

MC2210511-PIR4-C

Mellanox® MC2210511-PIR4 Compatible TAA 40GBase-IR4 QSFP+ Transceiver (SMF, 1310nm, 2km, MPO, DOM)

Features:

- SFF-8436 Compliance
- MPO Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 40GBase Ethernet
- Access and Enterprise

Product Description

This Mellanox® MC2210511-PIR4 compatible QSFP+ transceiver provides 40GBase-IR4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Mellanox® 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.

ProLabs' 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 |
|---------------------------|--------|------|------|------|------|
| Supply Voltage | Vcc | 0 | | +3.6 | V |
| Storage Temperature | Tst | -40 | | +85 | °C |
| Humidity (non-condensing) | Rh | 5 | | 85 | % |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|--------|-------|------|---------|------|
| Power Supply Voltage | Vcc | 3.13 | 3.3 | 3.47 | V |
| Operating Case Temperature | Tca | 0 | 25 | +70 | °C |
| Data Rate Per Channel | | | | 10.3125 | Gbps |
| Power Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | % |
| Power Supply Current | | | | 2.5 | W |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--|-----------------|------|------|-----------|------------------|------------|
| Transmitter Differential Input Voltage | V _{IN} | 180 | | 800 | mV _{pp} | |
| Receiver Differential Output Voltage | V _O | 400 | 450 | 850 | mV _{pp} | 1 |
| Loss of Signal (LOS) | V _{CH} | 2 | | Vcc | V | 2 |
| | V _{OL} | Vee | | Vee + 0.8 | | |
| Transmitter Disable (TX-Disable) | V _{IH} | 2 | | Vcc | V | |
| | V _{IL} | Vee | | Vee + 0.8 | | |
| Rx Output Rise and Fall Time | Tr/Tf | 28 | | | Ps | 20% to 80% |

Notes:

1. SFF-8431, SFP+ Module receiver output specifications at C'.
2. LOS is an open collector output. Should be pulled up with 4.7kΩ – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1.

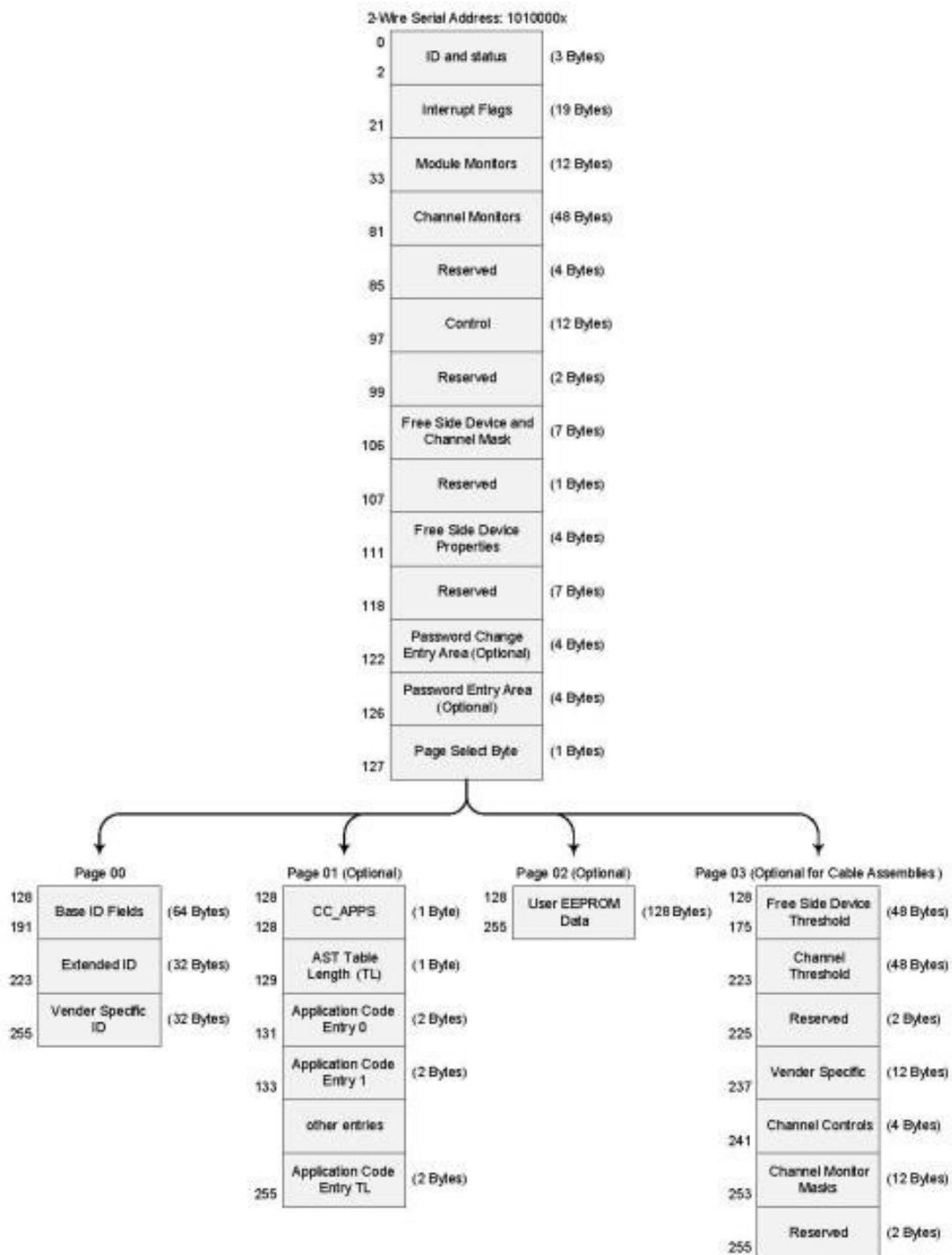
Optical Characteristics

| Parameter | Symbol | Unit | Min. | Typ. | Max. | Notes |
|--|--|-------------------------------------|-------|------|-------|-------------------|
| Transmitter | | | | | | |
| Average Launch Power, each lane | P _o | dBm | -8.2 | | +0.5 | |
| Center wavelength | λ_c | nm | 1260 | | 1355 | |
| Optical Spectral Width (RMS) | $\Delta\lambda$ | nm | | | 2.5 | |
| Extinction ratio | ER | Db | 3.0 | | | |
| Optical power OMA, each lane | P _{OMA} | dBm | -5.2 | | +1.5 | 1 |
| Average launch power of OFF transmitted, each lane | P _{off} | dBm | | | -30 | |
| RIN ₁₂ OMA | RIN | dB/Hz | | | -128 | |
| Optical return loss tolerance | ORL _T | dB | 12 | | | 2 |
| Output eye | | Compliant with IEEE802.3ba eye mask | | | | |
| Receiver | | | | | | |
| Center Wavelength | λ_c | nm | 1260 | | 1355 | |
| Receiver Overload in OMA, each lane | R _x OMA | dBm | +1.5 | | | |
| Receiver Overload in average power, each lane | P _{max} | dBm | +0.5 | | | 3 |
| Average receive power, each lane | R _x P _x | dBm | -11.5 | | | 4 |
| Receiver Sensitivity in OMA, each lane | S _{en} _{OMA} | dBm | | | -9.5 | 5, for 1.0km type |
| Receiver Sensitivity in OMA, each lane | S _{en} _{OMA} | dBm | | | -10.5 | 5, for 1.5km type |
| Receiver Crossing | RCP | % | 45 | | 55 | |
| Receiver Eye Mask | SFF-8431, SFP+MODULE RECEIVER OUTPUT SPECIFICATIONS AT C'. | | | | | |
| Receiver Eye Mask Margin | REMM | % | 0 | | | |
| Receiver Reflectance | R _{rx} | dB | | | -12 | |
| LOS | Assert | L _{OS} A | dBm | -30 | | |
| | De-assert | L _{OS} D | dBm | | -12 | |
| LOS Hysteresis | L _{OSH} | dB | 0.5 | | 6 | |

Notes:

1. Even if the TDP < 1 dB, the OMA (min) must exceed this value.
2. Transmitter reflectance is defined looking into the transmitter
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having a power level equal to the average receive power (max) plus at least 1 dB.
4. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. PRBS 231 -1 at BER 10-12 , ER=3.0dB

Digital Diagnostic Memory Map

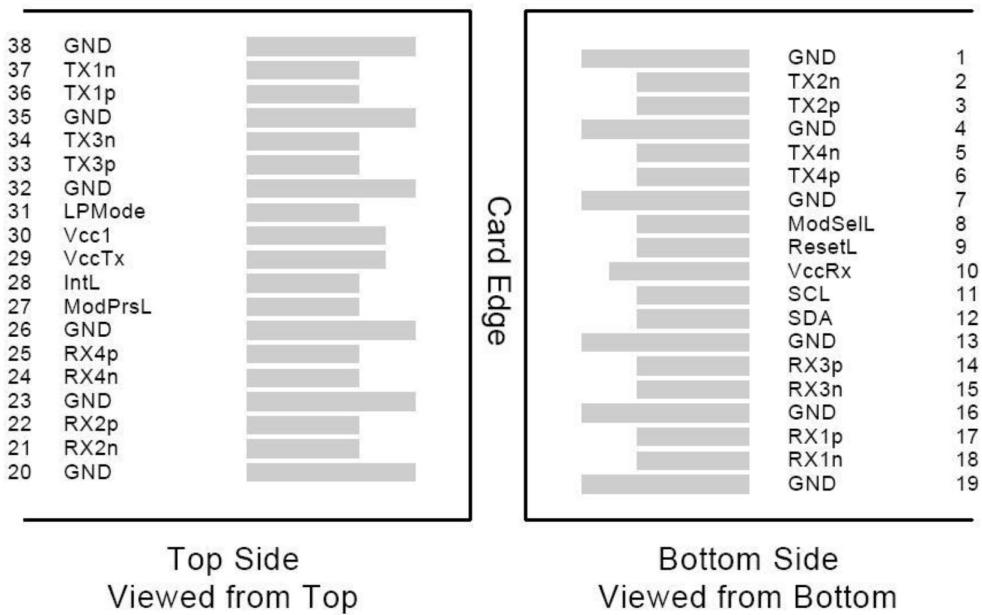


Pin Descriptions

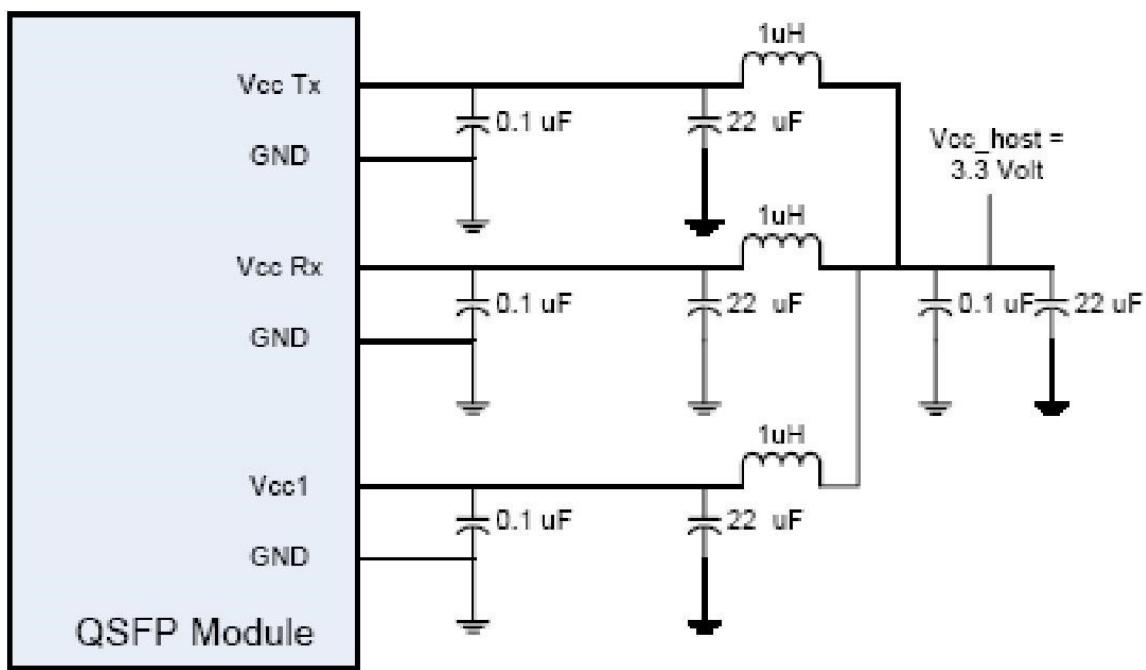
| Pin | Logic | Symbol | Name/Descriptions | Ref. |
|-----|------------|---------|--|------|
| 1 | | GND | Module Ground | 1 |
| 2 | CML-I | Tx2- | Transmitter inverted data input | |
| 3 | CML-I | Tx2+ | Transmitter non-inverted data input | |
| 4 | | GND | Module Ground | 1 |
| 5 | CML-I | Tx4- | Transmitter inverted data input | |
| 6 | CML-I | Tx4+ | Transmitter non-inverted data input | |
| 7 | | GND | Module Ground | 1 |
| 8 | LV TTL-I | MODSEIL | Module Select | 2 |
| 9 | LV TTL-I | ResetL | Module Reset | 2 |
| 10 | | VCCRx | +3.3v Receiver Power Supply | |
| 11 | LVCMOS-I | SCL | 2-wire Serial interface clock | 2 |
| 12 | LVCMOS-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 | LV TTL-O | ModPrsL | Module Present, internal pulled down to GND | |
| 28 | LV TTL-O | IntL | Interrupt output should be pulled up on host board | 2 |
| 29 | | VCCTx | +3.3v Transmitter Power Supply | |
| 30 | | VCC1 | +3.3v Power Supply | |
| 31 | LV TTL-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:

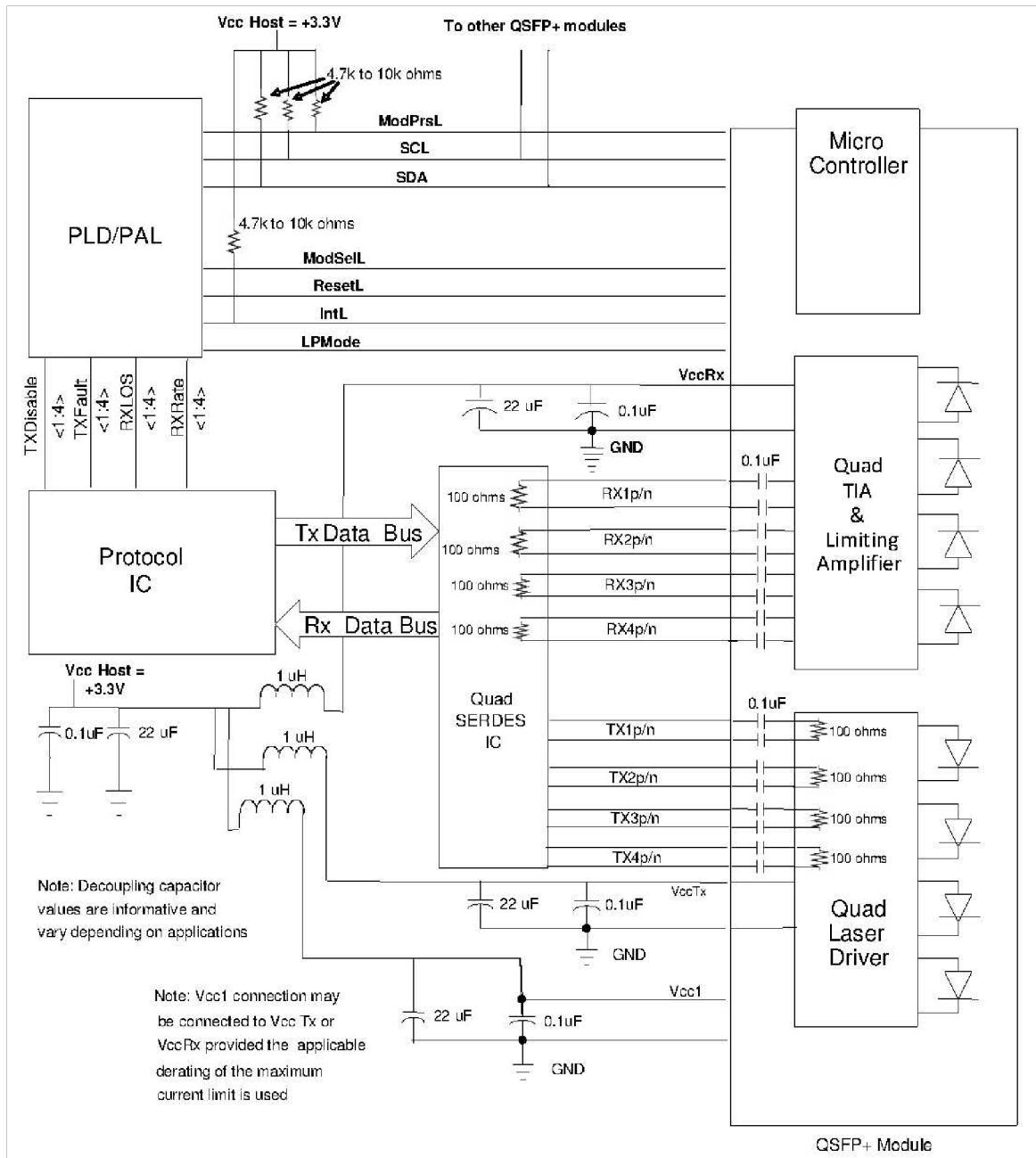
1. GND is the symbol for signal and supply (power) common for QSFP+ modules. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown in the figure below. Vcc Rx, Vcc1 and VccTx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Electrical Pin-out Details

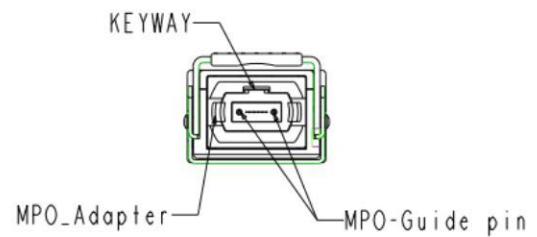
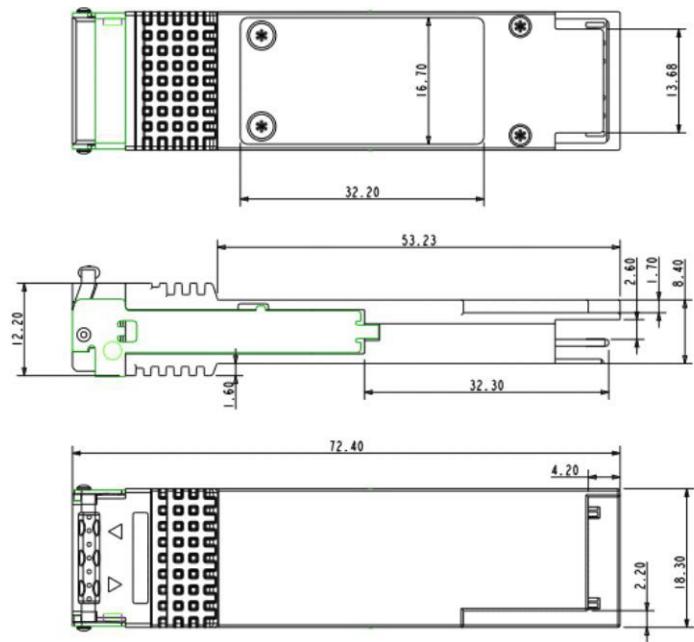
Recommended Power Supply Filter



Typical Application Circuit



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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