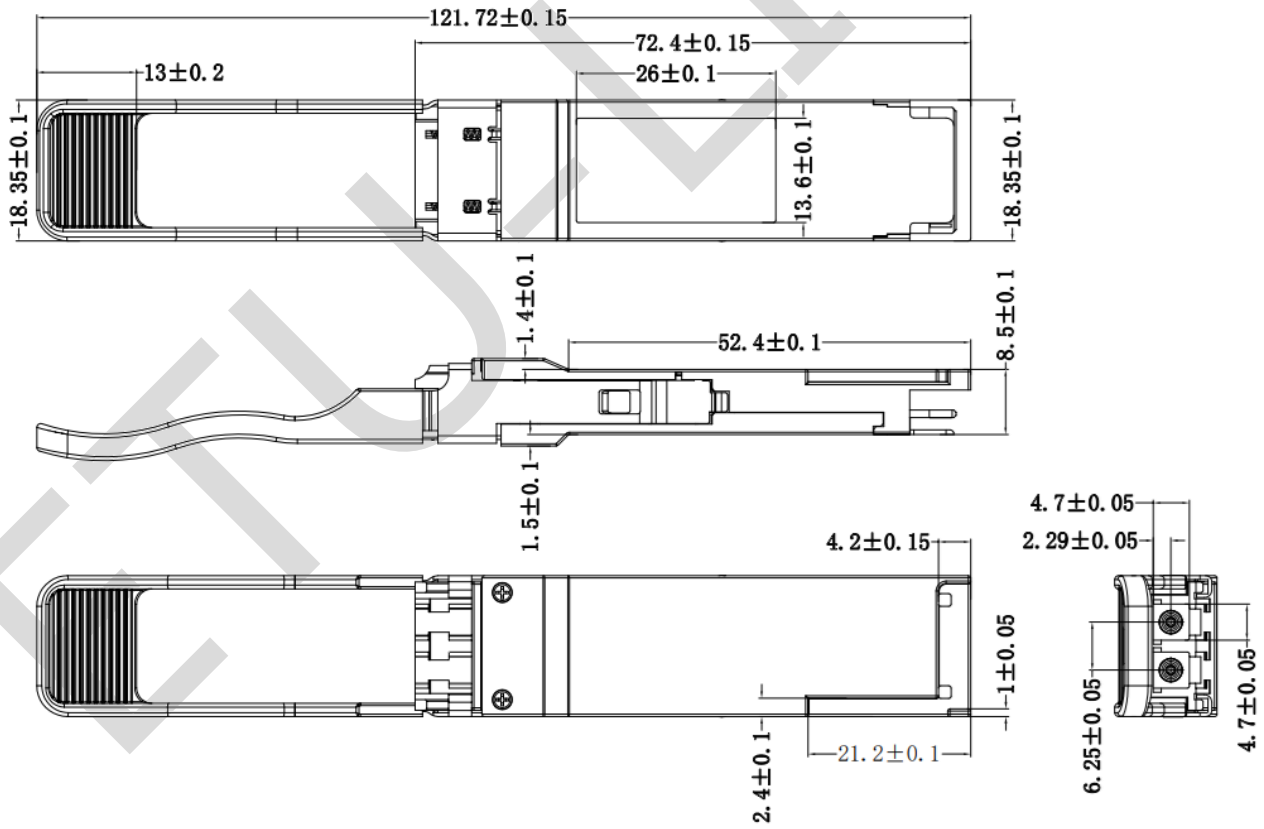


FIGURE 5-4 RECOMMENDED HOST BOARD POWER SUPPLY FILTERING

Mechanical Diagram



Revision History

Version No.	Date	Description
1.0	August 25, 2025	Preliminary datasheet

Company: ETU-Link Technology Co., LTD
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