

QSFP28-100G-FR1-XXG

100GBase QSFP28
1310nm
2km Reach

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Features

- QSFP28 MSA compliant
- PAM4 modulation
- Supports 53.125Gbaud
- 100G Lambda MSA 100G-FR1 Specification compliant
- Up to 2km 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 4.0W
- LC duplex connector
- RoHS compliant



Applications

- 100G Ethernet
- Data Center Interconnect
- Enterprise networking

Part number

Product description

QSFP28-100G-FR1-XXG

100GBase SMF QSFP28 1310nm 2km 0°C to 70°C LC Duplex DDM (4W)

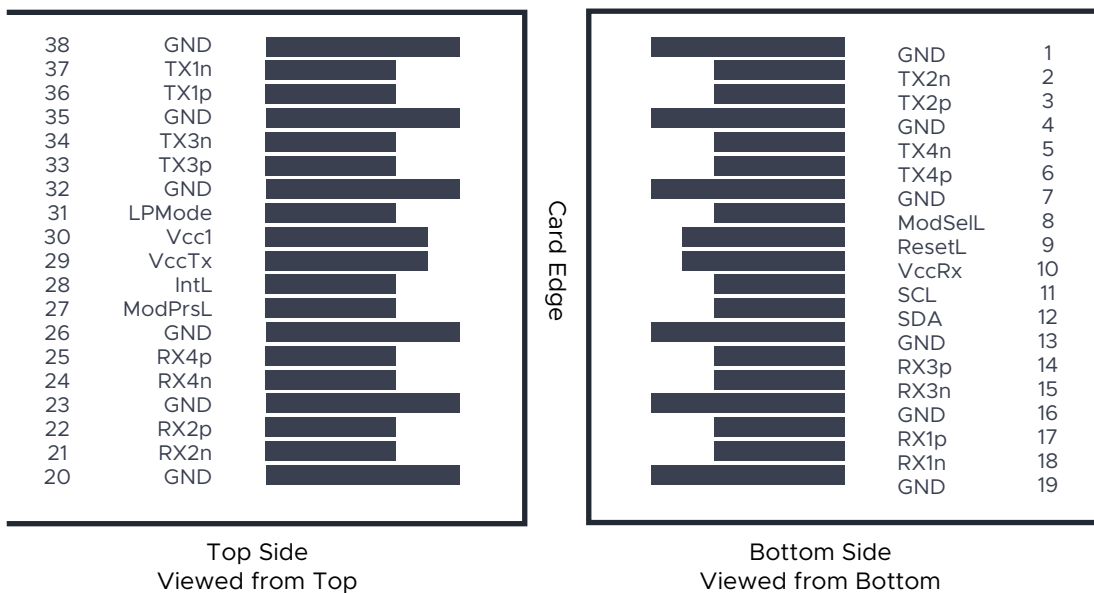
PIN Description

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 (Common 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 4.7K Ω to 10K Ω pull-up resistor to VccHost.

Pin Assignment and Description



Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Ts	-40	85	°C	
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	°C
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	-	-	-	4.0	W	-
Supply Current	I _{cc}	-	-	1.21	A	-
Transmitter						
Input Differential Impedance	R _{in}	-	100	-	Ω	1
Differential Data Input Swing	V _{in} , P-P	180	-	900	mVpp	-
Transmit Disable Voltage	VD	V _{cc} -1.3	-	V _{cc}	V	-
Transmit Enable Voltage	VEN	V _{ee}	-	V _{ee} +0.8	V	2
Receiver						
Differential Data Output Swing	V _{out} , P-P	300	-	900	mVpp	3
LOS Fault	V _{LOS} fault	V _{cc} -1.3	-	V _{cc} Host	V	4
LOS Normal	V _{LOS} norm	V _{ee}	-	V _{ee} +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 LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

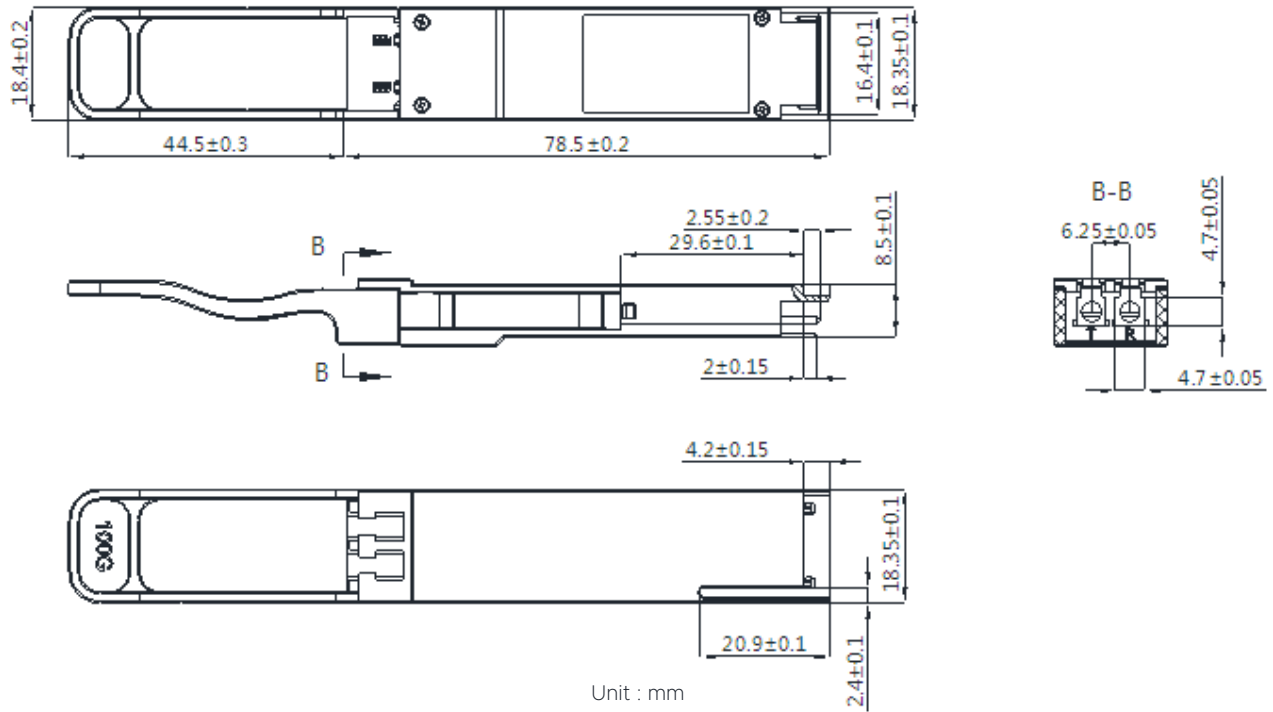
Transceiver Optical Characteristics

Parameter	Min	Typical	Max	Units	Notes
Transmitter					
Average Launch Power per Lane	-3.1	-	4.0	dBm	1
Optical modulation amplitude, each lane (OMA)	-0.2	-	4.2	dBm	2
Launched Outer OMA minus TDECQ, each Lane	-1.6	-	-	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	5.0	-	-	dBm	-
Average Receive Power each Lane	-7.1	-	4.0	dBm	4
Receive Power (OMA), each Lane	-	-	4.2	dBm	-
Receiver Sensitivity (OMA outer) each Lane	-	-	-4.5	dBm	-
Stressed Receiver Sensitivity (OMA outer) each Lane	-	-	-2.5	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.