

## Q7F11A-C

HP® Q7F11A Compatible TAA 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 100m, MPO, DOM)

### Features:

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



### Applications:

- 40GBase Ethernet
- 4x10G Breakout Option
- Access and Enterprise

### Product Description

This HP® Q7F11A compatible QSFP+ transceiver provides 40GBase-SR4 throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent HP® 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. Digital optical monitoring (DOM) support is also present to allow 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 |
|----------------------------|------------------|------|---------|------|------|
| Supply Voltage             | V <sub>CC</sub>  | -0.5 |         | 4.0  | V    |
| Storage Temperature        | T <sub>stg</sub> | -40  |         | 85   | °C   |
| Operating Case Temperature | T <sub>c</sub>   | 0    | 25      | 70   | °C   |
| Relative Humidity          | RH               | 5    |         | 95   | %    |
| Data Rate Per Channel      |                  |      | 10.3125 |      | Gbps |

## Electrical Characteristics

| Parameter                       | Symbol                         | Min.  | Typ. | Max.  | Unit  | Notes |
|---------------------------------|--------------------------------|-------|------|-------|-------|-------|
| Supply Voltage                  | V <sub>CC</sub>                | 3.135 | 3.3  | 3.465 | V     |       |
| Module Supply Current           | I <sub>CC</sub>                |       |      | 430   | mA    |       |
| Power Dissipation               | P <sub>DISS</sub>              |       |      | 1.5   | W     |       |
| <b>Transmitter</b>              |                                |       |      |       |       |       |
| Input Differential Impedance    | Z <sub>IN</sub>                |       | 100  |       | Ω     |       |
| Differential Data Input Swing   | V <sub>IN,pp</sub>             | 180   |      | 900   | mVp-p |       |
| <b>Receiver</b>                 |                                |       |      |       |       |       |
| Output Differential Impedance   | Z <sub>OUT</sub>               |       | 100  |       | Ω     |       |
| Differential Data Output Swing  | V <sub>OUT,pp</sub>            | 300   |      | 850   | mVp-p | 1     |
| Data Output Rise Time/Fall Time | T <sub>r</sub> /T <sub>f</sub> | 28    |      |       | ps    | 2     |

### Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.
2. 20 – 80 %.

## Optical Characteristics

| Parameter                                | Symbol                      | Min. | Typ. | Max. | Unit | Notes |
|--|-----------------------------|------|------|------|------|-------|
| <b>Transmitter</b>                       |                             |      |      |      |      |       |
| Launch Optical Power                     | P <sub>o</sub>              | -7.6 |      | +2.4 | dBm  | 1     |
| Center Wavelength Range                  | $\lambda_C$                 | 830  | 850  | 860  | nm   |       |
| Extinction Ratio                         | ER                          | 3    |      |      | dB   | 2     |
| Spectral Width (RMS)                     | $\Delta\lambda$             |      |      | 0.65 | nm   |       |
| Transmitter and Dispersion Penalty       | TDP                         |      |      | 3.2  | dB   |       |
| Optical Return Loss Tolerance            | ORLT                        |      |      | 12   | dB   |       |
| Eye Diagram                              | IEEE Std 802.3ba Compatible |      |      |      |      |       |
| <b>Receiver</b>                          |                             |      |      |      |      |       |
| Center Wavelength                        | $\lambda_C$                 | 830  | 850  | 860  | nm   |       |
| Receiver Sensitivity (P <sub>avg</sub> ) | S                           |      |      | -9.5 | dBm  | 3     |
| Damage Threshold                         | P <sub>OL</sub>             | 2.5  |      |      | dBm  | 3     |
| Optical Return Loss                      | ORL                         | 12   |      |      | dB   |       |
| LOS Assert                               | LOSA                        | -30  |      |      | dBm  |       |
| LOS De-Assert                            | LOSD                        |      |      | -11  | dBm  |       |
| LOS Hysteresis                           |                             | 0.5  |      |      | dB   |       |

### Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS  $2^{31}-1$  test pattern @10.3125Gbps.
3. Measured with PRBS  $2^{31}-1$  test pattern, 10.3125Gbps, and BER $<10^{-12}$ .

## Pin Descriptions

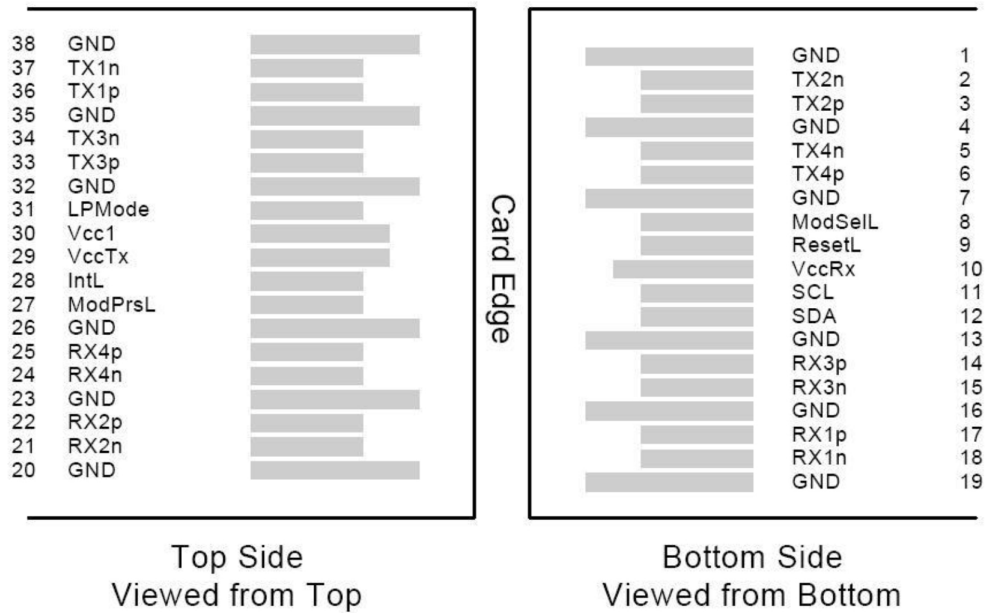
| Pin | Logic       | Symbol  | Name/Descriptions  | Notes |
|-----|-------------|---------|--|-------|
| 1   |             | GND     | Module Ground.   | 1     |
| 2   | CML-I       | Tx2-    | Transmitter Inverted Data Input.                         |       |
| 3   | CML-I       | Tx2+    | Transmitter 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   | LVTTTL-I    | ModSelL | Module Select.   | 2     |
| 9   | LVTTTL-I    | ResetL  | Module Reset.  | 2     |
| 10  |             | VccRx   | +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.                           | 1     |
| 25  | CML-O       | Rx4+    | Receiver Non-Inverted Data Output.                       |       |
| 26  |             | GND     | Module Ground.   | 1     |
| 27  | LVTTTL-O    | ModPrsL | Module Present. Internally pulled down to GND.           |       |
| 28  | LVTTTL-O    | IntL    | Interrupt Output. Should be pulled up on the host board. | 2     |
| 29  |             | VccTx   | +3.3V Transmitter Power Supply.                          |       |
| 30  |             | Vcc1    | +3.3V Power Supply.                                      |       |
| 31  | LVTTTL-I    | LPMODE  | 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. 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 4.7kΩ-10kΩ pull-up resistor to the Host\_Vcc.

**Electrical Pin-Out Details**



### Recommended Host Board Power Supply Filter Network



### Mechanical Specifications



## About ProLabs

Our experience comes as standard; for over 15 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 over 90 optical switching and transport platforms.

## 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 400G 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.

## Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. 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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