

QFP1302040PD – QSFP+ Parallel Fibre

1310nm / 20km / 40 Gigabit Ethernet / PSM4

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.

1. Overview

QFP1302040PD is a high performance QSFP+ transceiver module for 40 Gigabit Ethernet (aggregated) data links over single mode ribbon fibre. The maximum reach is 20km. The transmitters (4x) are 1310nm Distributed Feedback (DFB) lasers, the receivers (4x) are PIN photodiodes.

This transceiver module is compliant with the Small Form-factor Pluggable (QSFP+) Multisource Agreement (MSA) and hot pluggable. Always contact Skylane Optics® commercial agents for compatibility with different equipment platforms.

2. Features

- QSFP+ Multi-Source Agreement compliant (SFF-8436)
- Hot pluggable QSFP+ footprint
- Serial ID functionality supported according to (SFF-8438)
- MPO/MTP™ Optical Receptacle (8-degree angled)
- 4x parallel DFB transmitters (1310nm)
- Up to 11.2Gbps per Lane
- 20km point-to-point transmission on single mode ribbon fibre
- Operating temperature range 0°C to 70°C
- Low power dissipation (<3.5W)

3. Applications

- 40x Gigabit Ethernet
- Infiniband QDR, DDR and SDR

4. Optical Interface

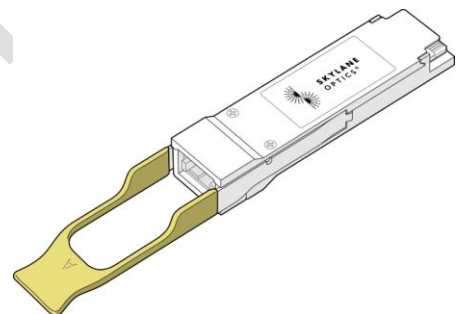


Figure 1. QSFP+ MPO (non-binding illustration)

| P/N | Nominal Wavelength [nm] | Protocol | Optical Output Power, each Lane ¹ [dBm] | Receiver Sensitivity ² (OMA), each Lane [dBm] | Receiver Overload ³ , per Lane [dBm] | Link Length ⁴ [km] |
|--------------|-------------------------|----------|--|--|---|-------------------------------|
| QFP1302040PD | 1310 | 40GBASE | -4.2 to 0.5 | ≤ -12.6 | -0.5 | ≤ 20 |

1. EOL, over operating temperature range
 2. Measured with 10.3125Gbps, PRBS 2³¹-1
 3. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers (optical loop back) before ensuring that proper optical attenuation is used
 4. Cabled optical fibre as per IEEE 802.3-2012

5. Technical Parameters

5.1. Recommended Operating Conditions

| Parameter | Min | Typ | Max | Unit | Notes |
|----------------------------|-------|-----|-------|------|----------------|
| Storage temperature | -40 | | 85 | °C | |
| Operating Case Temperature | 0 | | 70 | °C | |
| Relative Humidity | 0 | | 85 | % | Non-Condensing |
| Power Supply Voltage | 3.135 | 3.3 | 3.465 | V | |
| Power Dissipation | | | 3.5 | W | |

5.2. Transmitter Optical Specifications

| Parameter | Min | Typ | Max | Unit | Notes |
|--|------|------|------|------|-------|
| Optical Output Power, each lane | -4.2 | | 0.5 | dBm | 5 |
| Difference in Output Power between any two lanes | | | 6.5 | dB | |
| Centre Wavelength | 1260 | 1310 | 1355 | nm | |
| Spectral Width (-20dB) | | | 1 | nm | |
| Extinction Ratio | 3.5 | | | dB | |

5. Output power coupled into a 9/125 μm single-mode fibre

5.3. Receiver Optical Specifications

| Parameter | Min | Typ | Max | Unit | Notes |
|--|------|-----|-------|------|-------|
| Operating Wavelength | 1260 | | 1340 | nm | |
| Receiver Sensitivity (OMA), each Lane | | | -12.6 | dBm | 6 |
| Receiver Overload, each Lane | -0.5 | | | dBm | 6 |
| Difference in Received Power between any two lanes | | | 7.5 | dB | |

6. Measured with 10.3125Gbps, PRBS 2³¹-1

6. Electrical Connector

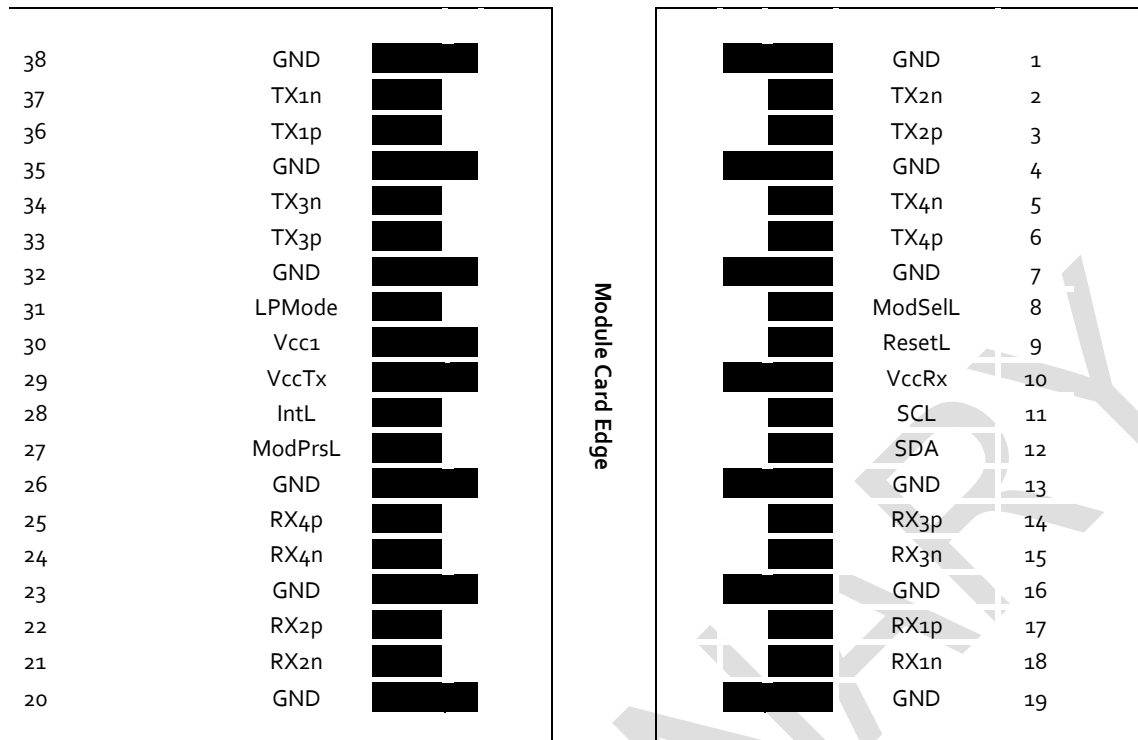


Figure 2. QSFP+ Module Pad Layout

7. Pin Function Definition

| Pin | Symbol | Description | Pin | Symbol | Description |
|-----|---------|-------------------------------------|-----|---------|-------------------------------------|
| 1 | GND | Ground | 20 | GND | Ground |
| 2 | TX2n | Transmitter Inverted Data Input | 21 | RX2n | Receiver Inverted Data Output |
| 3 | TX2p | Transmitter Non-Inverted Data Input | 22 | RX2p | Receiver Non-Inverted Data Output |
| 4 | GND | Ground | 23 | GND | Ground |
| 5 | TX4n | Transmitter Inverted Data Input | 24 | RX4n | Receiver Inverted Data Output |
| 6 | TX4p | Transmitter Non-Inverted Data Input | 25 | RX4p | Receiver Non-Inverted Data Output |
| 7 | GND | Ground | 26 | GND | Ground |
| 8 | ModSelL | Module Select | 27 | ModPrsL | Module Present |
| 9 | ResetL | Module Reset | 28 | IntL | Interrupt |
| 10 | VccRx | +3.3V Power Supply Receiver | 29 | VccTx | +3.3V Power supply transmitter |
| 11 | SCL | 2-wire serial interface clock | 30 | Vcc1 | +3.3V Power supply |
| 12 | SDA | 2-wire serial interface data | 31 | LPMODE | Low Power Mode |
| 13 | GND | Ground | 32 | GND | Ground |
| 14 | RX3p | Receiver Non-Inverted Data Output | 33 | TX3p | Transmitter Non-Inverted Data Input |
| 15 | RX3n | Receiver Inverted Data Output | 34 | TX3n | Transmitter Inverted Data Input |
| 16 | GND | Ground | 35 | GND | Ground |
| 17 | RX1p | Receiver Non-Inverted Data Output | 36 | TX1p | Transmitter Non-Inverted Data Input |
| 18 | RX1n | Receiver Inverted Data Output | 37 | TX1n | Transmitter Inverted Data Input |
| 19 | GND | Ground | 38 | GND | Ground |

8. EEPROM

QSFP+ MSA (SFF-8436)

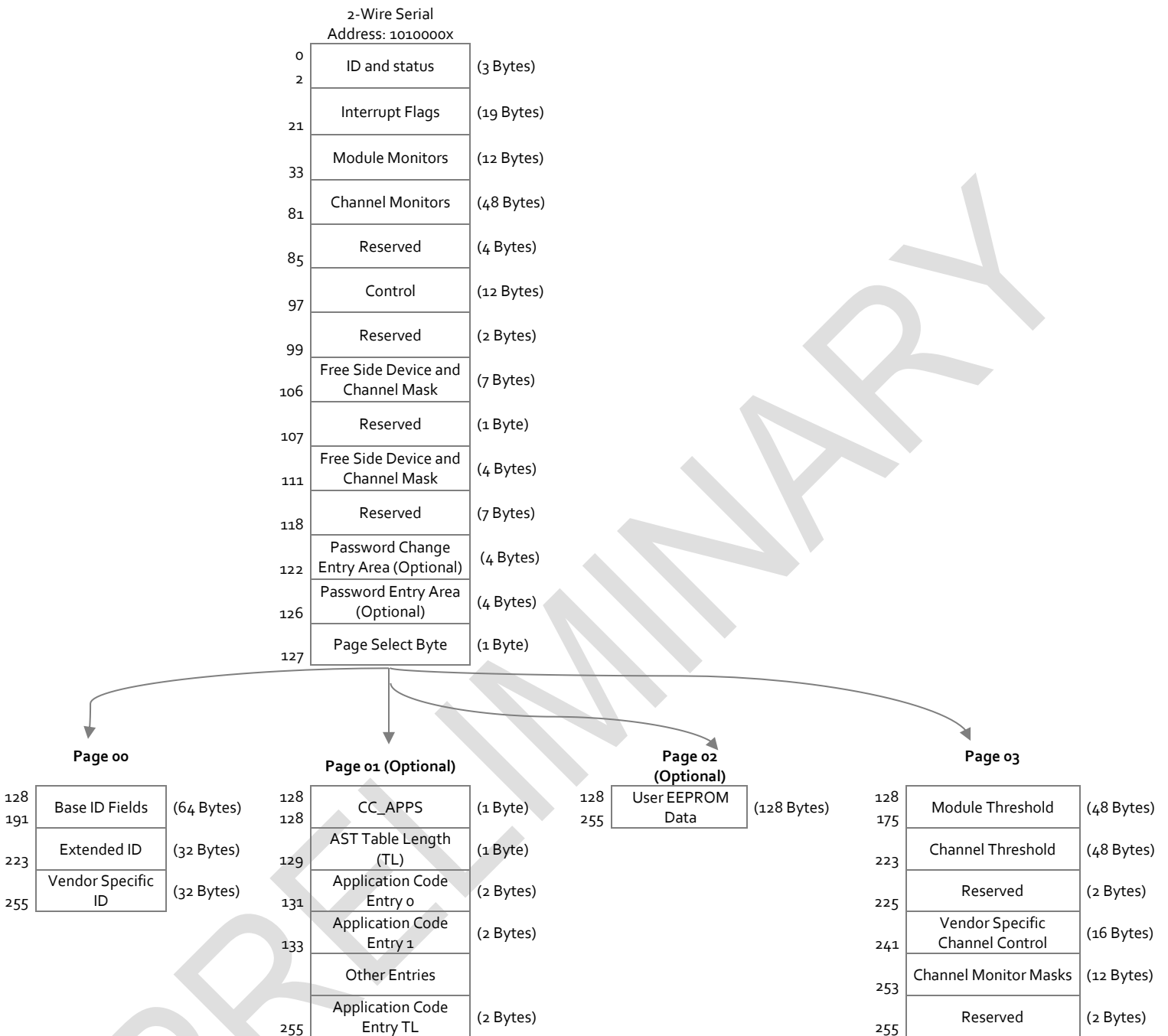


Figure 3. EEPROM of a QSFP+

9. Ordering Information

| Part Number | Description |
|--------------|--|
| QFP1302040PD | QSFP+ LR-4, 40G 1310nm, Tx (DFB), Rx (PIN), maximum distance 20km on SMF, 40x Gigabit Ethernet & Infiniband QDR, MTP/MPO connector, 0°C to 70°C, DDM |

10. Document Revision Information

| Revision | Description |
|----------|-----------------|
| A | Initial release |

Skylane Optics® supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:
support@skylaneoptics.com

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