

200G QSFP56 SR4 Optical Transceiver

CC-QSFP02SR4-12C

Features

- 4 independent parallel optical channels
- Each channel typical data rate 26.56GBaud with integrated CDR
- Hot Pluggable
- Up to 100m link on OM4 Multi-mode Fiber and 70m OM3 Multi-mode Fiber
- 850nm VCSEL/PD Array Technology
- CML Compatible electrical I/O
- SFF-8679 MSA Compliance
- Timing requirement of control and status I/O comply QSFP-DD Hardware Rev5.1
- MPO-12 APC Interface
- CMIS5.0
- Case Operating Temperature:
Commercial: 0 to 70°C
- RoHS II Compliance

Applications

- High performance computing interconnect
- Data center

Description

The Product is a QSFP56 Optical transceiver for 4x26.56GBaud optical links. It is compliant with the SFF -8679 MSA. It operates at 26.56GBaud up to 100m over OM4 Multi-mode fiber.

China Cloud Electro Optics Technology Co., Ltd.

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Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Ambient Temperature	Tstg	-40	+85	°C	Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
Relative Humidity - Storage	RHS	0	95	%	
Relative Humidity - Operating	RHO	0	85	%	
Module Supply Voltage	VCC	-0.5	3.6	V	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units	Notes
Case Operating Temperature	T _{case}	0	+25	+70	°C	Temperature
Module Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Module Supply Current	I _{IN}	-	1180	-	mA	
Signaling Speed Per Channel	S	-	26.56	-	GBaud	

Transmitter Electrical Interfaces

Parameter	Sym- bol	Min	Typ	Max	Units	Notes
Tx_Data Differential Input Voltage	V _{IN}	400	-	900	mV	
Tx_Data Differential Input Impedance	Z _{IN}	-	100	-	Ω	

Receiver Electrical Interfaces

Parameter	Sym- bol	Min	Typ	Max	Units	Notes
Rx_Data Differential Output Voltage	V _{OUT}	-	-	900	mV	
Rx_Data Differential Output Impedance	Z _{OUT}	90	100	110	Ω	

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Transmitter Optical Characteristics

Parameter	Symbol				Units	Notes
		Min	Typ	Max		
Signaling rate, each lane	SR	-	26.56	-	GBd	
Signaling Speed Accuracy	SSA	-100		100	ppm	
Modulation format		PAM4				
Average Launch Power ,each lane	P _{OUT}	-6.5	-	4	dBm	Average Optical Output
Outer Optical Modulation Amplitude	OMA _{outer}	-4.5	-	3	dBm	
Optical Output with Tx OFF	P _{OFF}	-	-	-30	dBm	
Extinction ratio	ER	3			dB	
Center Wavelength	λ	840	850	865	nm	
RMS Spectral Width	$\Delta\lambda$	-	-	0.6	nm	
Transmitter and dispersion eye closure (TDECQ) each lane	TDECQ	-	-	4.5	dB	
Launch power in OMA _{outer} minus TDECQ, each lane (min)		-5.9	-	-	dB	
TDECQ – 10log ₁₀ (C _{eq}), each lane (max)		-	-	4.5	dB	

Receiver Optical Characteristics

Parameter	Symbol				Units	Notes
		Min	Typ	Max		
Signaling rate, each lane	SR	-	26.56	-	GBd	
Signaling Speed Accuracy		-100		100	ppm	
Modulation format		PAM4				
Average power at receive input, each lane	P _{IN}	-8.4	-	4	dBm	
Receive power (OMA _{outer}), each lane (max)		-	-	3	dBm	
Receiver sensitivity (OMA _{outer}) each lane	Sen	-	-	max(-6.6, SECQ – 8)	dBm	Note1
Center Wavelength	λ	840	850	865	nm	
Rx_LOS of Signal - Assert	P _A	-24.6	-	-	dBm	
Rx_LOS of Signal - Deassert	P _D	-	-	-8.6	dBm	
Rx_LOS of Signal - Hysteresis	P _{Hy}	0.5	-	-	dB	
Note 1: Sensitivity where the BER = 2.4E-4 measured with a PRBS 31Q test pattern@26.56GBaud						

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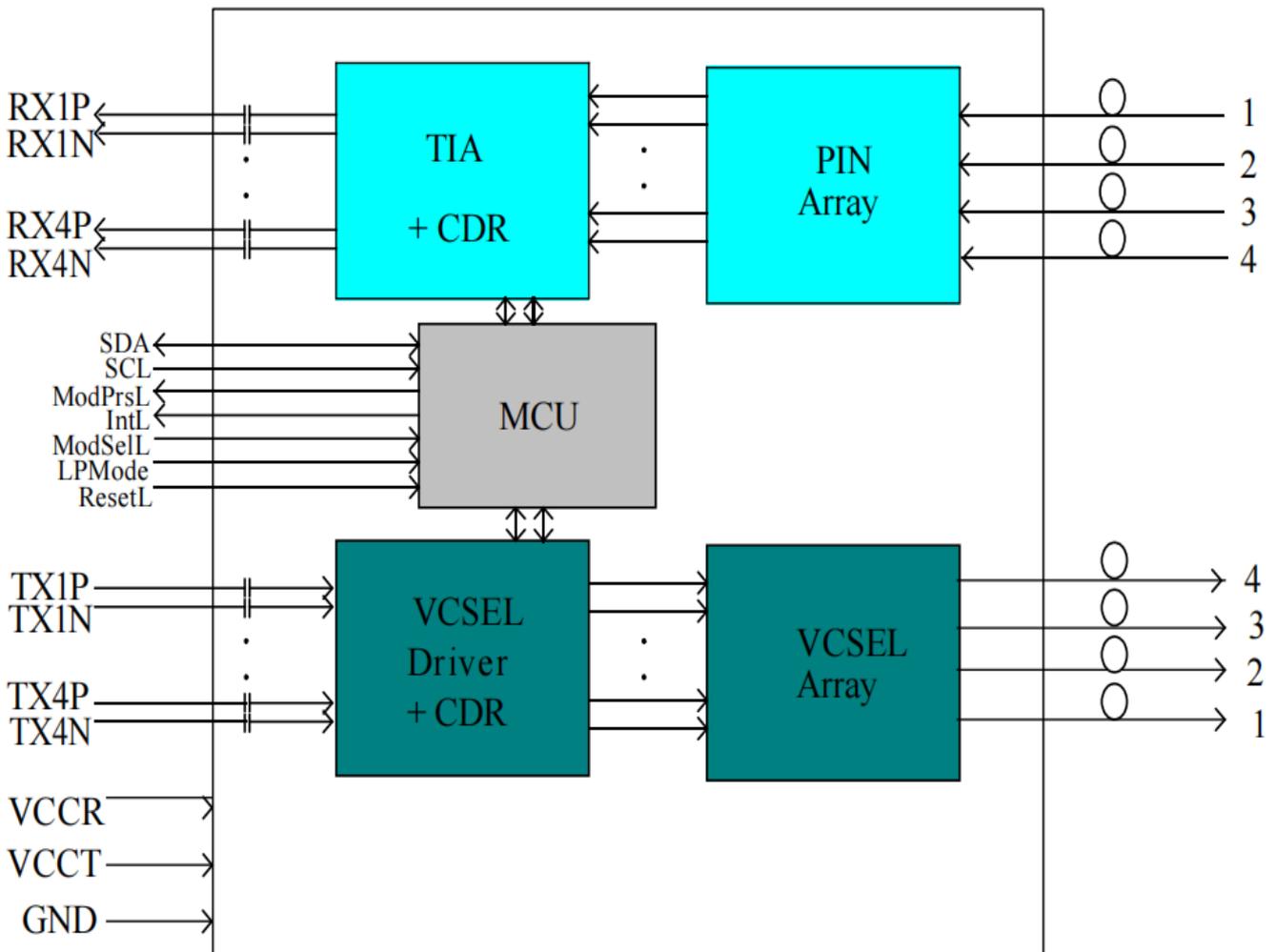
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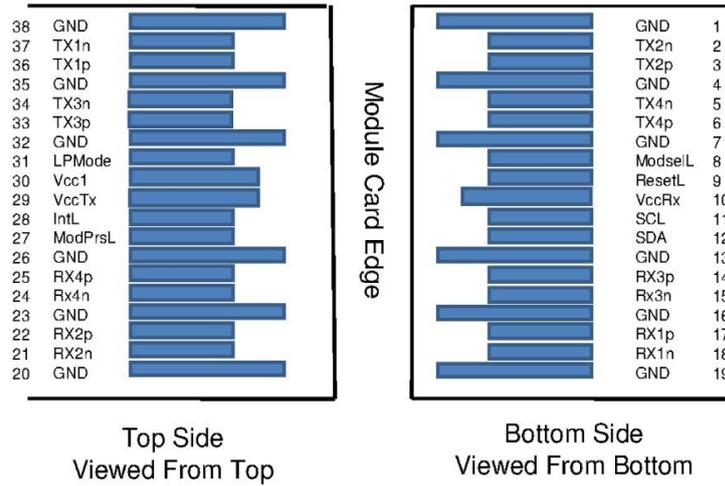
Block Diagram



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Pin Assignment



Pin Description

Pin	Symbol	Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non Inverted Data Input	
7	GND	Ground	
8	ModselL	Module Select	
9	RetsetL	Module Reset	
10	Vcc Rx	Receiver +3.3V DC Power Supply	
11	SCL	I ² C Serial Clock	
12	SDA	I ² C Serial Data	
13	GND	Ground	
14	Rx3p	Receiver Non Inverted Differential Output	
15	Rx3n	Receiver Inverted Differential Output	
16	GND	Ground	
17	Rx1p	Receiver Non Inverted Differential Output	
18	Rx1n	Receiver Inverted Differential Output	
19	GND	Ground	
20	GND	Ground	

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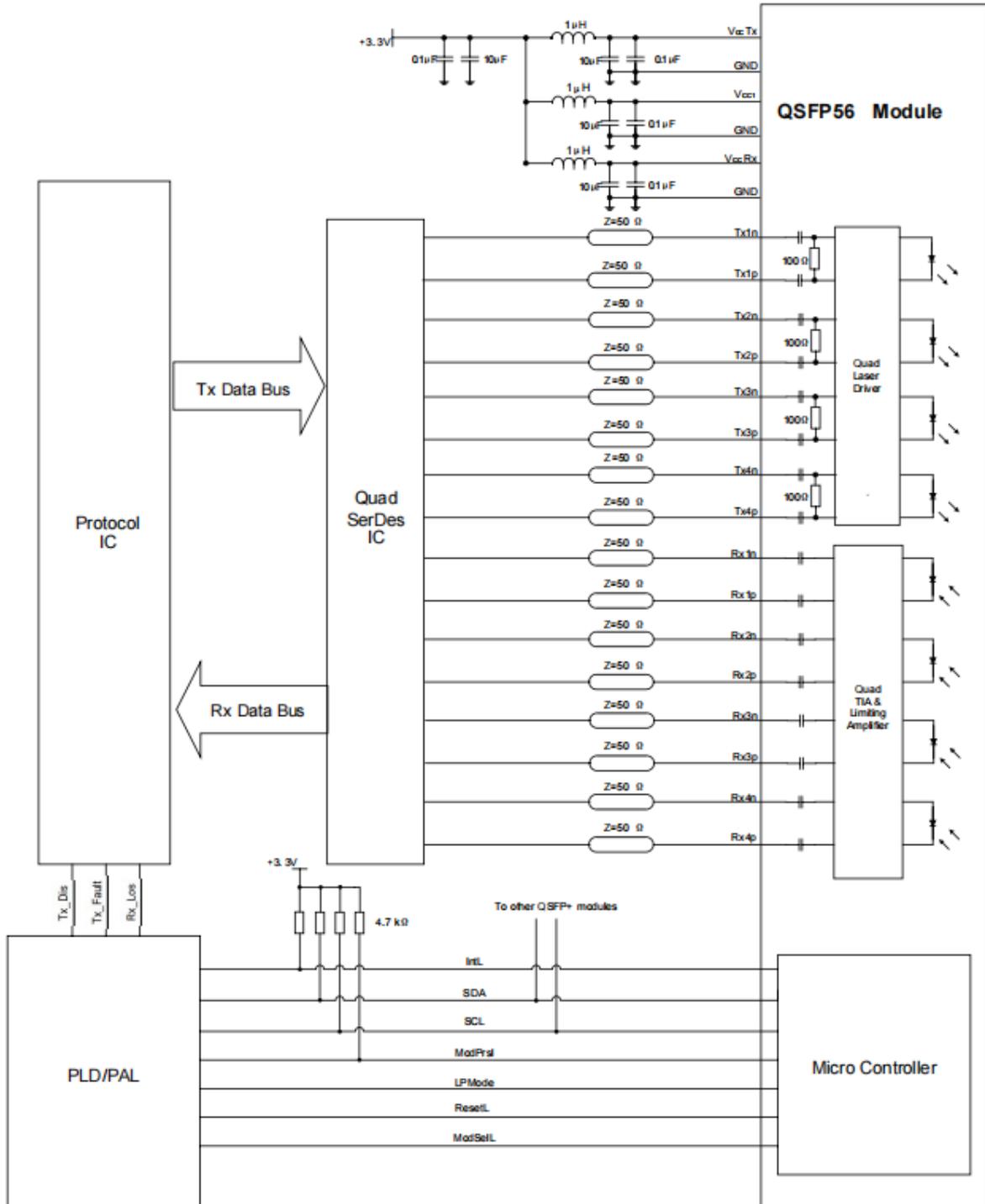
Pin Description

21	Rx2n	Receiver Inverted Differential Output	
22	Rx2p	Receiver Non Inverted Differential Output	
23	GND	Ground	
24	Rx4n	Receiver Inverted Differential Output	
25	Rx4p	Receiver Non Inverted Differential Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	Transmitter +3.3V DC Power Supply	
30	Vcc1	+3.3V DC Power Supply	
31	LPMoD	Low Power Mode	
32	GND	Ground	
33	Tx3p	Transmitter Non Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	

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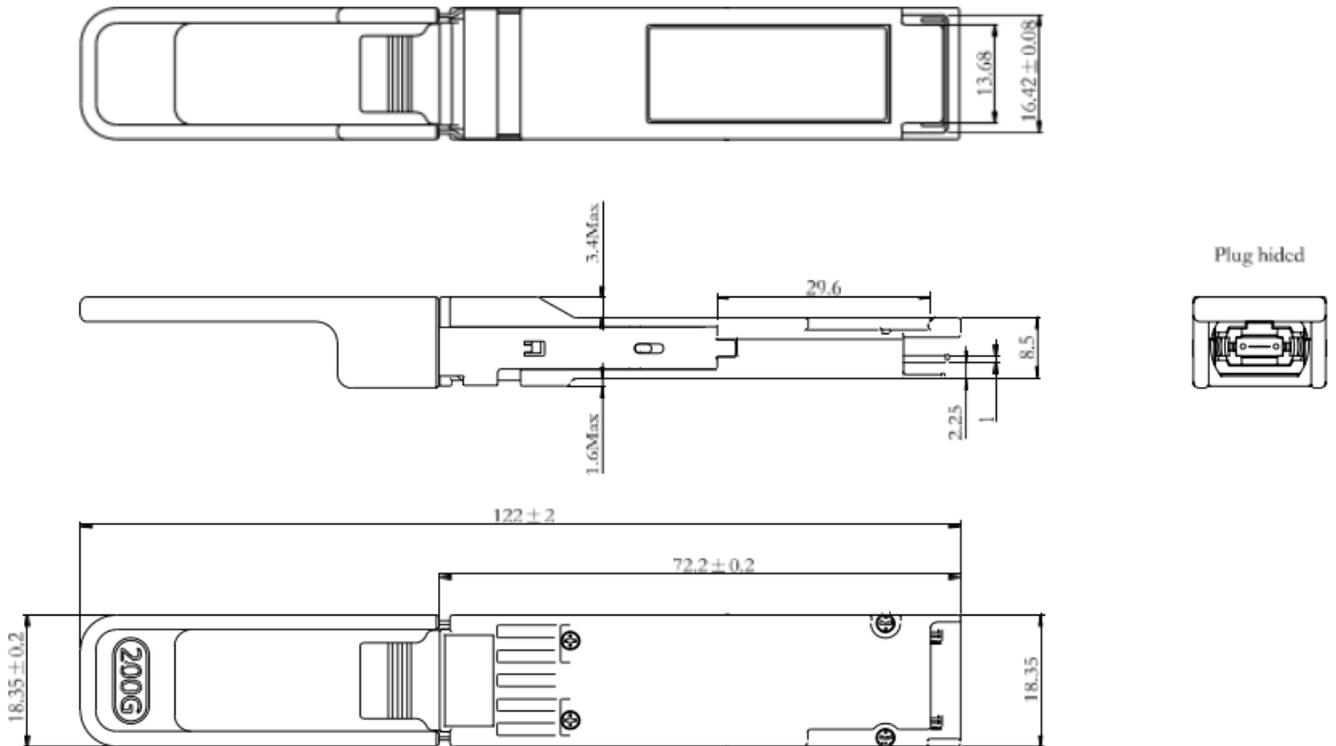
Electrical Interface



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Mechanical Dimensions



NOTES:

1. TOLERANCE: ± 0.1 MM.
2. OTHERS ACCORDING WITH SFF-8661 MSA OR CUSTOMER SPEC.
3. LIGHT PORT ACCORDING WITH FIBER CONNECTOR SPEC.

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Warnings

Handling Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. 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.

Check with your Sales Office for product updates, changes in specifications, sample availability and production release dates.

EYE SAFETY

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed.3., as described in Laser Notice No. 56, dated May 8, 2019.

Complies with IEC/EN 60825-1 and IEC/EN 60825-2. Class 1 laser safety compliant.

INVISIBLE LASER RADIATION.

CAUTION:

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.