TSQS-CW1HG-02LC Optical Transceiver

QSFP28 CWDM4 2km Transceiver, With Diagnostic Monitoring

Features

- Reach: 2 km via SMF
- Link budget assumes the use of KR4 FEC by the host
- Uncooled CWDM DFB lasers, directly modulated
- Electrical interface: retimed CAUI-4 per 100G Ethernet IEEE 802.3bm Annex 83E
- User controllable Transmit Input Equalization and Receiver Output Amplitude
- MSA-compliant performance monitoring via I2C interface
- Fiber connector: SMF LC duplex connector
- Hot pluggable
- 0–70°C operating temp
- Power dissipation < 3.5W
- RoHS6 compliant (lead free)

Applications

- 100G CWDM4 Ethernet
- InfiniBand 4x EDR

Description

The QSFP28 100G-CWDM4-2km module is a highly integrated 4x28G transceiver focused on reach, bandwidth, density and cost for high port-count 100G systems, and client-side 100G interfaces. It is compliant with the 100G 4WDM-10 MSA, which is based on the CWDM4 MSA version 1.1. It is interoperable with CWDM4 transceivers over a 2 km reach.

8 Jinxiu Middle Road, Pingshan, Shenzhen, Guangdong, 518118, P. R. China
+86 755 32983688 |info@china-tscom.com | www.china-tscom.com

Optical Transmitter Performance

Parameter		Symbol	Min	Typical	Max	Unit
Center Wavelength	Ch0	λ0	1264.5	-	1277.5	nm
	Ch1	λ1	1284.5	-	1297.5	nm
	Ch2	λ2	1304.5	-	1317.5	nm
	Ch3	λ3	1324.5		1337.5	nm
Bit Rate per Channel		B	25.78125±100ppm			Gb/s
Side Mode Suppression Ratio		SMSR	30	-	-	dB
Average launch power, each lane		-	-6.5	-	2.5	dBm
Optical Modulation Amplitude (each lane)		OMA	-4.0	-	2.5	dBm
Launch power in OMA minus TDP, each lane		OMA-TDP	-5.0	-	-	dBm
Transmission & dispersion penalty, each lane		TDP	-	-	3.0	dB
RIN20 OMA		-	-	-	-130	dB/Hz
Transmitter Reflectance		-	-	-	-12	dB
Extinction Ratio		ER	3.5	-		dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4} CWDM4 MSA Technical Specifications Rev 1.1				
Total average launch power		-	-	-	8.5	dBm
Average launch power of OFF transmitter, each lane		-	-	-	-30	dBm
Optical return loss tolerance		-	-	-	20	dB

Optical Receiver Performance

Parameter		Symbol	Min	Typical	Max	Unit
Center Wavelength	Ch0	λ0	1264.5	1271	1277.5	nm
	Ch1	λ1	1284.5	1291	1297.5	nm
	Ch2	λ2	1304.5	1311	1317.5	nm
	Ch3	λ3	1324.5	1331	1337.5	nm
Bit Rate per Channel		B	25.78125±100ppm			Gb/s
Unstressed Sensitivity (OMA) at 5 x 10^{-5} BER		OMAin	-	-	-10	dB
Stressed Sensitivity (OMA)		OMAin,str	-	-	-7.3	dBm
Receiver Reflectance		ORL	-	-	-26	dB

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Vertical eye closure penalty, each lane	VECP	-	-	1.9	dB
Stressed eye J2 Jitter, each lane	J2	-	-	0.3	UI
Stressed eye J9 Jitter, each lane	J9	-	-	0.5	UI
Stressed eye J4 Jitter, each lane	J4	-	-	0.48	UI
SRS eye mask definition { X1, X2, X3, Y1, Y2, Y3}	{0.39, 0.5, 0.5, 0.39, 0.39, 0.4} CWDM4 MSA Technical Specifications Rev 1.1				
Damage threshold, each lane	-	3.5	-	-	dB

Recommended Operating Environment

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	V_{CC}	3.135	3.300	3.465	V
Operating Case Temperature	T_C	0	25	70	°C

Pin Definition

Pin	Symbol	Name/Description
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	Vcc Rx	+3.3 V Power supply receiver
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	Vcc Tx	+3.3 V Power supply transmitter
30	Vcc1	+3.3 V Power Supply
31	LPMode	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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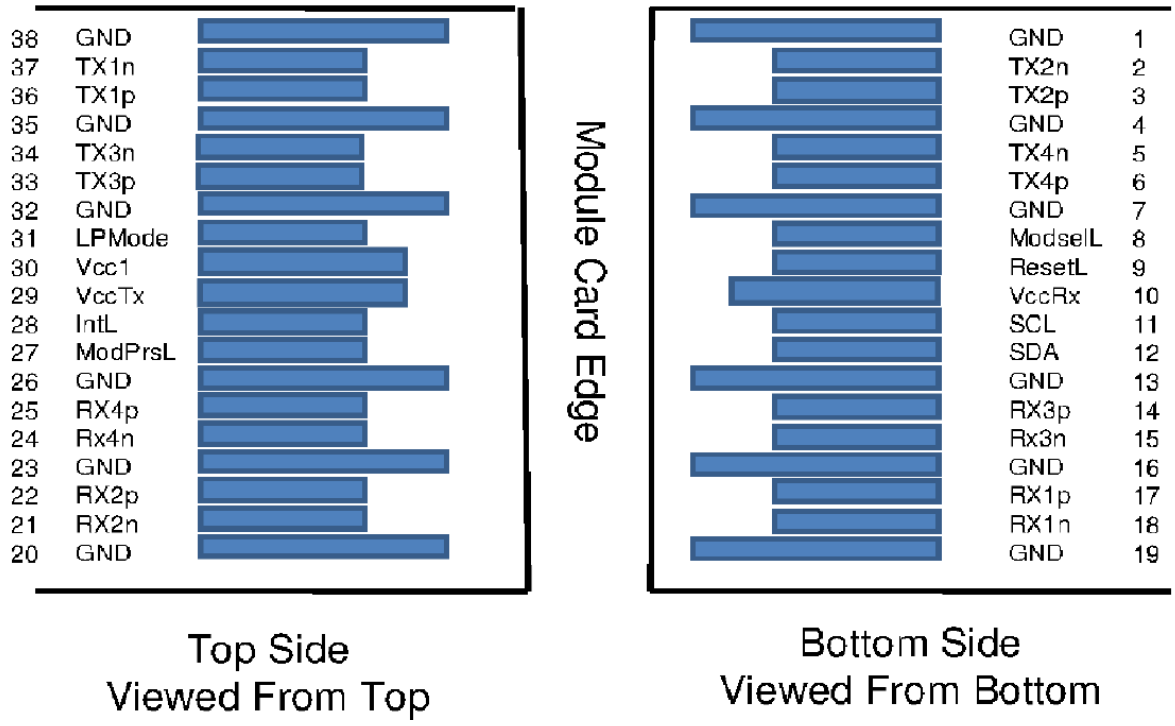
Pin Descriptions



Ordering Information

Part Number	Product Description
TSQS-CW1HG-02LC	100Gbps QSFP28 CWDM4 2km 0°C ~ +70°C

Important Notice

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