

QSFP-DD LR4

400 Gbps Rate Transceiver

Description:

OPTOKON **400G QSFP-DD (Double Density) LR4** module supports link length ranging from 2 meters to a minimum of 10 kilometers over Single-mode fiber (SMF) with duplex LC connector. The Multi-Source Agreement (MSA) specifies a 4 x 100 Gbps Coarse Wavelength Division Multiplex (CWDM) optical interface for Ethernet applications, enabling 400 Gbps optical transceivers. To ensure reliable system operation, the host must implement forward error correction (FEC).

The transceiver utilizes an eight-lane electrical interface in both directions, with a nominal signaling rate of 53.125 Gbps per lane.



Features:

- Compliant with 400GBASE-LR4
- 8x53.125 Gbps (PAM4) electrical interface
- Integrated CWDM EML TOSA / PIN ROSA for up to 10km reach over SMF
- Digital Diagnostics Monitoring Interface
- Duplex LC optical receptacle
- No external reference clock
- Electrically hot-pluggable
- Compliant with QSFP-DD MSA with LC connector
- Case operating temperature range: 0°C to 70°C
- Power dissipation less than 12 W
- Class 1 Laser

Standards:

- Compliant with QSFP-DD Hardware Specification Rev 5.1
- Compliant to QSFP-DD MSA

Recommended operating conditions:

Parameter	Min	Typ	Max	Unit	Note
Storage Temperature	-40		85	°C	Ts
Case operating temperature	0	-	70	°C	Without air flow (Tcase)
Relative humidity	5	-	95	%	RH
Power supply voltage	3.13	3.3	3.47	V	VCC
Power Supply Current			3458	mA	ICC
Data rate		53.125		GBd	Each channel-Optical (BR)
Transmission distance			10	km	TD
Coupled fiber	Single mode fiber				9/125 um SMF

Optical characteristics:

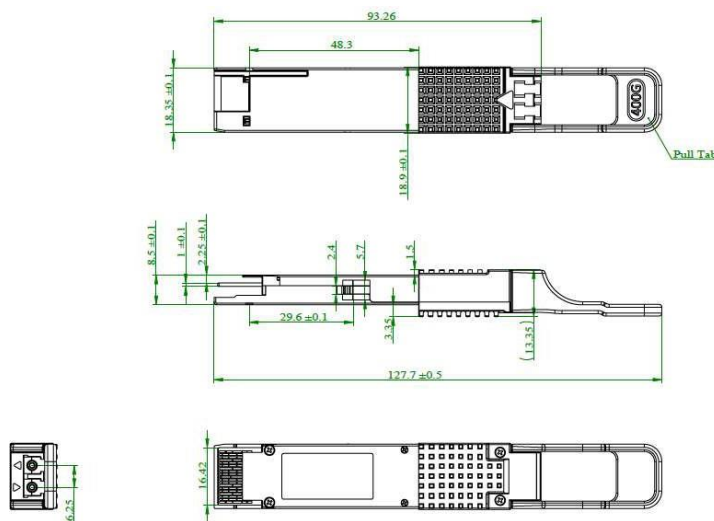
Transmitter

Parameter	Min	Typ	Max	Unit	Note
Wavelength assignment ($\lambda_0 - \lambda_3$)	1264.5	1271	1277.5	nm	λ_0
	1284.5	1291	1297.5		λ_1
	1304.5	1311	1317.5		λ_2
	1324.5	1331	1337.5		λ_3
Signaling speed per lane		53.125± 100 ppm		Gbps	
Data rate variation	-100		100	ppm	
Total output power			9.3	dBm	
Average launch power off per lane	-2.7		5.1	dBm	

Receiver

Parameter	Min	Typ	Max	Unit	Note
Average input power per channel	-9		5.1	dBm	
Receiver sensitivity (OMA) per Lane max.			-6.8	dBm	BER@2.4E-4
Signaling speed per lane		53.125± 100 ppm		Gbps	
Receiver reflectance			-26	dB	
Modulation format		PAM4			

Outline Dimension:



Laser Safety

The transceiver is a Class 1 laser product per IEC 60825-1:2014. It is considered non-hazardous when operated within the limits of this specification. Operating this product in a manner inconsistent with specifications and intended usage may result in hazardous radiation exposure.

Ordering code:

Product number	Description
S400G-QP-DD-LR4-D-XX	400 Gbps (4x100 Gbps), QSFP-DD, up to 10 km, 0°C to +70°C, duplex LC connector

Remark: Full compatibility is conditioned by exact specification of the end device; compatibility of older SFPs is not guaranteed with new devices or updated SW.