

QSFP-100G-SR4

100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM

Features

- Hot-pluggable QSFP28 form factor
- Supports 103.1Gb/s to 112.2Gb/s aggregate bit rates
- Power dissipation < 3.5W
- RoHS-6 compliant
- Commercial case temperature range of 0°C to 70°C
- Single 3.3V power supply
- Maximum link length of 100m on OM4 Multimode Fiber (MMF)
- 4x25Gb/s 850nm VCSEL-based transmitter
- 4x25G electrical interface
- Single MPO12 receptacle
- I2C management interface

Application

- 100GBASE-SR4 100G Ethernet
- 128G Fiber Channel
- 4x28Gb/s Multimode OTN

Product Description

Fibrenet's 100G QSFP28 transceiver modules are designed for use in 100 Gigabit Ethernet, 128G FC and 4x28G OTN client links over multimode fiber. They are compliant with the QSFP28 MSA 128G FC and IEEE 802.3bm 100GBASE-SR4 and CAUI-4. Digital diagnostics functions are available via the I2C interface as specified by the QSFP28 MSA.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	T_s	-20	-	+85	°C	
Supply Voltage	V_{CC}	-0.3	-	+3.6	V	
Case Operating Temperature	T_{OP}	0	-	70	°C	
Operating Relative Humidity	RH	-	-	+85	%	
Receiver Damage Threshold, per Lane	PR_{dmg}	5.5	-	-	dBm	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T_C	0	-	+70	°C	
Power Supply Voltage	V_{CC}	3.13	3.3	3.47	V	
Aggregate Bit Rate	BR_{AVE}	103.1	-	112.2	Gb/s	
Lane Bit Rate	BR_{LANE}	25.78	-	28.05	Gb/s	
Humidity	Rh	5	-	85	%	
Fiber Bend Radius	Rb	3	-	-	cm	

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Supply Voltage	V _{cc}	3.135		3.465	V	
Supply Current	I _{cc}			1.5	A	
Module total power	P			3.5	W	
Signaling rate per lane		25.78	-	28.05	Gb/s	2
Differential data input voltage per lane	V _{in,pp,diff}			900	mV	
Single-ended voltage tolerance	V _{in,pp}	-0.35		3.3	V	
Receiver						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Signaling rate per lane			25.78		Gb/s	2
Differential data output swing	V _{out,pp}	400	600	800	mV _{pp}	
Transition time (20% to 80%)	T _r , T _f	12			ps	
Bit Error Rate	BER			E-12		3

Notes:

- Maximum total power value is specified across the full operational temperature and voltage range when CDRs are locked or a lack of input signal results in squelch being activated. If incorrect frequencies cause the CDRs to continuously attempt to lock, maximum power dissipation may reach 4.5 W.
- ± 100ppm
- BER=10⁻¹²; PRBS [231-1@25.78125Gbps](#).

Optical Characteristics (EOL, TOP = 0 to 70°C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane		25.78125 ± 100ppm			Gb/s	1
Center wavelength		840	-	860	nm	
RMS Spectral Width	SW	-	-	0.6	nm	
Average Launch Power per Lane	TXPx	-8.4	-	2.4	dBm	
Transmit OMA per Lane	TxOMA	-6.4	-	3	dBm	
Launch Power [OMA] minus TDEC per Lane	P-TDEC	-7.3	-		dBm	
TDEC per Lane	TDEC	-	-	4.3	dBm	
Optical Extinction Ratio	ER	2	-		dB	
Receiver						
Signaling Speed per Lane		25.78125 ± 100ppm			GBd	2
Center wavelength		840	-	860	nm	
Average Receive Power per Lane	RXPx	-10.3	-	2.4	dBm	3
Receiver Reflectance	Rfl	-	-	-12	dB	
Stressed Receiver Sensitivity (OMA) per Lane	SRS	-	-	-5.2	dBm	
LOS De-Assert	LOSD	-	-	-12	dBm	
LOS Assert	LOSA	-30	-	-	dBm	
LOS Hysteresis		0.5	2	-	dB	

Notes:

1. Transmitter consists of 4 lasers operating at a maximum speed of 25.78125Gb/s ±100ppm each.
2. Receiver consists of 4 photodetectors operating at a maximum speed of 25.78125Gb/s ±100ppm each.
3. Minimum value is informative only and not the principal indicator of signal strength.
4. Hit Ratio 5×10^{-5} hits/sample.

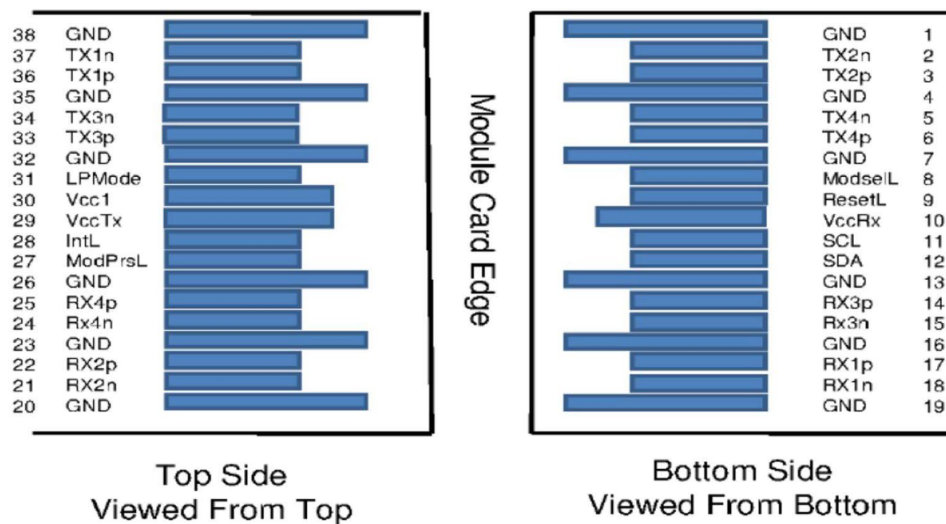
Ethernet Operation

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane		27.95~28.05			Gb/s	4
Center wavelength		840	-	860	nm	
RMS Spectral Width	SW	-	-	0.6	nm	
Average Launch Power per Lane	TXPx	-9	-	2.4	dBm	
Transmit OMA per Lane	TxOMA	-7.1	-	3	dBm	
Launch Power [OMA] minus TDEC per Lane	P-TDEC	-8.0	-		dBm	
TDEC per Lane	TDEC	-	-	5.0	dBm	
Optical Extinction Ratio	ER	3	-		dB	
Receiver						
Signaling Speed per Lane		27.95~28.05			GBd	5
Center wavelength		840	-	860	nm	
Average Receive Power per Lane	RXPx	-10.9	-	2.4	dBm	6
Receiver Reflectance	Rfl	-	-	-12	dB	
Stressed Receiver Sensitivity (OMA) per Lane	SRS	-	-	-4.7	dBm	7
LOS De-Assert	LOSD	-	-	-13	dBm	
LOS Assert	LOSA	-30	-	-	dBm	
LOS Hysteresis		0.5	2	-	dB	

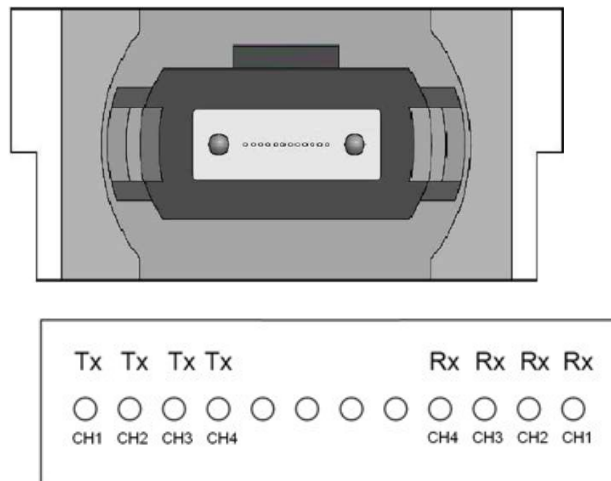
Notes:

1. Transmitter consists of 4 lasers operating at a maximum speed of 27.95 Gb/s each for OTU4 and 28.05 Gb/s each for Fibre Channel.
2. Hit ratio = 1.5×10^{-3} hits/sample.
3. Receiver consists of 4 photodetectors operating at a maximum speed of 27.95 Gb/s each for OTU4 and 28.05 Gb/s each for Fibre Channel.
4. Minimum value is informative only and not the principal indicator of signal strength.

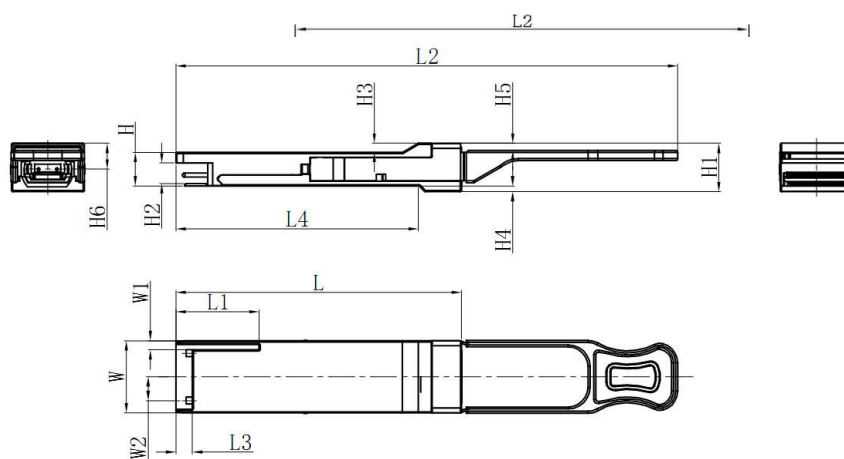
Pin Description



Optical Interface



Mechanical Dimension



Unit: mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
MAX	72.2	—	122	4.35	18.45	—	6.2	8.6	12.0	5.35
Typical	72.0	—	—	4.20	18.35	—	—	8.5	11.8	5.2
MIN	68.8	16.5	118	4.05	18.25	2.2	5.8	8.4	11.6	5.05

ORDERING INFORMATION

Part Number	Description
160-9400-900-CN	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Ciena compatible
QSFP-100G-SR4-S-C	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Cisco compatible
10401-EX	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Extreme compatible
QSFP-100G-SR4-H	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Huawei compatible
JNP-QSFP-100G-SR4-J	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Juniper compatible
JL274A-HP	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – HPE/H3C compatible
100G-QSFP28-SR4-B	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Brocade compatible
3HE10551AA-N	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Nokia ALU compatible
PAN-QSFP28-100GBASE-SR4-PA	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Palo Alto compatible
QSFP-100G-SR4-AR	100GBASE SR4 QSFP28 Transceiver, MPO, 100m over OM4 MMF DOM – Arista compatible