

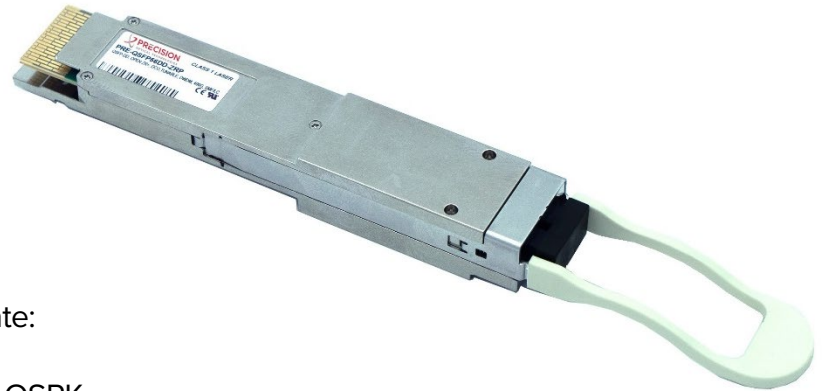
PRE-QSFP56DD-ZRP

QSFP-DD, OpenZR+, -10dBm, Tunable, DWDM, 400G, Coherent



Product Features:

- C-Band Tunable ITU Ch13 - 61
- 75/100GHz Grid Spacing
- 7nm Coherent DSP
- 425Gbps Nominal Data Rate
- 400GAUI-8 PAM4 Host Interface
- Supports Network/Line side multi-rate:
 - 100G to 400G
 - DP-16QAM / DP-8QAM / DP-QSPK
- >1000km Reach at 400G (Line System Dependent)
- Duplex LC-UPC Connector
- Digital Diagnostics Monitoring (DDM)
- C-Temp
- <22W Power Consumption



Product Applications:

- Data Center Interconnect
- Metro and Long-Haul Networks
- 100G-400G DWDM Ethernet

Standards:

- OpenZR+ w/O-FEC Support
- OIF 400ZR w/C-FEC Support
- QSFP-DD MSA 6.0
- CMIS 5.0 and C-CMIS 1.2
- Telcordia GR-468-CORE Reliability
- RoHS Compliant

General Specifications:

Parameter	Min	Typical	Max	Unit
Case Operating Temperature	0	-	75	°C
Power Consumption	-	-	22	W
Power Supply Voltage	3.14	3.3	3.46	V
Operating Humidity	5	-	85	%
Storage Temperature	-40	-	85	°C
Transmission Distance ¹ (OIF ZR)	-	-	120	km
Transmission Distance ¹ (OpenZR+)	-	-	1000 ²	km
Data Rate (Total)	120.28	-	481.11	Gbps
Signaling Rate per Lane (PAM4)	-	53.125	-	GBd
FEC Type	C-FEC / O-FEC			
Post FEC BER	1.00E-15			
Modulation Type	DP-16QAM / DP-8QAM / DP-QSPK			

¹ Amplified OSNR limited links. Max reach will depend on data rate, amplifiers, fiber quality and network design.

² Dispersion Limit

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Line Interface Modes

Interface	Modulation	FEC Type	Symbol Rate (GBd)
400ZR+	16QAM	O-FEC	60.1385
300ZR+	8QAM	O-FEC	60.1385
200ZR+	QPSK	O-FEC	60.1385
100ZR+	QPSK	O-FEC	30.0693
400ZR	16QAM	C-FEC	59.8438

Optical Characteristics: Transmitter

Parameter	Min	Typical	Max	Unit
Transmitter Frequency (Tunable)	191.3	-	196.1	THz
Laser Frequency Accuracy	-1.8	-	1.8	GHz
Channel Spacing	75	-	100	GHz
Transmitter Output Power	-10	-	-	dBm
Tx Output Power w/ Tx Disabled	-	-	-30	dBm
Output Power Range (400G ZR+)	-15	-	-8	dBm
Output Power Range (300G ZR+)	-15	-	-8	dBm
Output Power Range (200G ZR+)	-14	-	-7	dBm
Output Power Range (100G ZR+)	-13	-	-6	dBm
Output Power Tuning Step Size	0.1	-	-	dB
Optical Power Stability	-1.0	-	1.0	dB
Poff Optical Power	-	-	-30	dBm
RIN (0.2GHz ≤ f ≤ 10 GHz Avg)	-	-	-145	dB/Hz
RIN (0.2GHz ≤ f ≤ 10 GHz Peak)	-	-	-140	dB/Hz
Inband (IB) OSNR	34	50	-	dB/0.1nm
Out-of-band (OOB) OSNR	23	50	-	dB/0.1nm
Transmitter Reflectance	-	-	-20	dB
Transmitter Back Reflectance Tolerance	-	-	-24	dB
Transmitter Polarization Dependent Power	-	-	1.5	dB

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Optical Characteristics: Receiver

Parameter	Min	Typical	Max	Unit
Input Power Range (OSNR _{min} , 400ZR+)	-12	-	-	dBm
Input Power Range (OSNR _{min} , 300ZR+)	-15	-	-	dBm
Input Power Range (OSNR _{min} , 200ZR+)	-18	-	-	dBm
Input Power Range (OSNR _{min} , 100ZR+)	-18	-	-	dBm
OSNR Tolerance (0.1nm BW, 400ZR+)	-	-	24	dB/0.1nm
OSNR Tolerance (0.1nm BW, 300ZR+)	-	-	21	dB/0.1nm
OSNR Tolerance (0.1nm BW, 200ZR+)	-	-	16	dB/0.1nm
OSNR Tolerance (0.1nm BW, 100ZR+)	-	-	12.5	dB/0.1nm
Optical Return Loss	20	-	-	dB
CD Tolerance (400ZR+)	20,000	-	-	ps
CD Tolerance (300ZR+)	25,000	-	-	ps
CD Tolerance (200ZR+)	25,000	-	-	ps
CD Tolerance (100ZR+)	30,000	-	-	ps
Rx_LOS Assert (400ZR+)	-20	-18	-16	dBm
Rx_LOS Assert (300ZR+)	-22	-20	-18	dBm
Rx_LOS Assert (200ZR+)	-24	-22	-20	dBm
Rx_LOS Assert (100ZR+)	-24	-22	-20	dBm
Rx_LOS Hysteresis	-	1.0	2.5	dB
Damage Threshold (Total)	17	-	-	dBm

Product Ordering Information

Part Number	Description
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