

## QSFP28-100GB-SR4-MDC-J-C

Juniper Networks® Compatible TAA 100GBase-SR4 QSFP28 Transceiver (MMF, 850nm, 100m, MDC, DOM)

### Features:

- Hot-Pluggable QSFP28 Form Factor
- Supports 103.1Gbps Aggregate Bit Rate
- Maximum Link Length of 100m on OM4 MMF
- MDC Interface
- Single 3.3V Power Supply
- Power Consumption: 1.8W
- 4x25G Electrical Interface
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



### Applications:

- 100GBase Ethernet
- Access and Enterprise

### Product Description

This Juniper Networks® compatible QSFP28 transceiver provides 100GBase-SR4 throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 850nm via an MDC connector. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Juniper Networks®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Bit Rate (All Wavelengths Combined)	DR			103.1	Gbps	
Bit Error Rate (Pre-FEC)	BER			$5 \times 10^{-5}$		
Data Rate Per Lane	DR		25.78125 ± 100ppm		Gbps	1
Fiber Type	OM3 MMF	LMax1		70	m	
	OM4 MMF	LMax2		100	m	

### Notes:

- Receiver consists of 4 lasers and photo detectors operating at a maximum speed of 25.78125Gbps ± 100ppm each.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Supply Current	Icc			800	mA	
Power Consumption	PC			2.5	W	
<b>Transmitter</b>						
Differential Voltage Pk-Pk				900	mV	
Single-Ended Voltage Tolerance	VIN,pp	-0.65		3.3	V	
Module Stressed Input Test		Per Section 83E.3.4.1, IEEE 802.3bm			V	
<b>Receiver</b>						
Differential Data Output Swing	VOUT,pp	100		400	mVp-p	
		300		600		
		400	600	800		
		600		1200		
Eye Width		0.57			UI	
Differential Eye Height		228			mV	
Vertical Eye Closure	VEC	5.5			dB	
Transition Time (20-80%)	Tr/Tf	12			ps	

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Center Wavelength	$\lambda_C$	840	850	860	nm	
RMS Spectral Width	$\Delta\lambda$			0.6	nm	
Average Optical Power Per Lane	TxPx	-8.4		2.4	dBm	
Optical Power 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	
Optical Return Loss Tolerance	ORL			12	dB	
Encircled Flux	FLX		>86% at 19 $\mu$ m <30% at 4.5 $\mu$ m			
Average Launch Power of Off Transmitter Per Lane	Poff			-30	dBm	
Transmitter Eye Mask Definitions: {X1, X2, X3, Y1, Y2, Y3}			{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			1
<b>Receiver</b>						
Center Wavelength	$\lambda_C$	840		860	nm	
Damage Threshold	DT	3.4			dBm	
Average Receive Power Per Lane	RxPx	-10.3		2.4	dBm	
Receive Power on OMA Per Lane	RxOMA			3	dBm	
Receiver Reflectance	Rfl			-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-13	dBm	
LOS Hysteresis	LOSH	0.5	2		dB	
Stressed Sensitivity (OMA)	SRS			-5.2	dBm	2
<b>Stressed Conditions</b>						
Stressed Eye Closure	SEC		4.3		dB	
Stressed Eye J2 Jitter	J2		0.39		UI	
Stressed Eye J4 Jitter	J4		0.53		UI	
OMA of Each Aggressor Lane			3		dBm	
Stressed Receiver Eye Mask Definitions: {X1, X2, X3, Y1, Y2, Y3}			{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			3

### Notes:

1. Hit ratio  $1.5 \times 10^{-3}$  hits/sample.
2. Minimum value is informative only and not the principal indicator of signal strength.
3. Hit ratio  $5 \times 10^{-5}$  hits/sample.

## Pin Descriptions

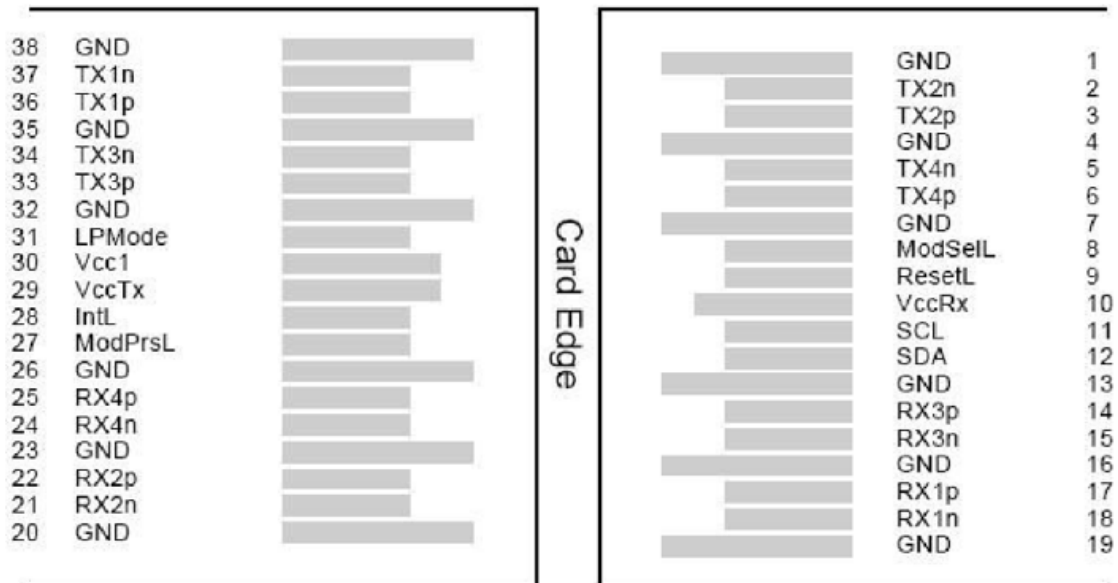
Pin	Symbol	Name/Description	Notes
1	GND	Module Ground.	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Input.	
4	GND	Module Ground.	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Input.	
7	GND	Module Ground.	1
8	ModSelL	Module Select.	
9	ResetL	Module Reset.	
10	VccRx	+3.3V Receiver Power Supply.	2
11	SCL	2-Wire Serial Interface Clock.	
12	SDA	2-Wire Serial Interface Data.	
13	GND	Module Ground.	1
14	Rx3+	Receiver Non-Inverted Data Output.	
15	Rx3-	Receiver Inverted Data Output.	
16	GND	Module Ground.	1
17	Rx1+	Receiver Non-Inverted Data Output.	
18	Rx1-	Receiver Inverted Data Output.	
19	GND	Module Ground.	1
20	GND	Module Ground.	1
21	Rx2-	Receiver Inverted Data Output.	
22	Rx2+	Receiver Non-Inverted Data Output.	
23	GND	Module Ground.	1
24	Rx4-	Receiver Inverted Data Output.	
25	Rx4+	Receiver Non-Inverted Data Output.	
26	GND	Module Ground.	1
27	ModPrsL	Module Present.	
28	IntL/RxLOSL	Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636).	
29	VccTx	+3.3V Transmitter Power Supply.	2
30	Vcc1	+3.3V Power Supply.	2
31	LPMoDe/TxDis	Low-Power Mode. Optionally configurable as TxDis via the management Interface (SFF-8636).	
32	GND	Module Ground.	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Input.	
35	GND	Module Ground.	1

36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Input.	
38	GND	Module Ground.	1

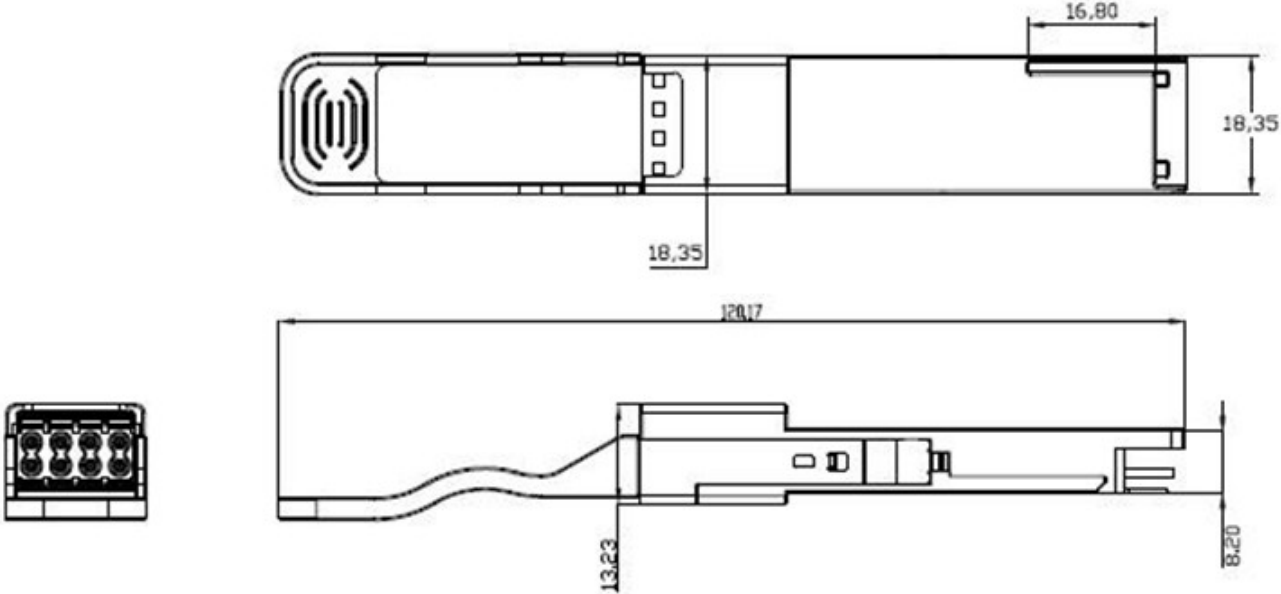
**Notes:**

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the module, and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1, and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the module in any combination. The connector pins are each rated for a maximum current of 1000mA.

**Electrical Pin-Out Details**



Mechanical Specifications



## About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

## A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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