**LQP100-ER4L**

**QSFP28 100Gbps ER4 Lite DDM Transceiver**

**PRODUCT FEATURES**

* Supports 103.1Gbps aggregate bit rate
* 4x25Gbps electrical interface
* 4X25Gbps LAN-WDM EML transmitter and APD/TIA receiver
* Maximum link length of 30km on SMF without FEC
* Hot pluggable QSFP28 footprint
* Duplex LC receptacles
* Single3.3V power supply
* Maximum power dissipation<4.5W
* RoHS-6 compliant and lead-free
* I2C management interface
* 0°C to +70°C case operating temperature

**APPLICATIONS**

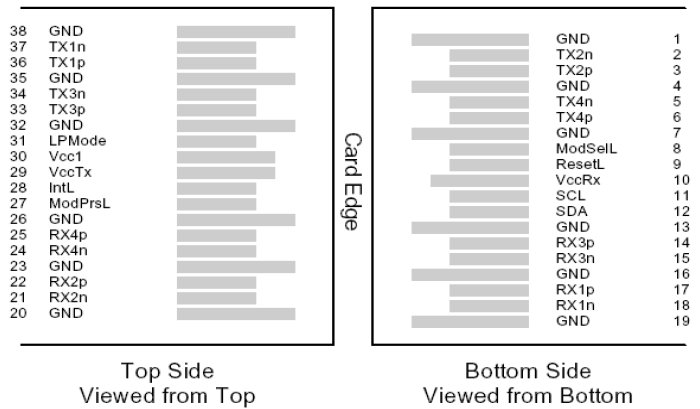
**COMPLIANCE**

* QSFP28 MSA SFF-8665
* IEEE802.3ba 100GBASE-ER4
* ROHS
* 100GBASE-ER4 100G Ethernet
* OTN OTU4
* Client-side 100G interconnects

**Ordering Information**

|  |  |  |
| --- | --- | --- |
| **Package** | **Product part NO.** | **Description** |
| QSFP28 | **LQP100-ER4L** | 4X25Gbps,Single-mode fiber, 30Km, 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 |  | -2.9 | |  | 4.5 | dBm |  |
| Optical Modulation Amplitude (OMA), each lane |  | 0.1 | |  | 4.5 | dBm |  |
| Extinction Ratio | ER | 4.5 | |  |  | dB |  |
| Center Wavelength | λc | 1294.53  1299.02  1303.54  1308.09 | | 1295.56  1300.05  1304.58  1309.14 | 1296.59  1301.09  1305.63  1310.19 | nm |  |
| SMSR | SMSR | 30 | |  |  | dB |  |
| 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 | 1294.53  1299.02  1303.54  1308.09 | | 1295.56  1300.05  1304.58  1309.14 | 1296.59  1301.09  1305.63  1310.19 | nm |  |
| Receive power, each lane (OMA) |  |  | |  | -1.9 | dBm |  |
| Receiver Sensitivity(OMA)，each lane |  |  | |  | -14.65 | dBm | For  BER= 1x10-12 |
| Receiver Reflectance | Rfl |  | |  | -26 | dBm |  |
| Loss of Signal Assert | PA |  | | -26 |  | dBm |  |
| Loss of Signal De-assert | PD |  | | -24 |  | dBm |  |
| LOS Hysteresis | PD- PA | 0.5 | |  |  | dB |  |

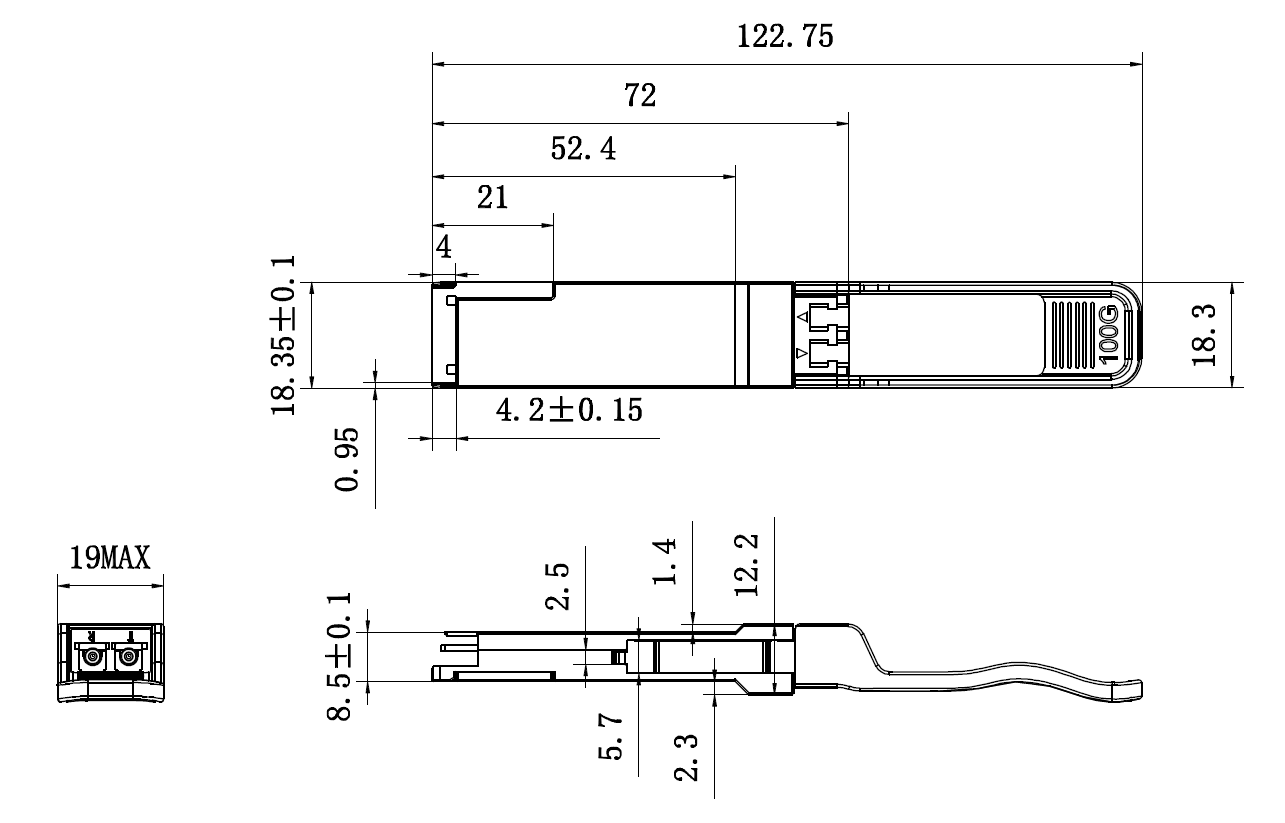
1. **Electrical Interface Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 |  |  | 4.5 | 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-ER4L** transceivers support the I2C-based diagnostics interface specified by the SFF8636.

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

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**Revision History**

|  |  |  |
| --- | --- | --- |
| **Version No.** | **Date** | **Description** |
| 1.0 | August 20, 2020 | Preliminary datasheet |