



## QFB85P10400DC64

Juniper Networks® JNP-QSFPP-40G-BXSR Compatible 40GBase-SR QSFP+ Transceiver (MMF, 832nm to 918nm, 100m, LC, DOM)

### Product Description

This Juniper Networks® JNP-QSFPP-40G-BXSR compatible QSFP+ transceiver provides 40GBase-SR throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 832nm to 918nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Juniper Networks® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of Juniper Networks®, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

### Features:

- SFF-8436 Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



### Applications:

- 40GBase Ethernet
- Access and Enterprise

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*For your product safety, please read the following information carefully before any manipulation of the transceiver:*



#### **ESD**

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



#### **LASER SAFETY**

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

*The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.*

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### Absolute Maximum Ratings

| Parameter           | Symbol | Min. | Typ. | Max. | Unit |
|---------------------|--------|------|------|------|------|
| Storage Temperature | Ts     | -40  |      | 85   | °C   |
| Supply Voltage      | VccT,R | -0.5 |      | 4    | V    |
| Relative Humidity   | RH     | 0    |      | 85   | %    |

### Recommended Operating Conditions

| Parameter                  | Symbol | Min.  | Typ. | Max. | Unit |
|----------------------------|--------|-------|------|------|------|
| Case operating Temperature | Tc     | 0     |      | 70   | °C   |
| Supply Voltage             | Vcct,R | +3.13 | 3.3  | 3.47 | V    |
| Supply Current             | Icc    |       |      | 1000 | mA   |
| Power Dissipation          | PD     |       |      | 3.5  | W    |

## Electrical Characteristics

| Parameter                             | Symbol | Min. | Typ.    | Max. | Unit | Notes |
|---------------------------------------|--------|------|---------|------|------|-------|
| Data Rate per Channel                 |        |      | 10.3125 | 11.2 | Gbps |       |
| Power Consumption                     |        |      | 2.5     | 3.5  | W    |       |
| Supply Current                        | ICC    |      | 0.75    | 1.0  | A    |       |
| Control I/O Voltage-High              | VIH    | 2.0  |         | Vcc  | V    |       |
| Control I/O Voltage-Low               | VIL    | 0    |         | 0.7  | V    |       |
| Inter-Channel Skew                    | TSK    |      |         | 150  | Ps   |       |
| RESETL Duration                       |        |      | 10      |      | Us   |       |
| RESETL De-assert time                 |        |      |         | 100  | ms   |       |
| Power On Time                         |        |      |         | 100  | ms   |       |
| Transmitter                           |        |      |         |      |      |       |
| Single Ended Output Voltage Tolerance |        | 0.3  |         | 4    | V    | 1     |
| Common mode Voltage Tolerance         |        | 15   |         |      | mV   |       |
| Transmit Input Diff Voltage           | VI     | 120  |         | 1200 | mV   |       |
| Transmit Input Diff Impedance         | ZIN    | 80   | 100     | 120  |      |       |
| Data Dependent Input Jitter           | DDJ    |      |         | 0.1  | UI   |       |
| Data Input Total Jitter               | TJ     |      |         | 0.28 | UI   |       |
| Receiver                              |        |      |         |      |      |       |
| Single Ended Output Voltage Tolerance |        | 0.3  |         | 4    | V    | 1     |
| Rx Output Diff Voltage                | Vo     |      | 600     | 800  | mV   |       |
| Rx Output Rise and Fall Voltage       | Tr/Tf  |      |         | 35   | ps   | 1     |
| Total Jitter                          | TJ     |      |         | 0.7  | UI   |       |
| Deterministic Jitter                  | DJ     |      |         | 0.42 | UI   |       |

### Notes:

1. 20~80%

## Optical Characteristics

| Parameter                         | Symbol    | Min. | Typ. | Max. | Unit  | Notes |
|-----------------------------------|-----------|------|------|------|-------|-------|
| Transmitter                       |           |      |      |      |       |       |
| Optical Wavelength CH1            | $\lambda$ | 832  | 850  | 868  | nm    |       |
| Optical Wavelength CH2            | $\lambda$ | 882  | 900  | 918  | nm    |       |
| RMS Spectral Width                | Pm        |      | 0.5  | 0.65 | nm    |       |
| Average Optical Power per Channel | Pavg      | -4   | -2.5 | 5.0  | dBm   |       |
| Laser Off Power Per Channel       | Poff      |      |      | -30  | dBm   |       |
| Optical Extinction Ratio          | ER        | 3.5  |      |      | dB    |       |
| Relative Intensity Noise          | RIN       |      |      | -128 | dB/Hz | 1     |
| Optical Return Loss Tolerance     |           |      |      | 12   | dB    |       |
| Receiver                          |           |      |      |      |       |       |
| Optical Center Wavelength CH1     | $\lambda$ | 882  | 900  | 918  | nm    |       |
| Optical Center Wavelength CH2     | $\lambda$ | 832  | 850  | 868  | nm    |       |
| Receiver Sensitivity per Channel  | R         |      | -11  |      | dBm   |       |
| Maximum Input Power               | Pmax      | 0.5  |      |      | dBm   |       |
| Receiver Reflectance              | Rrx       |      |      | -12  | dB    |       |
| LOS De-Assert                     | LOSD      |      |      | -14  | dBm   |       |
| LOS Assert                        | LOSA      | -30  |      |      | dBm   |       |
| LOS Hysteresis                    | LOSH      | 0.5  |      |      | dB    |       |

### Notes:

1. 12dB Reflection

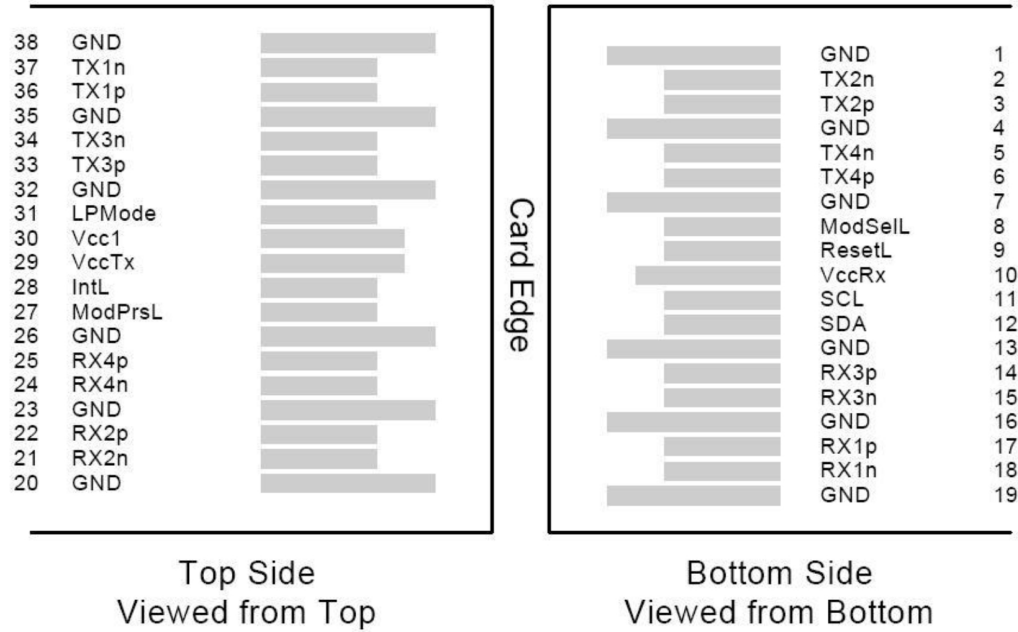
## Pin Descriptions

| Pin | Logic       | Symbol              | Name/Descriptions                                  | Ref. |
|-----|-------------|---------------------|----------------------------------------------------|------|
| 1   |             | GND                 | Module Ground                                      | 1    |
| 2   | CML-I       | Tx2-                | Transmitter inverted data input                    |      |
| 3   | CML-I       | Tx2+                | Transmitter non-inverted data input                |      |
| 4   |             | GND                 | Module Ground                                      | 1    |
| 5   | CML-I       | Tx4-                | Transmitter inverted data input                    |      |
| 6   | CML-I       | Tx4+                | Transmitter non-inverted data input                |      |
| 7   |             | GND                 | Module Ground                                      | 1    |
| 8   | LVTTL-I     | MODSEIL             | Module Select                                      | 2    |
| 9   | LVTTL-I     | ResetL              | Module Reset                                       | 2    |
| 10  |             | VCCR <sub>x</sub>   | +3.3v Receiver Power Supply                        |      |
| 11  | LVC MOS-I   | SCL                 | 2-wire Serial interface clock                      | 2    |
| 12  | LVC MOS-I/O | SDA                 | 2-wire Serial interface data                       | 2    |
| 13  |             | GND                 | Module Ground                                      | 1    |
| 14  | CML-O       | RX3+                | Receiver non-inverted data output                  |      |
| 15  | CML-O       | RX3-                | Receiver inverted data output                      |      |
| 16  |             | GND                 | Module Ground                                      | 1    |
| 17  | CML-O       | RX1+                | Receiver non-inverted data output                  |      |
| 18  | CML-O       | RX1-                | Receiver inverted data output                      |      |
| 19  |             | GND                 | Module Ground                                      | 1    |
| 20  |             | GND                 | Module Ground                                      | 1    |
| 21  | CML-O       | RX2-                | Receiver inverted data output                      |      |
| 22  | CML-O       | RX2+                | Receiver non-inverted data output                  |      |
| 23  |             | GND                 | Module Ground                                      | 1    |
| 24  | CML-O       | RX4-                | Receiver inverted data output                      |      |
| 25  | CML-O       | RX4+                | Receiver non-inverted data output                  |      |
| 26  |             | GND                 | Module Ground                                      | 1    |
| 27  | LVTTL-O     | ModPrsL             | Module Present, internal pulled down to GND        |      |
| 28  | LVTTL-O     | IntL                | Interrupt output should be pulled up on host board | 2    |
| 29  |             | VCCT <sub>x</sub>   | +3.3v Transmitter Power Supply                     |      |
| 30  |             | VCC1                | +3.3v Power Supply                                 |      |
| 31  | LVTTL-I     | LPM <sub>Mode</sub> | Low Power Mode                                     | 2    |
| 32  |             | GND                 | Module Ground                                      | 1    |
| 33  | CML-I       | Tx3+                | Transmitter non-inverted data input                |      |
| 34  | CML-I       | Tx3-                | Transmitter inverted data input                    |      |
| 35  |             | GND                 | Module Ground                                      | 1    |
| 36  | CML-I       | Tx1+                | Transmitter non-inverted data input                |      |
| 37  | CML-I       | Tx1-                | Transmitter inverted data input                    |      |
| 38  |             | GND                 | Module Ground                                      | 1    |

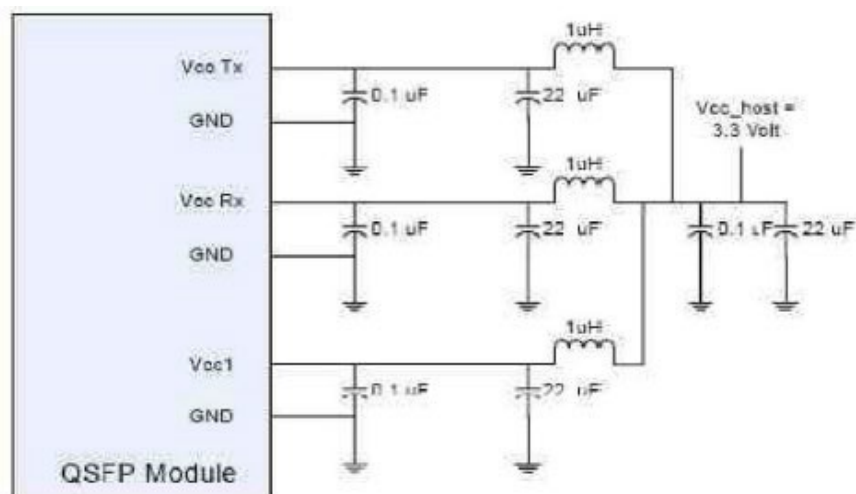
### Notes:

1. Module circuit ground is isolated from module chassis ground with in the module.
2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.

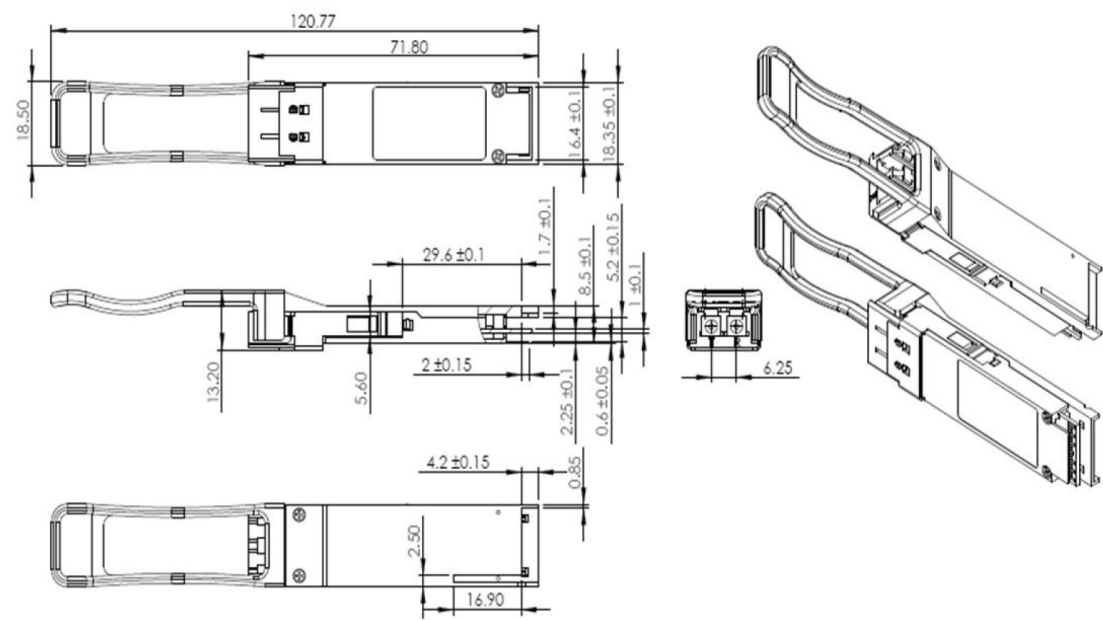
### Electrical Pin-out Details



### Recommended Circuit Schematic



Mechanical Specifications



# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

