

TSQS-CW1HG-10LC Optical Transceiver

QSFP28 CWDM4 10km Transceiver, With Diagnostic Monitoring

Features

- Reach: 10 km via SMF
- Optical link budget: Supports 6.5 dB of link budget
- 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-CWDM4-10km 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, but alters some of the specifications to extend the link reach from 2 km to 10 km. It is interoperable with CWDM4 transceivers over a 2 km reach.

Optical Transmitter Performance

Parameter	Symbol	Min	Typical	Max	Unit	
Center Wavelength	Ch0	λ_0	1264.5	-	1277.5	nm
	Ch1	λ_1	1284.5	-	1297.5	nm
	Ch2	λ_2	1304.5	-	1317.5	nm
	Ch3	λ_3	1324.5	-	1337.5	nm
Bit Rate per Channel	B	25.78125 ± 100ppm			Gb/s	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	

Information and specifications are subject to change without notice.
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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	-	-	-	-20	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} 100G 4WDM-10 MSA Technical Specifications Release 1.0				
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	λ_0	1264.5	1271	1277.5	nm
	Ch1	λ_1	1284.5	1291	1297.5	nm
	Ch2	λ_2	1304.5	1311	1317.5	nm
	Ch3	λ_3	1324.5	1331	1337.5	nm
Bit Rate per Channel		B	25.78125±100ppm			Gb/s
Damage threshold, each lane		-	3.5	-	-	dBm
Average receive power, each lane		-	-13.0	-	2.5	dbm
Unstressed Sensitivity (OMA) at 5 x 10 ⁻⁵ BER		OMAIN	-	-	-11.5	dBm
Stressed Sensitivity (OMA)		OMAIN,STR	-	-	-8.6	dBm
Receiver Reflectance		ORL	-	-	-26	dB
Vertical eye closure penalty, each lane		VECP	-	-	2.6	dB
Stressed eye J2 Jitter, each lane		J2	-	-	0.3	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} 100G 4WDM-10 MSA Technical Specifications Release 1.0				

Recommended Operating Environment

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	Vcc	3.135	3.300	3.465	V

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Operating Case Temperature	T _c	0	25	70	°C
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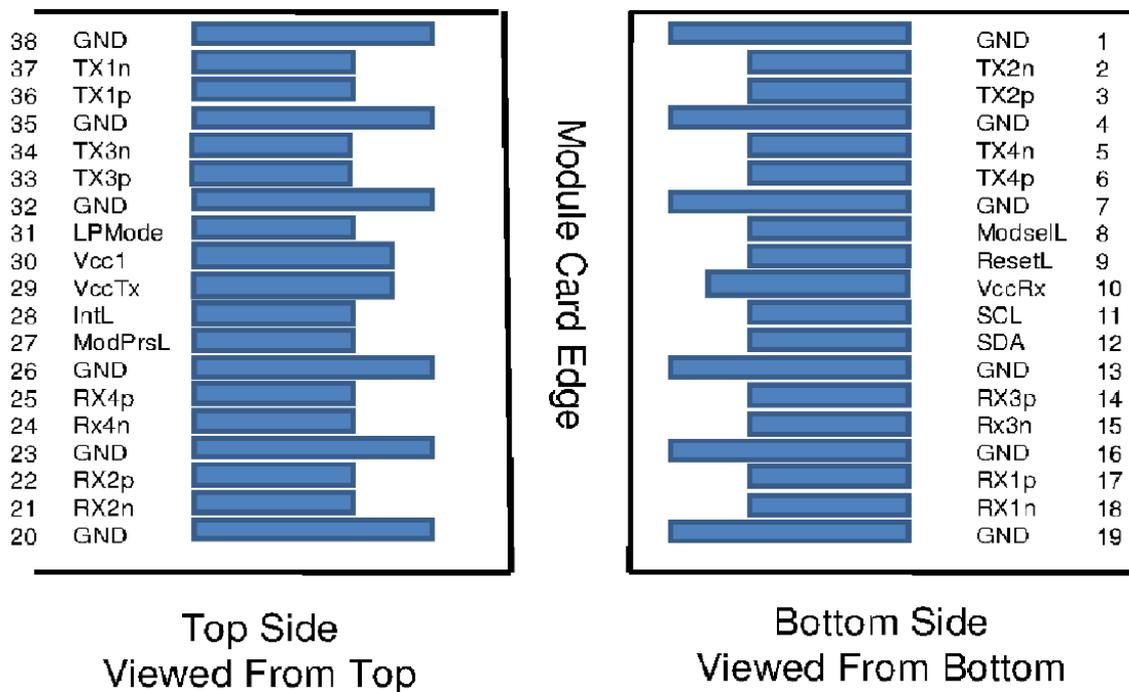
Pin Definition

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

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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

Pin Descriptions



Ordering Information

Part Number	Product Description
TSQS-CW1HG-10LC	100Gbps QSFP28 CWDM4 10km 0°C ~ +70°C

Important Notice

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