QSFPDD-400G-DR4-L10-CEO

QSFPDD
1310nm
10km Reach

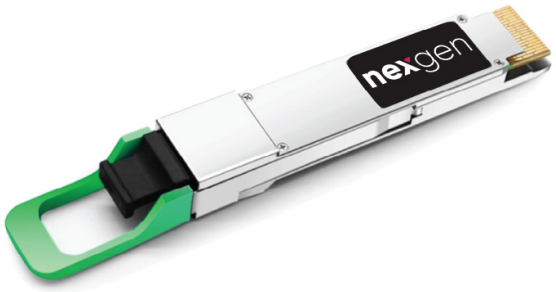
Datasheet | product specifications

ESD threshold 1kV for SFI pins and 2kV for all other electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114A (HBM). However, normal ESD precautions are still required during the handling of this module.

Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Features

- Has a reach up to 10km on SMF
- Maximum power consumption of 8W
- Operating case temperature: 0°C to 70°C
- Supports 53,125 Gbaud Data rate
- Contains a MPO-12 connector
- Contains a PIN receiver
- Contains a 1310nm EML transmitter



Product may differ from the picture

Applications

- Suitible for 400G BASE-DR4 Ethernet usage
- Suitible for Data Center usage

Compliances

- Compliant with RoHS
- Compliant with IEEE Std 802.3bs
- Compliant with IEEE Std 802.3cu
- Compliant with QSFP-DD MSA
- Compliant with CMIS4.0

Overview

Part Number	Data Rate	Output Power (OMA)	Connector	Reach	Temperature
QSFPDD-400G-DR4-L10-CEO	53,125Gbaud	Maximum of 5dB	MPO-12	10km	0 ~ 70°C

Ordering Information

Part Number	Product Description
QSFPDD-400G-DR4-L10-CEO	400GBase SMF QSFP-DD 1310nm 10km 0°C to 70°C MTP/MPO-12 DDM EML 8W

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PIN Description

PIN	Symbol	Name - Description	Logic	Notes
1	GND	Ground		1
2	Tx2n	Transmitter Inverted Data Input	CML-I	
3	Tx2p	Transmitter Non-Inverted Data Input	CML-I	
4	GND	Ground		1
5	Tx4n	Transmitter Inverted Data Input	CML-I	
6	Tx4p	Transmitter Non-Inverted Data Input	CML-I	
7	GND	Ground		1
8	ModSelL	Module Select	LVTTL-I	
9	ResetL	Module Reset	LVTTL-I	
10	VccRx	+3.3V Power Supply Receiver		2
11	SCL	2-Wire serial Interface Clock	LVCOMS-I/O	
12	SDA	2-Wire serial Interface Data	LVCOMS-I/O	
13	GND	Ground		1
14	Rx3p	Receiver Non-Inverted Data Output	CML-O	
15	Rx3n	Receiver Inverted Data Output	CML-O	
16	GND	Ground		1
17	Rx1p	Receiver Non-Inverted Data Output	CML-O	
18	Rx1n	Receiver Inverted Data Output	CML-O	
19	GND	Ground		1
20	GND	Ground		1
21	Rx2n	Receiver Inverted Data Output	CML-O	
22	Rx2p	Receiver Non-Inverted Data Output	CML-O	
23	GND	Ground		1
24	Rx4n	Receiver Inverted Data Output	CML-O	
25	Rx4p	Receiver Non-Inverted Data Output	CML-O	
26	GND	Ground		1
27	ModPrsL	Module Present	LVTTL-O	
28	IntL/RxLOS	Interrupt/optional RxLOS	LVTTL-O	
29	VccTx	+3.3V Power supply transmitter		2
30	Vcc1	+3.3V Power supply		2
31	LPMode	Low Power mode	LVTTL-I	
32	GND	Ground		1
33	Tx3p	Transmitter Non-Inverted Data Input	CML-I	
34	Tx3n	Transmitter Inverted Data Input	CML-I	
35	GND	Ground		1
36	Tx1p	Transmitter Non-Inverted Data Input	CML-I	
37	Tx1n	Transmitter Inverted Data Input	CML-I	
38	GND	Ground		1
39	GND	Ground		1
40	Tx6n	Transmitter Inverted Data Input	CML-I	
41	Tx6p	Transmitter Non-Inverted Data Input	CML-I	
42	GND	Ground		1
43	Tx8n	Transmitter Inverted Data Input	CML-I	
44	Tx8p	Transmitter Non-Inverted Data Input	CML-I	
45	GND	Ground		1

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PIN Description

PIN	Symbol	Name - Description	Logic	Notes
46	Reserved	For Future Use	LVCMOS/CML-I	3
47	P/VS1	Programmable/Module Vendor Specific 1	LVCMOS/CML-I	3
48	VccRx1	+3.3V Power Supply		2
49	P/VS2	Programmable/Module Vendor Specific 2	LVCMOS/CML-O	3
50	P/VS3	Programmable/Module Vendor Specific 3	LVCMOS/CML-O	3
51	GND	Ground		1
52	Rx7p	Receiver Non-Inverted Data Output	CML-O	
53	Rx7n	Receiver Inverted Data Output	CML-O	
54	GND	Ground		1
55	Rx5p	Receiver Non-Inverted Data Output	CML-O	
56	Rx5n	Receiver Inverted Data Output	CML-O	
57	GND	Ground		1
58	GND	Ground		1
59	Rx6n	Receiver Inverted Data Output	CML-O	
60	Rx6p	Receiver Non-Inverted Data Output	CML-O	
61	GND	Ground		1
62	Rx8n	Receiver Inverted Data Output	CML-O	
63	Rx8p	Receiver Non-Inverted Data Output	CML-O	
64	GND	Ground		1
65	NC	No Connect		3
66	Reserved	For future use		3
67	VccTx1	+3.3 V Power Supply		2
68	Vcc2	+3.3 V Power Supply		2
69	ePPS/Clock	1PPS PTP clock or reference clock input	LVCMOS-I	4
70	GND	Ground		1
71	Tx7p	Transmitter Non-Inverted Data Input	CML-I	
72	Tx7n	Transmitter Inverted Data Input	CML-I	
73	GND	Ground		1
74	Tx5p	Transmitter Non-Inverted Data Input	CML-I	
75	Tx5n	Transmitter Inverted Data Input	CML-I	
76	GND	Ground		1

Notes:

1. QSFP-DD uses common ground (GND) for all signals and supply (power). All are common within the QSFP-DD module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane. Each connector Gnd contact is rated for a steady state current of 500mA.
2. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 shall be applied concurrently. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 may be internally connected within the module in any combination. For power classes 4 and above the module differential loading of input voltage pads must not result in exceeding contact current limits. Each connector Vcc contact is rated for a steady state current of 1000mA.
3. All Vendor Specific, Reserved and No Connect pins may be terminated with 50Ω to ground on the host. Pad 65 (No Connect) shall be left unconnected within the module, optionally pad 65 may get terminated with 10kΩ to ground on the host. Vendor specific and reserved pads shall have an impedance to GND that is greater than 10kΩ.
4. For host not implementing ePPS/Clock, it is not necessary to parallel terminate the ePPS/Clock signal to ground on the host. ePPS/Clock already has parallel termination in the module.

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Absolute Maximum Ratings

Parameters	Symbol	Min	Typ	Max	Unit	Notes
Storage Temperature	Ts	-40	-	85	°C	
Relative Humidity	RH	15	-	85	%	1
Operating Case Temperature	Tc	0	-	70	°C	

Notes:
1. Non-condensing.

Recommended Operating Conditions

Parameters	Symbol	Min	Typ	Max	Unit	Notes
Data Rate per Lane	-	-	53,125	-	Gbaud	-
Link Distance	D	-	-	10	km	SMF
Power Consumption	Po	-	-	8	W	
Power Supply Current	Icc	-	-	2,55	A	

Wavelengths

Parameters	Symbol	Min	Typ	Max	Unit	Notes
Center Wavelength	λ	1304,5	-	1317,5	nm	

Optical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Average Launch Power Each Lane	PAVG	-1,9	-	4,8	dBm	
Average Launch Power of OFF transmitter, each line	TOFF	-	-	-15	dBm	
Optical Return Loss Tolerance	TOL	-	-	21,4	dB	
Extinction Ratio	ER	3,5	-	-	dB	
Transmitter and Dispersion Eye Closure for PAM4	TDECQ	-	-	3,4	dB	
Outer Optical Modulation Amplitude (OuterOMA)	TOMA	1,1	-	5	dBm	

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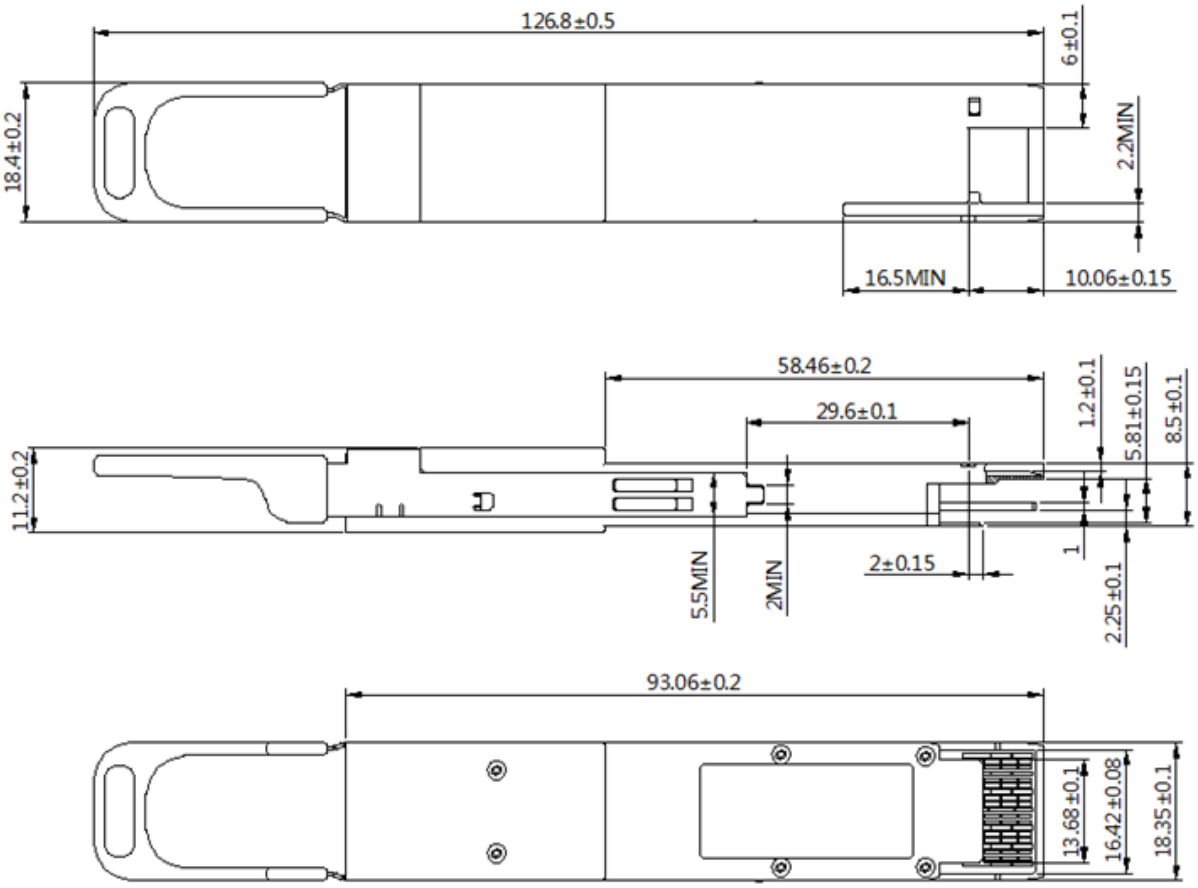
Optical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Notes
Receiver						
Center Wavelength	λ	1304,5	-	1317,5	nm	
Average Receiver Power (OMA_{outer})	POMA	-	-	5	dBm	
Receiver Sensitivity (OMA_{outer})	SOMA	-	-	-6,1	dBm	
Receiver Sensitivity	S	-	-	-6,2	dBm	
LOS Assert	LOSA	-18	-	-	dBm	
LOS Deassert	LOSD	-	-	-12	dBm	
LOS Hysteresis	LOSH	0,5	-	-	dB	

Mechanical Dimensions



Revision History

Revision	Doc. #	Date	Author	Description
V1.0	DT000152	26/Jun	SHN	Initial Document

Note: Nexgen A/S reserves the right to change this document without notice.