

TITLE 200G QSFP56 SR4 100m Transceiver	DOC No. RFD-20221201011-002	
	REVISION : 01	AUTHORIZED BY : Albert Lin
	DATE : 2022/11/30	CLASSIFICATION : Optical Transceiver

1. PRODUCT DESCRIPTION

- 4x26.5625GBd (PAM4) electrical interface
- Support 212.5Gb/s aggregate bit rate
- VCSEL Transmitter
- PIN and TIA array on the receiver side
- Maximum link length of 100m on OM4 Multimode Fiber (MMF)
- Hot-pluggable QSFP56 footprint
- Single MPO 12 receptacle
- Low power Consumption
- RoHS-6 compliant and lead-free
- +3.3V single power supply
- Support Digital Diagnostic Monitor interface
- Case operating temperature Commercial: 0°C to +70°C

2. PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

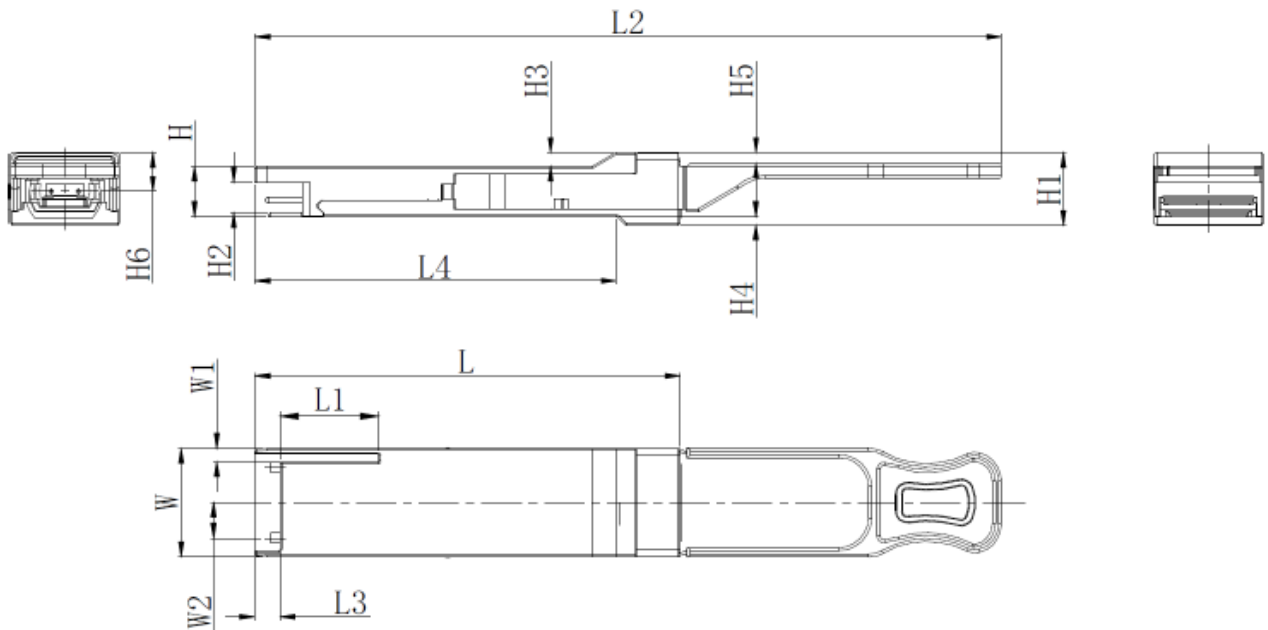
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Part Number	Data Rate	Wavelength (nm)	Distance	Media	Power (dBm)	Sen. (dBm)	Connector	Tem.
P59000FACAS1-1	200G	850nm	100m	MMF	-4.5 ~ 3	-6.5	MPO	C

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2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Unit mm

	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5	H6
Max	72.2	-	128	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6	2	-
TYPE	72	-	-	4.2	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5	1.8	6.55
Min	68.8	16.5	124	4.05	61	18.25	2.2	5.8	8.4	12	5.05	2.1	1.3	1.6	-

Units: mm

3. COMPLIANCE

- 200GBASE-SR4 200G Ethernet
- QSFP MSA
- IEEE802.3cd
- SFF-8636

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4. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_S	-40	-	85	°C
Storage Ambient Humidity	H_A	0	-	85	%
Maximum Supply Voltage	V_{CC}	-0.5	-	3.6	V

Recommended Operating Conditions					
Parameter	Symbol	Min.	Typical	Max.	Unit
Supply Voltage	V_{CC}	3.13	3.3	3.47	V
Baud Rate (per channel) PAM4	BR	-	26.5625	-	GBd
Operating Case Temperature	T_C	0	-	70	°C
Link distance on OM3 MMF	d	-	-	70	meters
Link distance on OM4 MMF	d	-	-	100	meters
Supply Voltage	V_{CC}	3.15	-	3.45	V
Power Dissipation	P_d	-	-	6	W

Transmitter Operating Characteristic-Optical, Electrical						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Average Output Power per lane	P_{OUT}	-6.5		4	dBm	
Outer Optical Modulation Amplitude per lane	OMA_{OUT}	-4.5		3	dBm	
Extinction Ratio	ER	3			dB	
Center Wavelength	λ_C	840		860	nm	
RMS Spectral Width	σ			0.6	nm	
Launch power in OMA_{OUT} minus TDECQ	P_{TDECQ}	-5.9			dBm	

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Transmitter and dispersion eye closure (each lane)	TDECQ			4.5	dB	
Transmitter OFF Output Power	POff			-30	dBm	
Optical Return Loss Tolerance	ORLT			12	dB	
Input different impedance	R _{in}	90	100	110	Ω	
Single ended input voltage tolerance	V _{inT}	-0.3		4.0	V	
Differential Input Voltage Amplitude	V _{in,pp}			900	mV	

Receiver Operating Characteristic-Optical, Electrical						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λ _{IN}	840		860	nm	
Average Receive Power per lane	P _{in}	-8.4		4	dBm	
Receiver Power (OMA _{OUT}) each lane	R _{OMA}			3	dBm	
Rx Sensitivity (OMA _{OUT}) per lane (SECQ=1.4 dB)	R _{SENS}			-6.5	dBm	
Stressed Rx Sensitivity (OMA) per lane	SR _{SENS}			-3	dBm	
Damage threshold	PDT	5			dBm	
Receiver Reflectance	R _{fl}			-12	dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-9	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Error Bit Rate	BER			2.4E-4		
Output different impedance	R _{out}	90	100	110	Ω	
Single-ended output voltage	V _{outR}	-0.3		4.0	V	
Differential Output Voltage Amplitude	V _{out,pp}			900	mV	

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5. Pin-out Definition

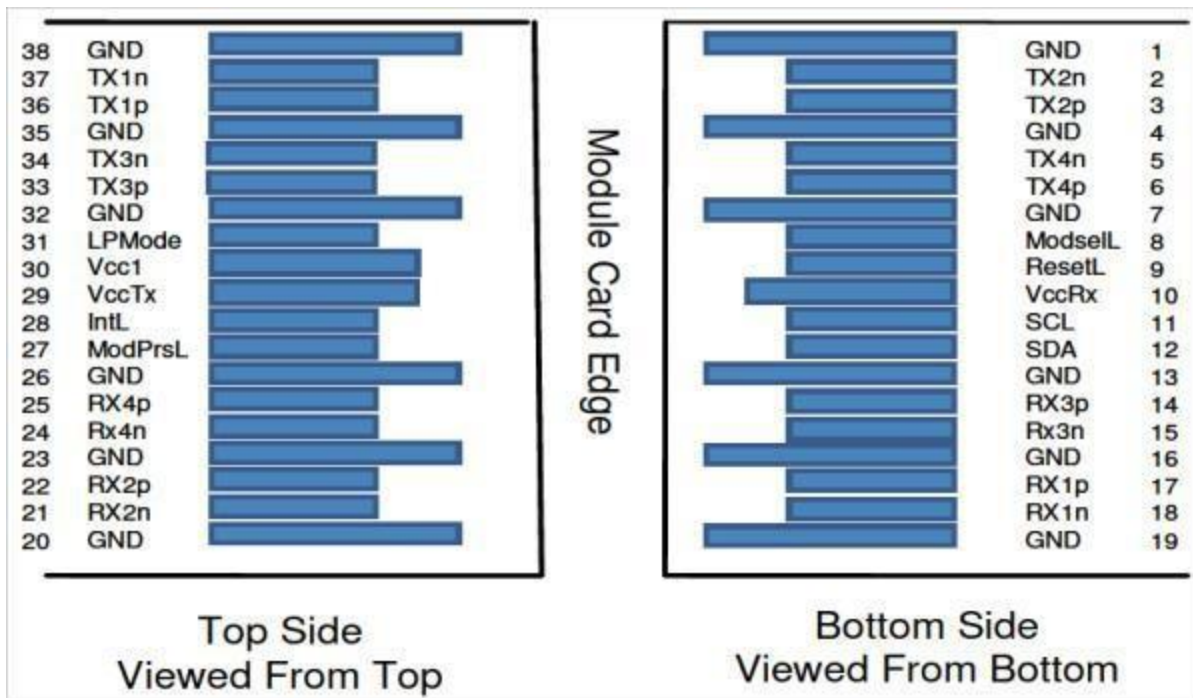


Figure 1.Pin function definitions

Pin Assignment

Pin	Symbol	Name/Description	Plug Sequence
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSe1L	Module Select	

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9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power supply receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrSL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power Supply	
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	

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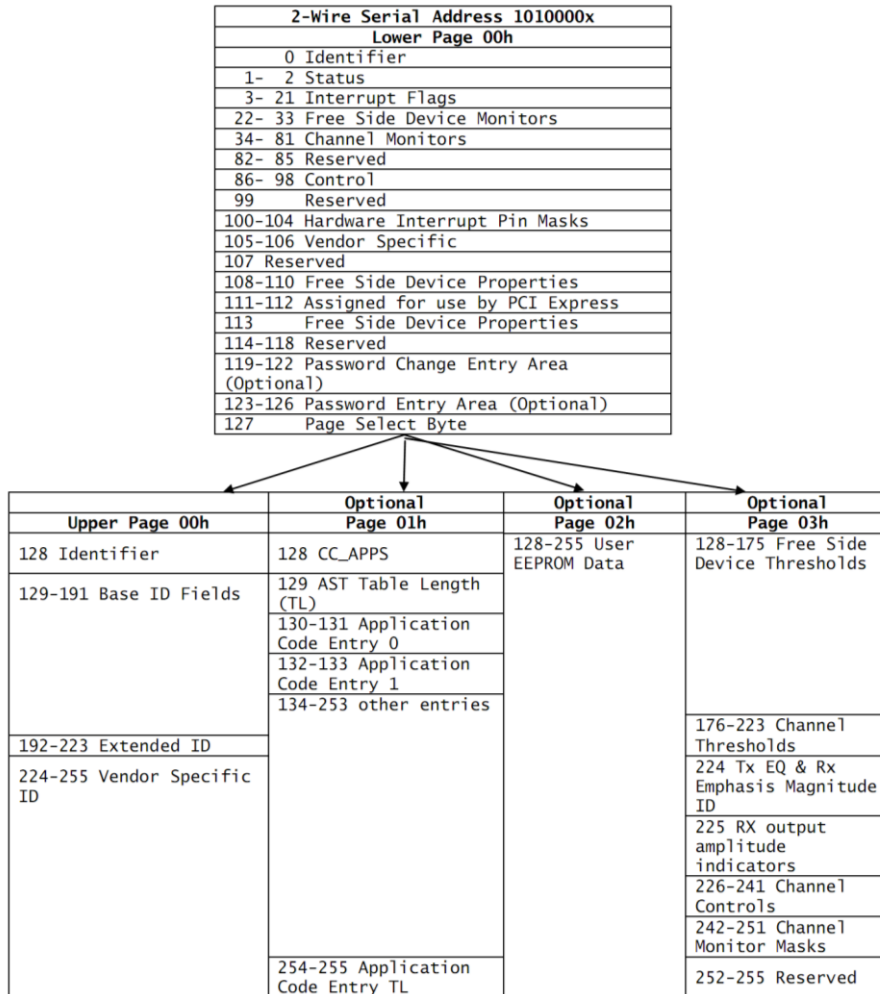
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Note : Circuit ground is internally isolated from chassis ground.

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6. Digital Diagnostic Memory Map



7. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2022/11/30	Albert Lin	Mike Sun