**LQP100-LR4**

**QSFP28 100Gbps LR4 10km DDM Transceiver**

**PRODUCT FEATURES**

* Supports 103.1Gbps aggregate bit rate
* 4x25Gbps electrical interface
* 4X25Gbps DFBLAN-WDM

 transmitter and PIN/TIA receiver

* Maximum link length of 10km on

Single Mode Fiber

* Hot pluggable QSFP28 footprint
* Duplex LC receptacles
* Single3.3V power supply
* Maximum power dissipation<4W
* RoHS-6 compliant and lead-free
* I2C management interface
* 0°C to +70°C case operating temperature

**APPLICATIONS**

**COMPLIANCE**

* QSFP28 MSA SFF-8665
* IEEE802.3ba 100GBASE-LR4
* ROHS
* 100GBASE-LR4 100G Ethernet**Ordering Information**

|  |  |  |
| --- | --- | --- |
| **Package** | **Product part NO.** | **Description** |
| QSFP28 | LQP100-LR4 | 4X25Gbps,Single-mode fiber, 10Km, 0-70℃ |

1. **Pin Diagram**

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QSFP28 38pin connector (SFF 8679)

1. **Pin Descriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pin**  | **Symbol**  | **Name/Description**  | **Note** |
| 1  | GND | Ground | 1 |
| 2  | Tx2n | Transmitter Inverted Data Input |  |
| 3  | Tx2p | Transmitter Non-Inverted Data Input |  |
| 4  | GND | Ground | 1 |
| 5  | Tx4n | Transmitter Inverted Data Input |  |
| 6  | Tx4p | Transmitter Non-Inverted Data Input |  |
| 7  | GND | Ground | 1 |
| 8  | ModSe1L | Module Select |  |
| 9  | ResetL | Module Reset |  |
| 10  | Vcc Rx | +3.3V Power supply receiver |  |
| 11  | SCL | 2-wire serial interface clock |  |
| **Pin**  | **Symbol**  | **Name/Description**  | **Note** |
| 12  | SDA | 2-wire serial interface data |  |
| 13  | GND | Ground | 1 |
| 14  | Rx3p | Receiver Non-Inverted Data Output |  |
| 15  | Rx3n | Receiver Inverted Data Output |  |
| 16  | GND | Ground | 1 |
| 17  | Rx1p | Receiver Non-Inverted Data Output |  |
| 18  | Rx1n | Receiver Inverted Data Output |  |
| 19  | GND  | Ground | 1 |
| 20  | GND | Ground | 1 |
| 21 | Rx2n | Receiver Inverted Data Output |  |
| 22 | Rx2p | Receiver Non-Inverted Data Output |  |
| 23 | GND | Ground | 1 |
| 24 | Rx4n | Receiver Inverted Data Output |  |
| 25 | Rx4p | Receiver Non-Inverted Data Output |  |
| 26 | GND | Ground  | 1 |
| 27 | ModPrSL | Module Present |  |
| 28 | IntL | Interrupt |  |
| 29 | VccTx | +3.3V Power supply transmitter |  |
| 30 | Vcc1 | +3.3V Power Supply |  |
| 31 | LPMode | Low Power Mode |  |
| 32 | GND | Ground | 1 |
| 33 | Tx3p | Transmitter Non-Inverted Data Input |  |
| 34 | Tx3n | Transmitter Inverted Data Input |  |
| 35 | GND | Ground | 1 |
| 36 | Tx1p | Transmitter Non-Inverted Data Input |  |
| 37 | Tx1n | Transmitter Inverted Data Input |  |
| 38 | GND | Ground | 1 |

Note：

1. Circuit ground is internally isolated from chassis ground.

1. **Absolute Maximum Ratings**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter**  | **Symbol**  | **Min.**  | **Typ.**  | **Max.**  | **Unit**  | **Remark** |
| Storage Temperature  | TS | -40 |  | 85 | ºC  |  |
| Storage Ambient Relative Humidity  | HA | 0 |  | 85 | %  |  |
| Case Operation Temperature | ℃ | 0 |  | 70 | ºC |  |
| Maximum Supply Voltage  | VCC | -0.5 |  | 4.0 | V  |  |
| Signal Input Voltage  |  | -0.3 |  | Vcc+0.3  | V  |  |
| Receiver Damage Threshold  |  | +5.5 |  |  | dBm |  |

1. **Optical Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter**  | **Symbol**  | **Min.**  | **Typ.**  | **Max.**  | **Unit**  | **Remark** |
| **Transmitter** |
| Total Average Output Power | POUT |  |  | 10.5 | dBm |  |
| Average Output Power, each lane |  | -4.3 |  | 4.5 | dBm |  |
| Optical Modulation Amplitude (OMA), each lane |  | -1.3 |  | 4.5 | dBm |  |
| Extinction Ratio  | ER  | 4 |  |  | dB |  |
| Center Wavelength  | λc | 1294.531299.021303.541308.09 | 1295.561300.051304.581309.14 | 1296.591301.091305.631310.19 | nm  |  |
| Spectral Width |  |  |  | 1 | nm |  |
| Transmitter OFF Output Power  | POff |  |  | -30 | dBm |  |
| Transmitter eye mask definition {X1,X2,X3,Y1,Y2,Y3} |  | {0.25,0.4,0.45,0.25,0.28,0.4} |  | Hit ratio 5x10-5 |
| **Receiver** |
| Input Optical Wavelength | λIN | 1294.531299.021303.541308.09 | 1295.561300.051304.581309.14 | 1296.591301.091305.631310.19 | nm |  |
| Average receive power, each lane |  | -10.6 |  | 4.5 |  | BER = 10–12 |
| Receive power, each lane (OMA) |  | -8.6 |  | 4.5 | dBm | BER = 10–12 |
| Receiver Reflectance | Rfl |  |  | -26 | dBm |  |
| Loss of Signal Assert  | PA | -24 |  | -13.6 | dBm |  |
| Loss of Signal De-assert  | PD |  |  | -11.6 | dBm |  |
| LOS Hysteresis  | PD- PA |  0.5  |  | 6  | dB  |  |

1. **Electrical Interface Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typ.** | **Max.** | **Unit** | **Remark** |
| Supply Voltage | VCC | 3.135 |  | 3.465 | V |  |
| Supply Current | ICC |  |  | 1.15 | A |  |
| Module total power | P |  |  | 4 | W |  |
| **Transmitter** |
| Signaling rate per lane |  | 25.78125±100ppm | Gbps |  |
| Differential pk-pk input voltage  | Vin,pp,diff | 350 |  |  | mV |  |
| Differential input Resistance | Rtin |  | 100 |  | Ohm |  |
| **Receiver**  |
| Signaling rate per lane |  | 25.78125±100ppm | Gbps |  |
| Differential data output swing | Vout,pp |  | 400 |  | mVpp |  |
| Eye width |  | 0.57 |  |  | UI |  |
| Differential output Resistance |  |  | 100 |  | ohm |  |

1. **Digital Diagnostic Functions**

LQP100-LR4 transceivers support the I2C-based diagnostics interface specified by the SFF8636.

1. **Mechanical Specifications(Unit: mm)**

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**Revision History**

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| --- | --- | --- |
| **Version No.**  | **Date**  | **Description**  |
| 1.0 | June 24, 2019 | Preliminary datasheet  |