

## QSFP-40G-ESR4-DE-AO

Dell® QSFP-40G-ESR4 Compatible TAA 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 400m, MPO, DOM)

### Features

- SFF-8436 Compliance
- MPO 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

### Product Description

This Dell® QSFP-40G-ESR4 compatible QSFP+ transceiver provides 40GBase-SR4 throughput up to 400m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Dell® 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.

AddOn's 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 |
|----------------------------|-----------------|------|---------|------|------|
| Maximum Supply Voltage     | V <sub>CC</sub> | -0.5 |         | 4.0  | V    |
| Storage Temperature        | T <sub>s</sub>  | -40  |         | 85   | °C   |
| Case Operating Temperature | T <sub>c</sub>  | 0    | 25      | 70   | °C   |
| Humidity (non-condensing)  | RH              | 5    |         | 95   | %    |
| Data Rate per Channel      |                 |      | 10.3125 |      | Gbps |

## Electrical Characteristics (TOP=25°C, V<sub>CC</sub>=3.3Volts)

| Parameter                      | Symbol               | Min.  | Typ. | Max.  | Unit | Notes |
|--------------------------------|----------------------|-------|------|-------|------|-------|
| Power Supply Voltage           | V <sub>CC</sub>      | 3.135 | 3.30 | 3.465 | V    |       |
| Power Supply Current           | I <sub>CC</sub>      |       |      | 430   | mA   |       |
| Power Consumption              | P <sub>DISS</sub>    |       |      | 1.5   | W    |       |
| Transmitter                    |                      |       |      |       |      |       |
| Differential data input swing  | V <sub>in,pp</sub>   | 180   |      | 900   | mV   |       |
| Input differential impedance   | Z <sub>in</sub>      |       | 100  |       | Ω    |       |
| Receiver                       |                      |       |      |       |      |       |
| Differential data output swing | V <sub>out, pp</sub> | 300   |      | 850   | mV   |       |
| Output differential impedance  | Z <sub>in</sub>      |       | 100  |       | Ω    |       |

## Optical Characteristics

| Parameter                          | Symbol           | Min. | Typ. | Max. | Unit | Notes |
|------------------------------------|------------------|------|------|------|------|-------|
| Transmitter                        |                  |      |      |      |      |       |
| Optical Power (average)            | P <sub>AVE</sub> | -7.6 |      | +2.4 | dBm  | 1     |
| Optical Wavelength                 | Tλ               | 830  | 850  | 860  | nm   |       |
| Optical Extinction Ratio           | ER               | 3    |      |      | dB   | 2     |
| Spectral Width (RMS)               | Δλ               |      |      | 0.4  | nm   |       |
| Optical Return Loss Tolerance      | ORLT             |      |      | 12   | dB   |       |
| Transmitter and Dispersion Penalty | TDP              |      |      | 3.2  | dB   |       |
| Receiver                           |                  |      |      |      |      |       |
| Receiver Sensitivity (average)     | R <sub>AVE</sub> |      |      | -9.5 | dBm  | 3     |
| Damage Threshold                   | Pol              | 2.5  |      |      | dBm  | 3     |
| Receiver wavelength                | Rλ               | 830  | 850  | 860  | nm   |       |

### Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps.
3. Measured with PRBS 2<sup>31</sup>-1 test pattern, 10.3125Gb/s, BER<10<sup>-12</sup>.

## 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     | 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. 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.

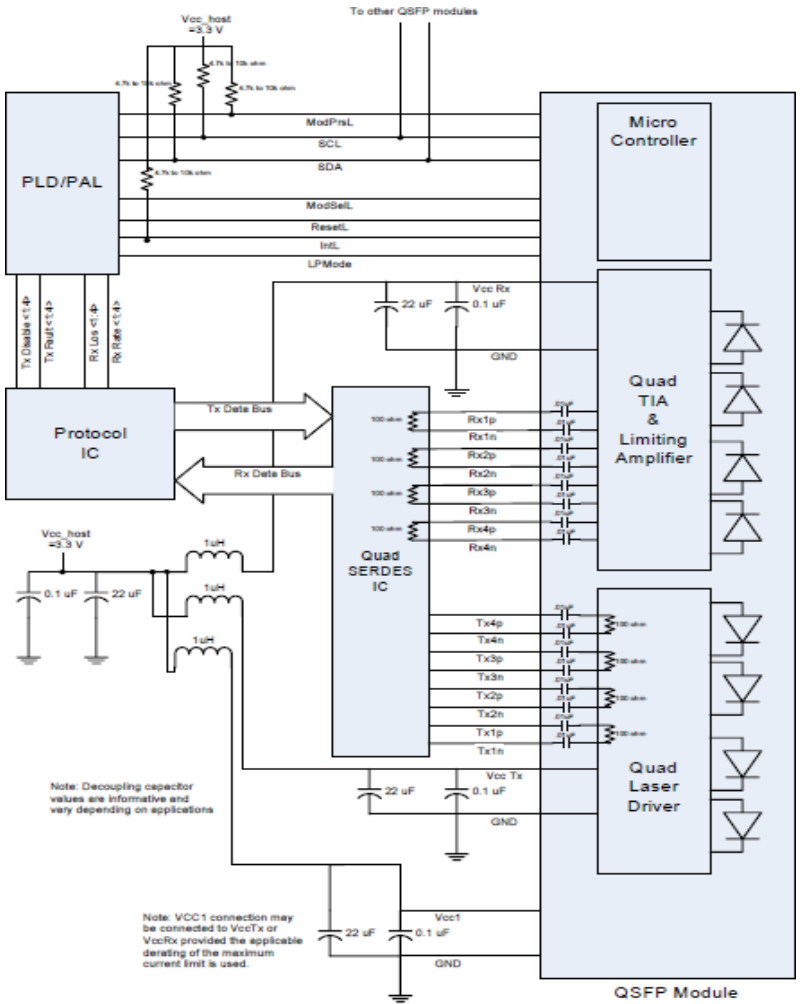
#### Electrical Pin-out Details



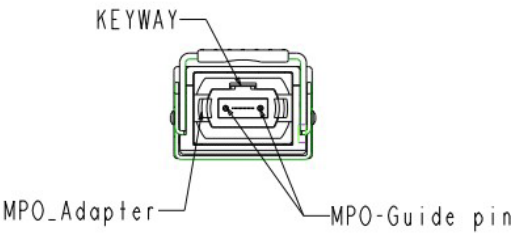
Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram



Mechanical Specifications



## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is ingrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



## U.S. Headquarters

Email: [sales@addonnetworks.com](mailto:sales@addonnetworks.com)

Telephone: +1 877.292.1701

Fax: 949.266.9273

## Europe Headquarters

Email: [salesupportemea@addonnetworks.com](mailto:salesupportemea@addonnetworks.com)

Telephone: +44 1285 842070