



XQX5400 QSFP28 100G-CWDM4-10km

10 km Reach Optimized for Data Center

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.

This product is built on the **LightScale®2** platform.

Leveraging its novel hybrid integration technology, **Kaiam** is able to design and produce high-speed optical modules for high bandwidth applications such as router and data center interconnect. All of **Kaiam's** products allow for superior performance at 40Gb/s and beyond with duplex single mode fiber.

KEY FEATURES

- *Reach: 10 km via SMF*
- *Interoperable with 2 km CWDM4 modules*
- *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*
- *40G-LR4 compatible*



OPTICAL TRANSMITTER PERFORMANCE

PARAMETER		SYMBOL	MIN	MAX	UNITS
Channel Wavelength	Ch0	λ_0	1264.5	1277.5	nm
	Ch1	λ_1	1284.5	1297.5	
	Ch2	λ_2	1304.5	1317.5	
	Ch3	λ_3	1324.5	1337.5	
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
RIN _{20 OMA}				-130	dB/Hz
Transmitter Reflectance				-20	dB
Extinction Ratio		ER	3.5		dB
Transmitter Optical Mask		MM	Compliant with 100G-CWDM4		

OPTICAL RECEIVER PERFORMANCE

PARAMETER		SYMBOL	MIN	TYP	MAX	UNITS
Channel Wavelength	Ch0	λ_0	1264.5	1271	1277.5	nm
	Ch1	λ_1	1284.5	1291	1297.5	
	Ch2	λ_2	1304.5	1311	1317.5	
	Ch3	λ_3	1324.5	1331	1337.5	
Average Receive Power, each lane (BER=5x10 ⁻⁵ , PRBS=2 ³¹ - 1)			-13		2.5	dBm
Receiver Sensitivity (OMA) per channel		OMA _{in}			-11.5	dBm
Stressed Receiver Sensitivity (OMA)		OMA _{in,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		0.33		UI
Stressed eye J9 Jitter, each lane		J9		0.48		UI

NOMINAL OPERATING CONDITIONS

PARAMETER	MIN	TYP	MAX	UNITS	NOTES
Operating Case Temperature	0		+70	°C	
Supply Voltage	3.135	3.3	3.465	V	+/- 5%
IIC Clock Frequency		100	400	kHz	
IIC Clock Stretching			500	µs	
IIC Data Hold Time			900	ns	

