

RQ-100G-CWDM4

100G QSFP28 CWDM4 2KM LC Optical Transceiver



Features

- ◆ High density interconnectivity
- ◆ Supports 100Gb/s data rate links up to 2km on a Single mode Fiber (SMF)
- ◆ Industry standard QSFP28 form factor
- ◆ Power Dissipation < 3.5W
- ◆ Single 3.3V Power Supply

Applications

- ◆ Data Center interconnections
- ◆ 100GBASE Ethernet links

FIBERWDM's 100G QSFP28 CWDM4 is a 4x25G single-mode fiber, hot pluggable optical transceiver. FIBERWDM's unique System On Glass™ (SOGTM) technology enables the integration of 4 transmitters, 4 receivers and an optical MUX/ DeMUX into a small form factor package that delivers a 100 Gbps data link in a compact QSFP28 footprint.

The optical connectivity is based on two Single mode Fiber (SMF) LC connectors, one for Tx and one for Rx. The Tx and Rx each consist of 4 25GB/s CWDM channels, whose wavelengths are in the 1300nm range. The QSFP28 CWDM4 transceiver is designed for applications with a reach up to 2000m and with the use of FEC.

This transceiver is based on proprietary FIBERWDM PLC technology, using surface mounted opto-electronic devices with no free space elements. The unique design of the optical engine facilitates unparalleled compactness while maintaining Telcordia robustness.

Revisions

Rev	Date	Description
A	Oct 27,2015	Initial Release
B	April 5, 2016	Updated mechanical design with modified pull tab
C	Sept 2, 2016	Modified mechanical design and Part Number
D	Dec.23th.2021	Update module pictures and drawing

General Description

Compliant with the 100G CWDM4 MSA Technical Specification Rev 1.0

Supports 100 Gbps data rates links from 2m to 2km over a standard SMF

QSFP28 footprint (Quad Small Form-factor Pluggable) with 2 unidirectional LC SMF optical connector receptacles

Compliant to the SFF-8665 Pluggable Transceiver Solution (QSFP28) MSA

Electrical Interface based on CAUI-4 as defined by IEEE 802.3 CL83E

Compliant to the SFF-8636 Common Management Interface MSA

38 pin hot pluggable edge connector electrical interface

The transmitter consists of a retimed quad input, 4 un-cooled CWDM DFB lasers operating on the ITU G.694.2 wavelength grid at 1271, 1291, 1311 and 1331nm and multiplexed into a single SMF output

The receiver consists of a CWDM de-multiplexer, a quad photodiode receiver and a retimed electrical output

Provides Bias and Transmit Power Monitoring (TPM) for each of the 4 transmitter channels.

Provides RSSI Monitoring for each of the 4 receiver channels.

Provides monitoring of the voltage supplies and case temperature

Provides Module Present and Interrupt signals

Input control pins for Module Select, Module Reset and Low Power Modes

Supports operation for a case temperature of 0° C to +70 ° C

Includes customized coding option for module security implementation

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature Range	T _{STG}	-40	+85	°C
Supply Voltage	V _{CC}	0	4	V
Relative Humidity	RH	10% to 90% non-condensing		

Operating Conditions

Parameter	Symbol	Min	Max	Units
Case Temperature- Operating	T _{CASE}	3.14	70	°C
Supply Voltage	V _{CC}		3.46	V
Power Consumption	P _{DISS}		3.5	W
Power Consumption- LP Mode	P _{DISS-LP}		1.5	W

Wavelength Lane Assignments

Transmitter Parameter	Lane	Min	Typical	Max	Units
Lane Wavelength Range	Lane 0	1264.5	1271	1277.5	nm
	Lane 1	1284.5	1291	1297.5	nm
	Lane 2	1304.5	1311	1317.5	nm
	Lane 3	1324.5	1331	1337.5	nm

Transmitter Optical Specifications

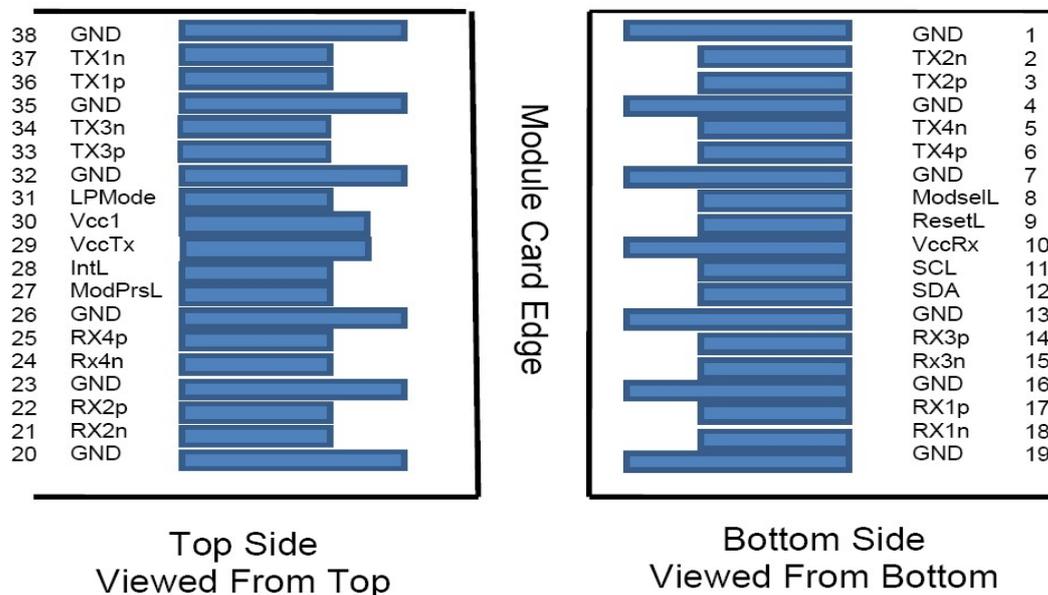
Transmitter Parameter	Lane	Min	Typical	Max	Units
Signaling rate, each lane		25.78125 ± 100ppm			Gb/s
Lane Wavelength Range	Lane 0	1264.5	1271	1277.5	nm
	Lane 1	1284.5	1291	1297.5	nm
	Lane 2	1304.5	1311	1317.5	nm
	Lane 3	1324.5	1331	1337.5	nm
Average Optical Power per lane		-6.5		2.5	dBm
Total Average Launch Power				8.5	dBm
Optical Modulation Amplitude (OMA), each lane		-4		2.5	dBm
Launch Power in OMA minus TDP, each lane		-5			dBm
Transmitter and Dispersion Penalty (TDP) each lane				3	dB
Average Launch Power per Lane @ TX Off State				-30	dBm
Extinction Ratio		3.5			dB
Relative Intensity Noise (OMA)				-130	dB/Hz
Side-Mode Suppression Ration (SMSR)		30			dB
Optical Return Loss Tolerance				20	dB
Transmitter Reflectance				-12	dB
Transmitter Output Power Monitoring Accuracy		-3		3	dB
Transmitter Eye Mask Definition (X1, X2, X3, Y1, Y2, Y3)	{0.31.0.4.0.45.0.34.0.38.0.4}				

Receiver Optical Specifications

Receiver Parameter	Lane	Min	Typical	Max	Units
Signaling rate, each lane		25.78125± 100ppm			GB/S
Lane Wavelength Range	Lane 0	1264.5	1271	1277.5	nm
	Lane 1	1284.5	1291	1297.5	nm
	Lane 2	1304.5	1311	1317.5	nm
	Lane 3	1324.5	1331	1337.5	nm
Damage Threshold		3.5			dBm
Average Receive Power, each lane		-11.5		2.5	dBm
Receiver Power, each lane (OMA)				2.5	dBm
Receiver Reflectance				-26.0	dB
Receiver Sensitivity (OMA) per lane at 5 x 10 ⁻⁵ BER				-10.0	dBm
RSSI Accuracy		-3.0		3.0	dB

QSFP28 Edge Connector and Pinout Description

The electrical interface to the transceiver is a 38 pins edge connector. The 38 pins provide high speed data, low speed monitoring and control signals, I2C communication, power and ground connectivity. The top and bottom views of the connector are provided below, as well as a table outlining the contact numbering, symbol and full description.

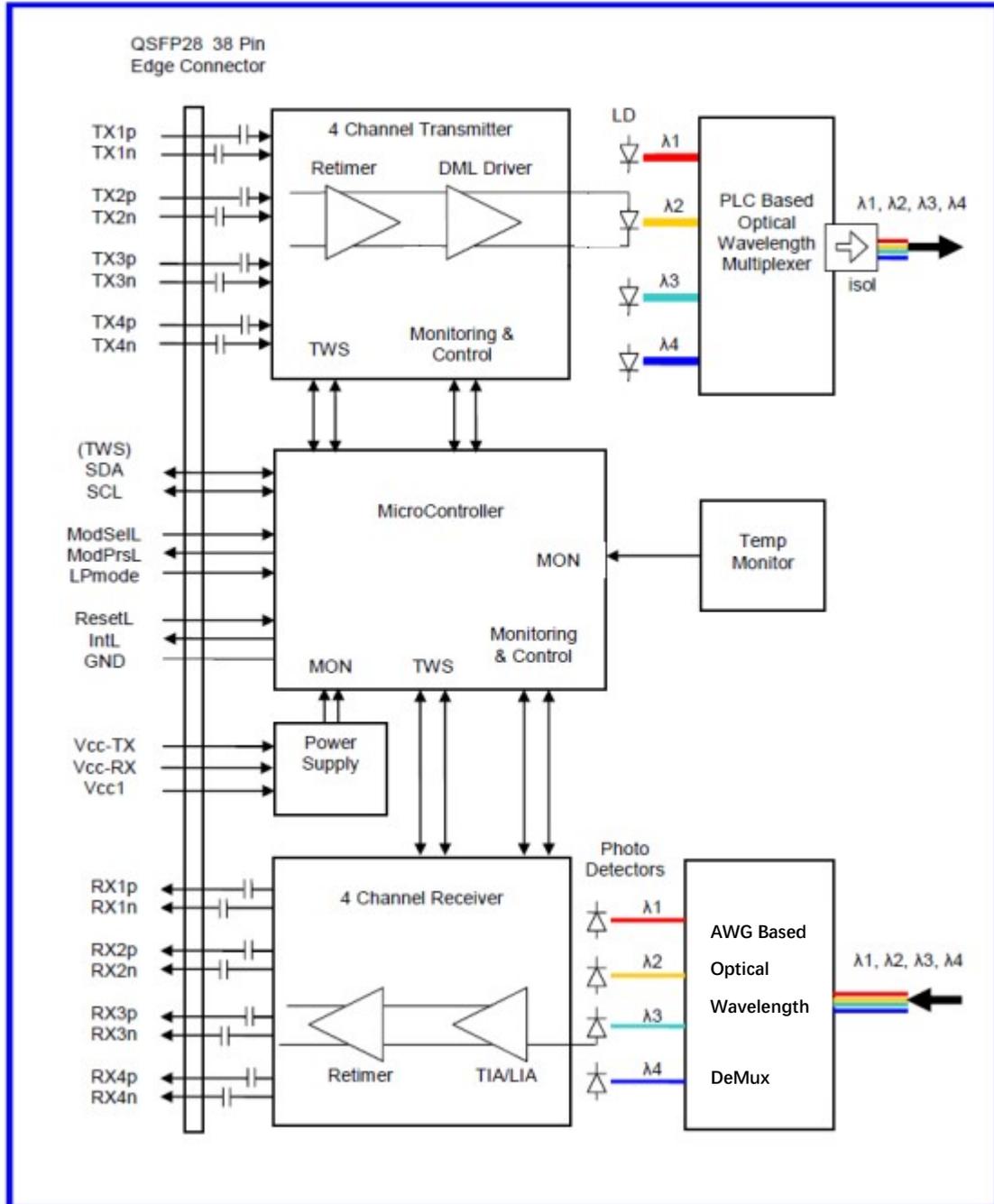


Top Side Viewed From Top

Bottom Side Viewed From Bottom

Figure 1. QSFP28 compliant 38-pin connector

Functional Block Diagram



Mechanical Drawings

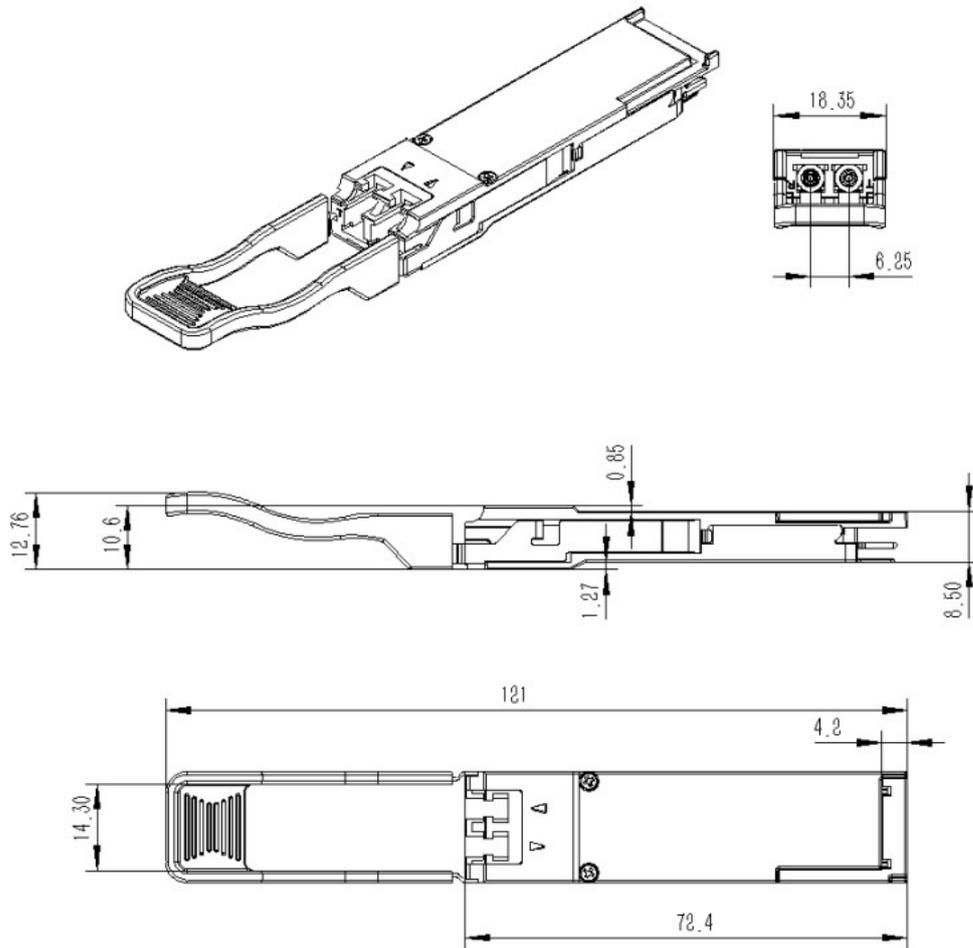


Figure 3. Mechanical Dimensions

Ordering information

Part Number	Description
RQ-100G-CWDM4	100G QSFP28 CWDM4 2KM LC Optical Transceiver