SPRINGTEK
思博源科技

100Gbps CWDM4 500m QSFP28 Optical Transceiver Module

S-QP1AC4L05-CD

Features

- QSFP28 MSA compliant
- 4x25Gb/s electrical interface
- Supports 103.125Gb/s aggregate bit rate
- Up to 500m transmission on single mode fiber
- LC duplex connector
- 4-lane DFB and 4-lane Pin
- Commercial case temperature: 0 ℃o 70℃
- Single 3.3V power supply
- Maximum power consumption 3.5 Watts
- RoHS

Applications

- 100GBASE-CWDM4 Ethernet
- Telecom networking
- Data Center Interconnect

Standards

- QSFP28 MSA
- SFF-8665
- IEEE802.3ba
- ROHS

Description

Springtek 100Gbps CWDM4 QSFP28 designed for 500m optical communication applications. This module contains 4-lane DFB optical transmitter, 4-lane optical receiver and module management block including 2 wire serial interfaces. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Maximum Supply Voltage	Vcc	0		3.6	V
Storage Temperature	Ts	-40		85	℃
Operating Case Temperature	T_{case}	-5		75	℃
Relative Humidity	RH	0		85	%

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Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	Tcase	0		70	℃
Supply Voltage	VCC	3.135	3.3	3.465	V
Relative Humidity	RH	5		85	%
Power Dissipation	PD			3.5	W
Data Rate (optical)	DRO		4*25.78125		Gbps
Data Rate (Electrical)	DRE		4*25.78125		Gbps

Electrical Characteristics

Transmitter Electrical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Differential Voltage pk-pk	Vpp			900	mV
Input differential impedance	Rin		100		Ohm
Differential Termination Resistance Mismatch				10	%
Receiver Electrical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Output differential impedance	Rout		100		Ohm
Differential Termination Resistance Mismatch				10	%
Differential output voltage	Vout, pp	400	600	800	mV

Optical Characteristics

Parameters	Symbol	Min	Typical	max	Unit	Note
Transmitter						
Signal Speed per Lane	BR	25.78125 ± 100 ppm			Gb/s	
Transmit wavelength	λ0	1264.5	1271	1277.5	nm	
	λ1	1284.5	1291	1297.5	nm	
	λ2	1304.5	1311	1317.5	nm	
	λ3	1324.5	1331	1337.5	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Total Average Launch Power	P_{total}			8.5	dBm	
Average launch power, each lane	P_{out}	-6.5		2.5	dBm	

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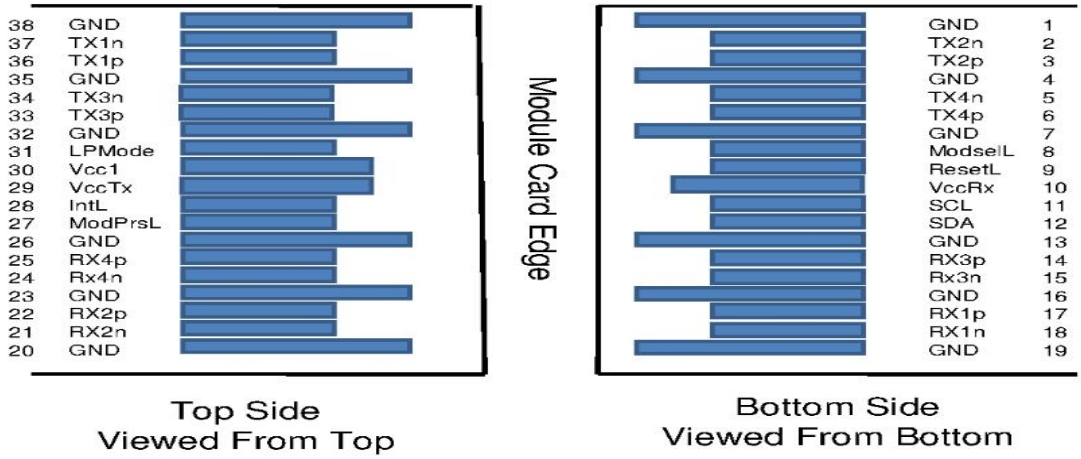
Optical Modulation Amplitude (OMA), each lane	P_{OMA}	-4		2.5	dBm	
Launch power OFF per lane				-30	dBm	
Transmitter and Dispersion Penalty (TDP), each lane	TDP			3.0	dB	
Extinction Ratio (ER)	ER	3.5			dB	
Transmitter eye mask definition {X1,X2, X3, Y1, Y2, Y3}	{0.31, 0.40, 0.45, 0.34, 0.38, 0.4}					1
Mask margin		15			%	1
Receiver						
Signaling Speed per Lane	BR	25.78125 ± 100 ppm			Gb/s	
Receive wavelength	λ0	1264.5	1271	1277.5	nm	
	λ1	1284.5	1291	1297.5	nm	
	λ2	1304.5	1311	1317.5	nm	
	λ3	1324.5	1331	1337.5	nm	
Damage threshold, each lane		3.5			dBm	
Average receive power, each lane		-10		4.5	dBm	
Receive power, each lane(OMA)		2.5			dBm	2
Receiver reflectance				-26	dB	
LOS Assert		-24		-13.6	dBm	
LOS De-Assert				-11.6	dBm	
LOS Hysteresis		0.5		6	dB	

Pin Definitions



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Pin	Symbol	Name/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	ResetL	Module Reset.	
10	VccRx	3.3V Power Supply Receiver.	1
11	SCL	2-Wire serial Interface Clock.	
12	SDA	2-Wire serial Interface Data.	
13	GND	Ground.	
14	Rx3p	Receiver Non-Inverted Data Output.	
15	Rx3n	Receiver Inverted Data Output.	
16	GND	Ground.	
17	Rx1p	Receiver Non-Inverted Data Output.	
18	Rx1n	Receiver Inverted Data Output.	
19	GND	Ground.	
20	GND	Ground.	
21	Rx2n	Receiver Inverted Data Output.	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground.	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground.	
27	ModPrsl	Module Present	
28	IntL	Interrupt	
29	VccTx	3.3V power supply.	1
30	Vcc1	3.3V power supply.	1
31	LPMode	Low Power Mode	

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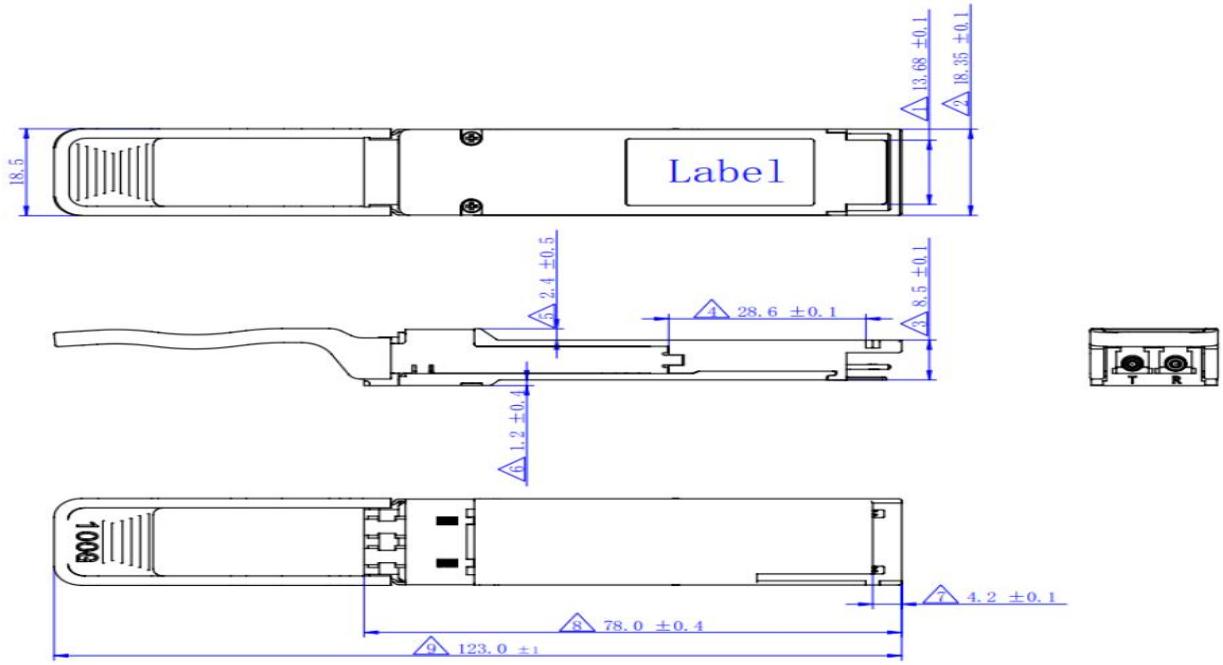
32	GND	Ground.	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground.	
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground.	

Notes:

1. VccRx, Vcc1 and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP28 transceiver module in any combination.

Mechanical Dimensions



Ordering information

Part Number	Product Description
S-QP1AC4L05-CD	QSFP28, 100Gbps,1271 -1331nm, SM, LC,500m, 0ºC~+70ºC, With DDM,

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