**LQP100-SR4**

**QSFP28100Gb/s SR4 100m DDM**

**PRODUCT FEATURES**

* Supports 103.1Gb/s aggregate bit rate
* 4x25Gb/s electrical interface
* Maximum link length of 100m on

OM4 Multimode Fiber (MMF)

* Hot-pluggable QSFP28 footprint
* Single MPO 12 receptacle
* Maximum power dissipation<3.5W
* RoHS-6 compliant and lead-free
* Support Digital Diagnostic Monitor interface
* Case operating temperature

Commercial: 0°C to +70°C

**APPLICATIONS**

**Compliance**

* QSFP28 MSA.
* IEEE802.3bm
* SFF-8436
* RoHS
* 100GBASE-SR4 100G Ethernet

**PRODUCT DESCRIPTION**

LQP100-SR4 are designed for use in 100 Gigabit Ethernet links over multimode fiber. They are compliant with the QSFP28 MSA and IEEE 802.3bm 100GBASE-SR4and CAUI-4. Module-level digital diagnostic functions are available via an I2C interface, as specified by the QSFP+ MSA. The optical transceiver is compliant per the RoHS Directive 2011/65/EU.

**Ordering information**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Package** | **Product part NO.** | **Data Rate(Gbps)** | **Media** | **Wavelength(nm)** | **TransmissionDistance(m)** | **Temperature Range（℃）** |
| QSFP28 | LQP100-SR4 | 4X25 | multi-mode fiber | 850 | 100 | 0~70 | Commercial |

1. **Pin Diagram**

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1. **Pin Descriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pin**  | **Symbol**  | **Name/Description**  | **Ref.** |
| 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 |  |
| **Pin**  | **Symbol**  | **Name/Description**  | **Ref.**  |
| 9  | ResetL | Module Reset |  |
| 10  | Vcc Rx | +3.3V Power supply receiver |  |
| 11  | SCL | 2-wire serial interface clock |  |
| 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**  | **Ref.** |
| Storage Temperature  | TS | -40 |  | 85 | ºC  |  |
| Storage Ambient Relative Humidity  | HA | 0 |  | 85 | %  |  |
| Maximum Supply Voltage  | VCC | -0.5 |  | 4.0 | V  |  |
| Signal Input Voltage  |  | -0.3 |  | Vcc+0.3  | V  |  |
| Receiver Damage Threshold  |  | +3.4 |  |  | dBm |  |
| Lead Soldering Temperature/Time  | TSOLD  |  |  | 260/10  | ºC/sec  | 1 |
| Lead Soldering Temperature/Time  | TSOLD  |  |  | 360/10  | ºC/sec  | 2 |

Note:

1.Suitable for wave soldering.

2. Only for soldering by iron.

1. **General Product Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Data Rate Spcifications** | **Symbol**  | **Min.**  | **Typ.**  | **Max.**  | **Unit**  | **Ref.** |
| Bit Rate(all wavelength combined) | BR |  |  | 103.1 | Gb/s | 1 |
| Bit Error Ratio(pre-FEC) | BER |  |  | 10-5 |  | 2 |
| Maximum Supported Distance |  |  |  |  |  |  |
| Fiber Type |  |  |  |  |  |  |
| Link distance on OM3 MMF | d |  |  | 70 | meters | 3 |
| Link distance on OM4 MMF | d |  |  | 100 | meters | 3 |

Notes:

1.Supports 100GBASE-SR4 per IEEE 802.3bm.

2. Tested with a PRBS 231-1 test pattern.

3. Requires FEC on the host to support maximum distance, per 100GBASE-SR4.

1. **Optical Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter**  | **Symbol**  | **Min.**  | **Typ.**  | **Max.**  | **Unit**  | **Ref.** |
| **Transmitter(per lane)** |
| Average Output Power per lane | POUT | -8.4 |  | 2.4 | dBm |  |
| Transmit OMA per Lane | TxOMA | -6.4 |  | 3.0 | dBm |  |
| Extinction Ratio  | ER  | 2 |  |  | dB |  |
| Center Wavelength  | λC | 840 |  | 860 | nm  |  |
| RMS Spectral Width | σ |  |  | 0.6 | nm |  |
| Transmitter OFF Output Power  | POff |  |  | -30 | dBm |  |
| Transmitter eye mask definition {X1,X2,X3,Y1,Y2,Y3} |  | {0.3,0.38,0.45,0.35,0.41,0.5} |  | 1 |
| **Receiver(per lane)** |
| Input Optical Wavelength | λIN | 840 |  | 860 | nm |  |
| Rx Sensitivity(OMA) per lane | RSENS |  |  | -10.3 | dBm | 2 |
| InputSaturation Power (Overload)  | PSAT | +3.4 |  |  | dBm |  |
| Receiver Reflectance | Rfl |  |  | -12 | dBm |  |
| Loss of Signal Assert  | PA | -30 |  |  | dBm |  |
| Loss of Signal De-assert  | PD |  |  | -11.3 | dBm |  |
| LOS Hysteresis  | PD - PA |  0.5  |  | 6  | dB  |  |

Note:

1.Hit Ratio 1.5x10-3 hit/sample.

2.Minimum value is informative only and not the principal indicator of signal strength.

1. **Digital Diagnostic Functions**

LQP100-SR4 QSFP28 transceivers support the I2C-based diagnostics interface specified by the QSFP28 MSA.

1. **Electrical Interface Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Symbol** | **Min.** | **Typ.** | **Max.** | **Unit** | **Ref.** |
| Supply Voltage | VCC | 3.15 |  | 3.45 | V |  |
| Supply Current | ICC |  |  | 1.5 | A |  |
| Module total power | P |  |  | 3.5 | W | 1 |
| **Transmitter** |
| Signaling rate per lane |  | 25.78125±100ppm | Gb/s |  |
| Differential pk-pk input voltage tolerance | Vin,pp,diff |  |  | 900 | mV |  |
| Single-ended voltage tolerance | Vin,pp | -0.35 |  | +3.3 | V |  |
| Module stress input test |  | Per Section 83E.3.4.1,IEEE802.3bm |  |  |
| **Receiver**  |
| Signaling rate per lane |  | 25.78125±100ppm | Gb/s |  |
| Differential data output swing | Vout,pp | 100 |  | 400 | mVpp | 2 |
| 300 |  | 600 |
| 400 | 600 | 800 |
| 600 |  | 1200 |
| Eye width |  | 0.57 |  |  | UI |  |
| Eye height,differential |  | 228 |  |  | mV |  |
| Vertical eye closure | VEC | 5.5 |  |  | dB |  |

Note :

1.Maximum total power value is specified across the fulltemperature and voltage range.

when CDRs are locked or a lack of input signal results in squelch being activated.If incorrect frequencies cause the CDRs to continuously attempt to lock, maximum power dissipation may reach 4.5W.

2.Output voltage is settable in 4 discrete range via I2C.Default range is Range 2 ( 400 – 800mV ).

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

**LQP100-SR4**

**Revision History**

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