QSFP28-100G-LR1-XXH

100GBase QSFP28
1310nm
10km Reach

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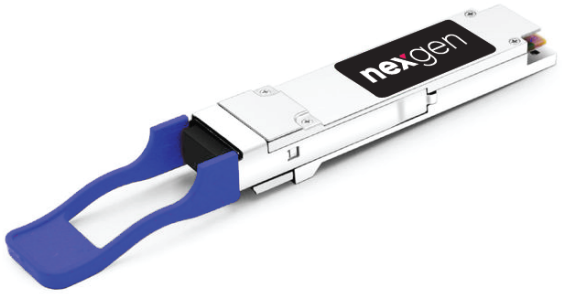
Features

- QSFP28 MSA compliant
- PAM4 modulation
- Supports 53.125Gbaud
- 100G Lambda MSA 100G-LR1 Specification compliant
- Up to 10 km transmission on single mode fiber (SMF) with FEC
- Operating case temperature: 0 to 70°C
- 4x25G electrical interface (OIF CEI-28G-VSR)
- Maximum power consumption 4.5W
- LC duplex connector
- RoHS compliant



Applications

- 100G Ethernet
- Data Center Interconnect
- Enterprise networking

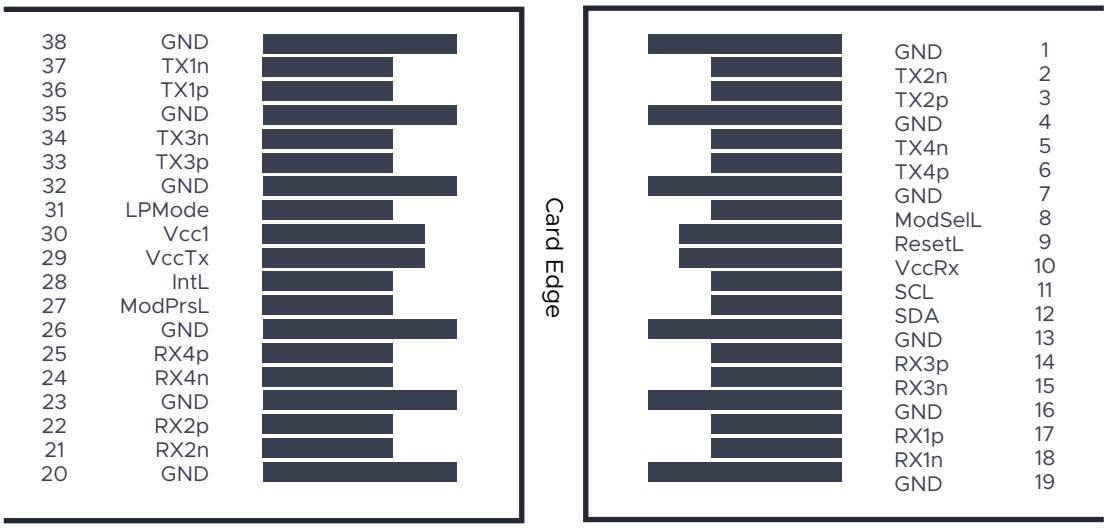
Part number	Product description
QSFP28-100G-LR1-XXH	100GBase SMF QSFP28 1310nm 10km 0°C to 70°C LC Duplex DDM (4.5W)

PIN Description

Pin		Function/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (C ommon with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	
30	Vcc1	3.3V power supply	
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:
1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.

Pin Assignment and Description



Top Side
Viewed from Top

Bottom Side
Viewed from Bottom

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Ts	-40	85	℃	
Power Supply Voltage	Vcc	-0.5	3.6	V	
Relative Humidity (non-condensation)	RH	5	95	%	

Notes:
Exceeding any of these values may be harmful for the device

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units
Operating Case Temperature	Tc	0	-	70	℃
Supply Voltage	Vcc	3.13	3.3	3.47	V
Data Rate (PAM4)	-	-	53.125	-	GBd

Transceiver Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Power Dissipation	-	-	-	4.5	W	-
Supply Current	Icc	-	-	1.36	A	-
Transmitter						
Input Differential Impedance	Rin	-	100	-	Ω	1
Differential Data Input Swing	Vin, P-P	180	-	900	mVpp	-
Transmit Disable Voltage	VD	Vcc-1.3	-	Vcc	V	-
Transmit EnableVoltage	VEN	Vee	-	Vee+0.8	V	2
Receiver						
Differential Data Output Swing	Vout, P-P	300	-	900	mVpp	3
LOS Fault	VLOS fault	Vcc-1.3	-	VccHost	V	4
LOS Normal	VLOS norm	Vee	-	Vee+0.8	V	4

Notes:
1. Connected directly to TX data input pins. AC coupled thereafter.
2. Open circuit.
3. Into 100 ohms differential termination
4. Loss Of Signal is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

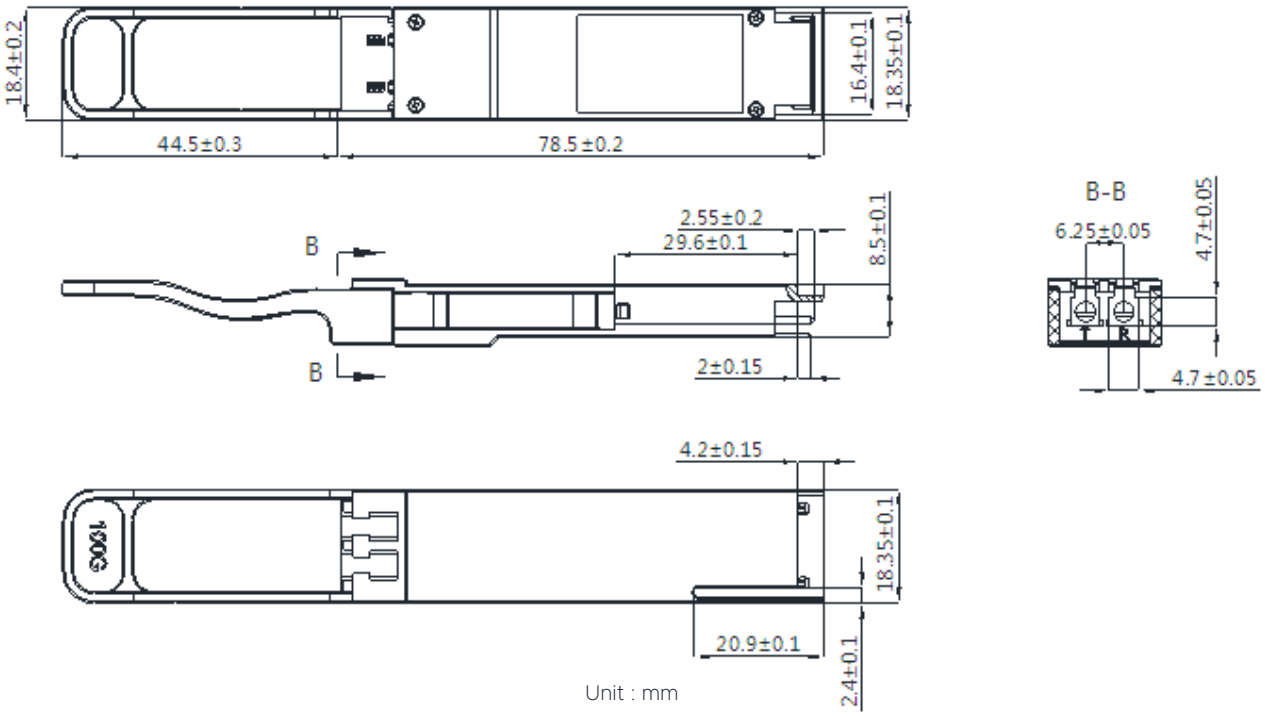
Transceiver Optical Characteristics

Parameter	Min	Typical	Max	Units	Notes
Transmitter					
Average Launch Power per Lane	-1.4	-	4.5	dBm	1
Optical modulation amplitude, each lane (OMA)	0.7	-	4.7	dBm	2
Launched Outer OMA minus TDECQ, each Lane	-0.7	-	-	nm	3
Center Wavelength Range	1304.50	1311.00	1317.50	nm	-
Extinction Ratio each Lane	3.5	-	-	dB	-
Transmitter and Dispersion Eye Closure (TDECQ), each Lane	-	-	3.4	dB	-
Receiver					
Center Wavelength Range	1304.50	1311.00	1317.50	nm	-
Damage Threshold, each Lane	5.5	-	-	dBm	-
Average Receive Power eachLane	-7.7	-	4.5	dBm	4
Receive Power (OMA), each Lane	-	-	4.7	dBm	-
Receiver Sensitivity (OMA outer) each Lane	-	-	-6.1	dBm	-
Stressed Receiver Sensitivity (OMA outer) each Lane	-	-	-4.1	dBm	5

Notes:

1. Average launch power, each lane(min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance
2. Even if the TDECQ < 1.4dB for an extinction ratio of ≥ 4.5dB or TDECQ < 1.3dB for an extinction ratio of < 4.5dB the minimum OMA outer must exceed the specified minimum value
3. Extinction ratio ≥ 4.5dB
4. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance
5. Measured with conformance test signal with BER ≤2.4 x 10^-4

Mechanical specifications



Revision history

Revision	Date	Author	Description
V1.0	31-04-2021	JGN	Initial Document

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