

QSFP28-100G-ER4L-XEI

100GBase QSFP28
LWDM4
30-40km(+FEC) Reach

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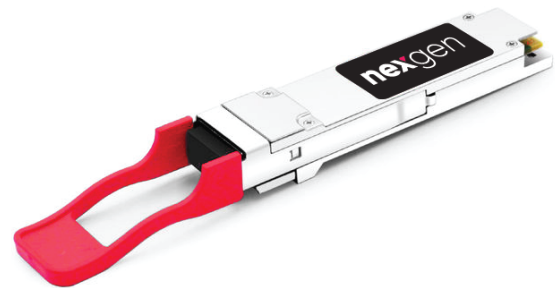


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Features

- QSFP28 MSA compliant
- 4 LAN-WDM lanes MUX/DEMUX design
- 4x25G electrical interface
- Maximum power consumption 5W
- LC duplex connector
- Supports 103.125Gb/s aggregate bit rate
- Up to 40km with FEC on the host card
- Up to 30km without FEC on the host card
- PIN + SOA Receiver
- Operating case temperature: 0°C to 70°C
- Single 3.3V power supply
- RoHS-2.0 compliant



Applications

- 100GBASE-ER4 Ethernet links
- Telecom

Part number

Product description

QSFP28-100G-ER4L-XEI

100GBase SMF QSFP28 (EML) LWDM4 30km/40km with FEC 0°C to 70°C LC Duplex DDM (5W)

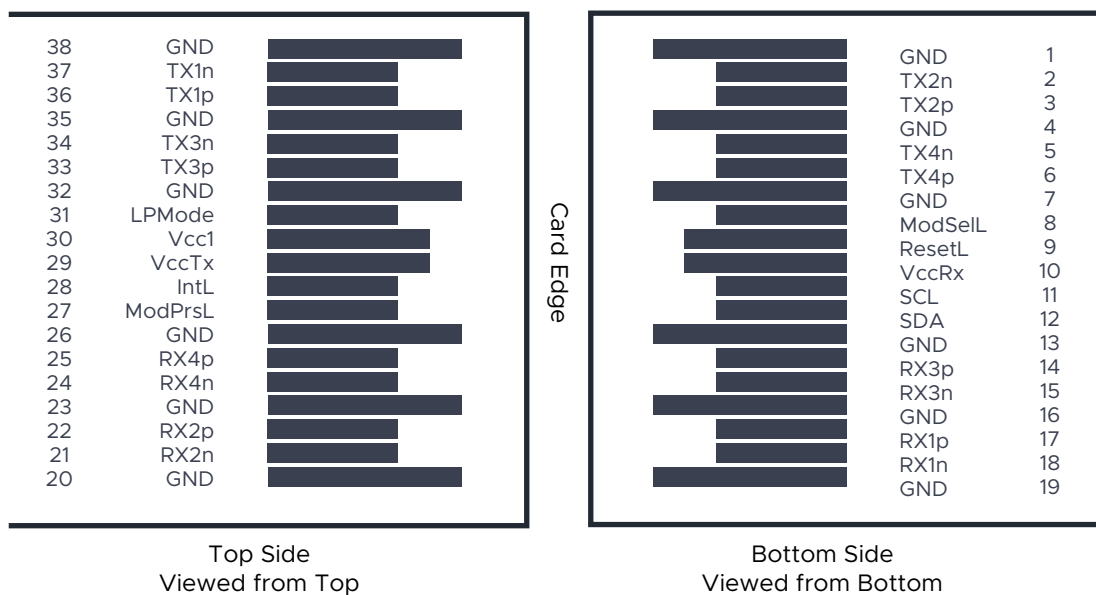
PIN Description

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 (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	4.0	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	3.465	V
Data Rate per Lane	-	-	25.78125	-	Gb/s

Transceiver Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Power Dissipation	-	-	-	5.0	W	-
Supply Current	I _{cc}	-	-	1445	mA	-
Transmitter						
Input Differential Impedance	Z _{in}	-	100	-	Ω	-
Differential Data Input Swing	V _{in} , P-P	190	-	700	mV p-p	-
AC Common Mode Input Voltage Tolerance	-	15	-	-	mV	-
Differential Input Voltage Swing Threshold	EW15	-	50	-	mVpp	-
Receiver						
Output Differential Impedance	Z _{out}	90	100	110	Ω	-
Differential Data Output Swing	V _{out} , p-p	300	-	850	mV p-p	-
AC Common Mode Output Voltage	-	-	-	7.5	mV	-
Single-ended Output Voltage	-	-0.3	-	4.0	V	-

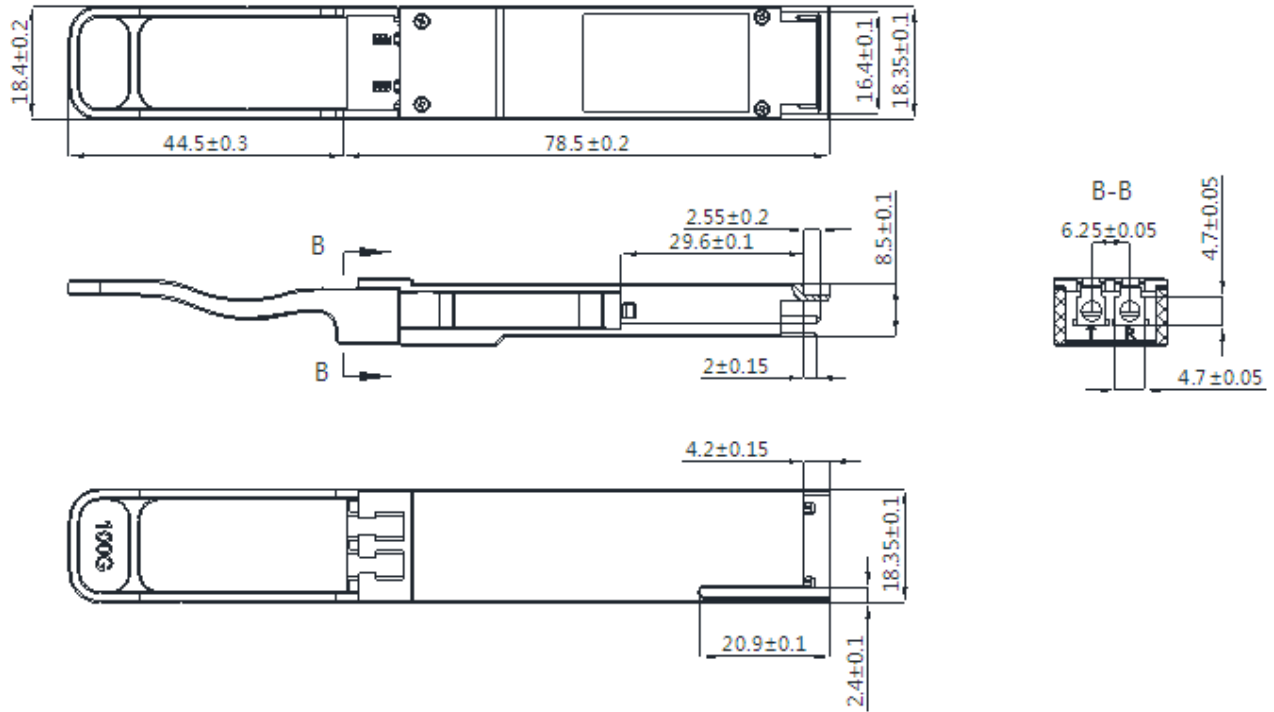
Transceiver Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter						
Average Launch Power per Lane	Pavg	-2.5	-	2.9	dBm	1
Total Launch Optical Power	Pout	-	-	8.9	dBm	1
Optical modulation amplitude, each lane (OMA)	OMA	0.1	-	4.5	dBm	-
Center Wavelength Range	L1	1294.53	1295.56	1296.59	nm	-
	L2	1299.02	1300.05	1301.09	nm	-
	L3	1303.54	1304.58	1305.63	nm	-
	L4	1308.09	1309.14	1310.19	nm	-
Extinction Ratio	ER	8.0	-	-	dB	2
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Optical Return Loss Tolerance	ORLT	-	-	20	dB	-
Pout @TX-Disable Asserted	Poff	-	-	-30	dBm	1
Eye Mask {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				-
Receiver						
Center Wavelength	L1	1294.53	1295.56	1296.59	nm	-
	L2	1299.02	1300.05	1301.09	nm	-
	L3	1303.54	1304.58	1305.63	nm	-
	L4	1308.09	1309.14	1310.19	nm	-
Average receiver power, each lane	Pmax	-20.9	-	-	dBm	-
Damage Treshold (each channel)	Pmax	2.9	-	-	dBm	-
Receiver sensitivity (OMA), each lane	Psens1	-	-	-18.4	dBm	3
Receiver sensitivity (OMA), each lane	Psens2	-	-	-21.4	dBm	4
LOS De-Assert	LOSD	-	-	-22.0	dBm	-
LOS Assert	LOSA	-30.0	-	-	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-

Notes:

1. The optical power is launched into SMF.
2. Measured with PRBS 2³¹-1 test pattern @25.78125Gbps
3. Measured with PRBS 2³¹-1 test pattern @25.78125Gb/s @BER 1x10⁻¹²
4. Measured with PRBS 2³¹-1 test pattern @25.78125Gb/s @BER 5x10⁻⁵

Mechanical specifications



Unit : mm

Revision history

Revision	Date	Author	Description
V1.1	22-12-2021	JGN	Initial Document

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