

QSFP28

EQ2A10X-32Q23CDxx

100G-2x50G QSFP28-2xQSFP28 Active optical cable

- Support 2x50GBASE-SR application
- Compliant to QSFP28 MSA SFF-8636
- Multi rate of up to 25.78125Gbps per lane
- Transmission distance up to 70M(OM3) and 100M(OM4)
- +3.3V single power supply
- Low power consumption
- Operating temp Commercial: 0°C to +70 °C
- RoHS compliant



Applications

- 100G-2*50GBase-SR
- Other optical links

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------|--------|------|------|------|------|------|
| Storage Temperature | Ts | -10 | - | 70 | °C | |
| Relative Humidity | RH | +5 | - | 85 | % | |
| Power Supply Voltage | VCC | -0.5 | - | 3.6 | V | |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|------------------------------|--------|-------------|----------|------|------|--------------|
| Case Operating Temperature | Tcase | 0 | - | 70 | °C | |
| Power Supply Voltage | VCC | 3.14 | 3.3 | 3.47 | V | |
| Power Dissipation per QSFP28 | Pd | - | - | 2.5 | W | |
| Bit Rate per Lane | BR | 10.31 25 | 25.78125 | - | Gbps | Each channel |

Electrical Characteristics

| Parameter | | Symbol | Min | Typ. | Max. | Units | Notes |
|---|------------------|---------------------|-----|------|----------------------|-------|-------|
| ModSelL | Module Select | VOL | 0 | - | 0.8 | V | |
| | Module Unselect | VOH | 2.5 | - | VCC | V | |
| LPMode | Low Power Mode | VIL | 0 | - | 0.8 | V | |
| | Normal Operation | VIH | 2.5 | - | V _{CC} +0.3 | V | |
| ResetL | Reset | VIL | 0 | - | 0.8 | V | |
| | Normal Operation | VIH | 2.5 | - | V _{CC} +0.3 | V | |
| ModPrsL | Normal Operation | VOL | 0 | - | 0.4 | V | |
| IntL | Interrupt | VOL | 0 | - | 0.4 | V | |
| | Normal Operation | VoH | 2.4 | - | VCC | V | |
| Electrical Transmitter Characteristics | | | | | | | |
| Differential Data Input Swing | | V _{in,P-P} | 200 | - | 1600 | mV | |

| Output Differential Impedance | Z _{IN} | 90 | 100 | 110 | Ω | |
|-------------------------------------|------------------|-----|-----|------|------------------|---|
| Electrical Receiver Characteristics | | | | | | |
| Differential Data Output Swing | V _{out} | 200 | - | 800 | mV _{PP} | |
| Bit Error Rate | BER | | | E-12 | | 1 |
| Input Differential Impedance | Z _D | 90 | 100 | 110 | Ω | |

Note: 1 PRBS2^31-1@25.78125Gbps

Pin Assignment

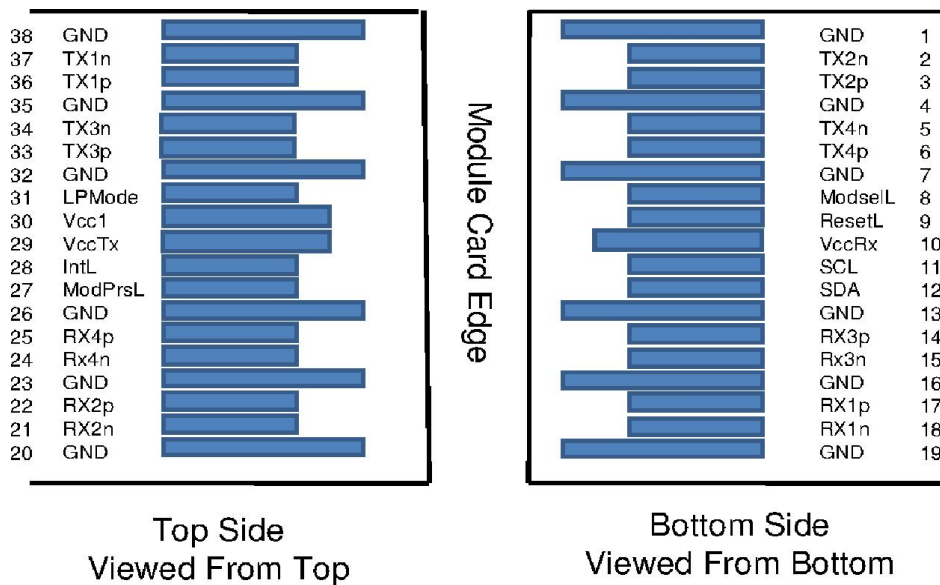


Figure 1, Pin View for QSFP28

| Pin | Symbol | Name/Description | Notes |
|-----|---------|-------------------------------------|-------|
| 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 | ModSelL | Module Select | |
| 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 | Vcc Tx | +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.

Host - Transceiver Interface Block Diagram

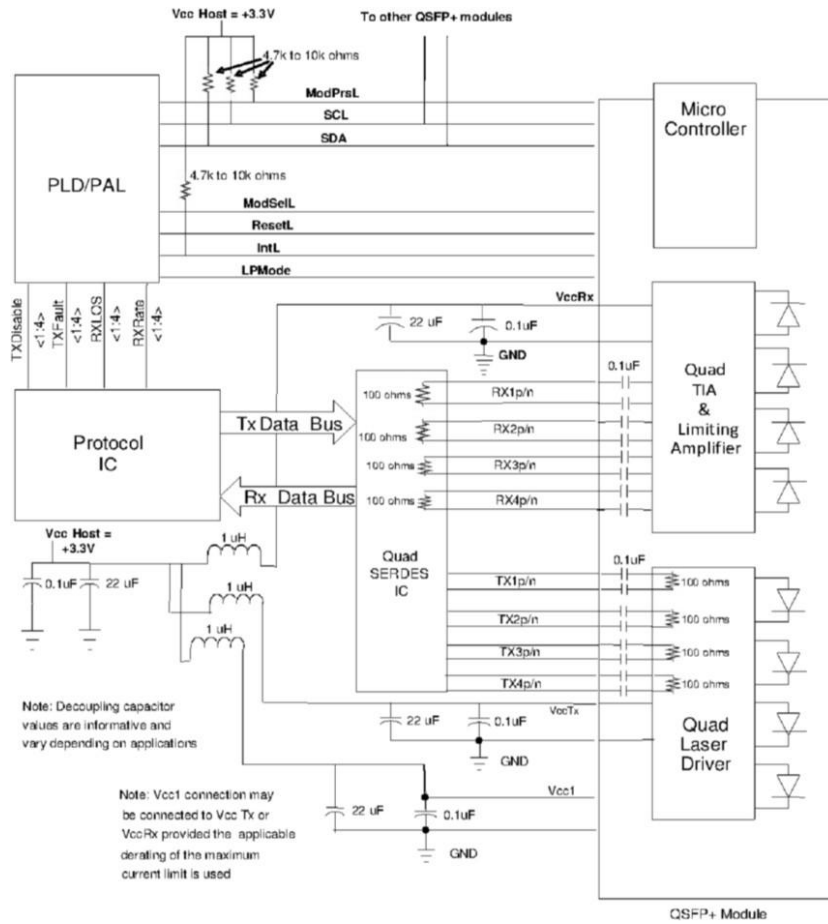


Figure 2, Recommended Interface Circuit

| 2-Wire Serial Address 1010000x | | | |
|--------------------------------|---------------------------------------|--|--|
| Lower Page 00h | | | |
| 0 | Identifier | | |
| 1- 2 | Status | | |
| 3- 21 | Interrupt Flags | | |
| 22- 33 | Free Side Device Monitors | | |
| 34- 81 | Channel Monitors | | |
| 82- 85 | Reserved | | |
| 86- 98 | Control | | |
| 99 | Reserved | | |
| 100-104 | Hardware Interrupt Pin Masks | | |
| 105-106 | Vendor Specific | | |
| 107 | Reserved | | |
| 108-110 | Free Side Device Properties | | |
| 111-112 | Assigned for use by PCI Express | | |
| 113 | Free Side Device Properties | | |
| 114-118 | Reserved | | |
| 119-122 | Password Change Entry Area (Optional) | | |
| 123-126 | Password Entry Area (Optional) | | |
| 127 | Page Select Byte | | |

| Upper Page 00h | Optional Page 01h | Optional Page 02h | Optional Page 03h |
|----------------------------|-----------------------------------|--------------------------|--------------------------------------|
| 128 Identifier | 128 CC_APPS | 128-255 User EEPROM Data | 128-175 Free Side Device Thresholds |
| 129-191 Base ID Fields | 129 AST Table Length (TL) | | |
| | 130-131 Application Code Entry 0 | | |
| | 132-133 Application Code Entry 1 | | |
| | 134-253 other entries | | |
| 192-223 Extended ID | | | 176-223 Channel Thresholds |
| 224-255 Vendor Specific ID | | | 224 Tx EQ & Rx Emphasis Magnitude ID |
| | | | 225 RX output amplitude indicators |
| | | | 226-241 Channel Controls |
| | | | 242-251 Channel Monitor Masks |
| | 254-255 Application Code Entry TL | | 252-255 Reserved |

Figure3, Memory Map

Mechanical

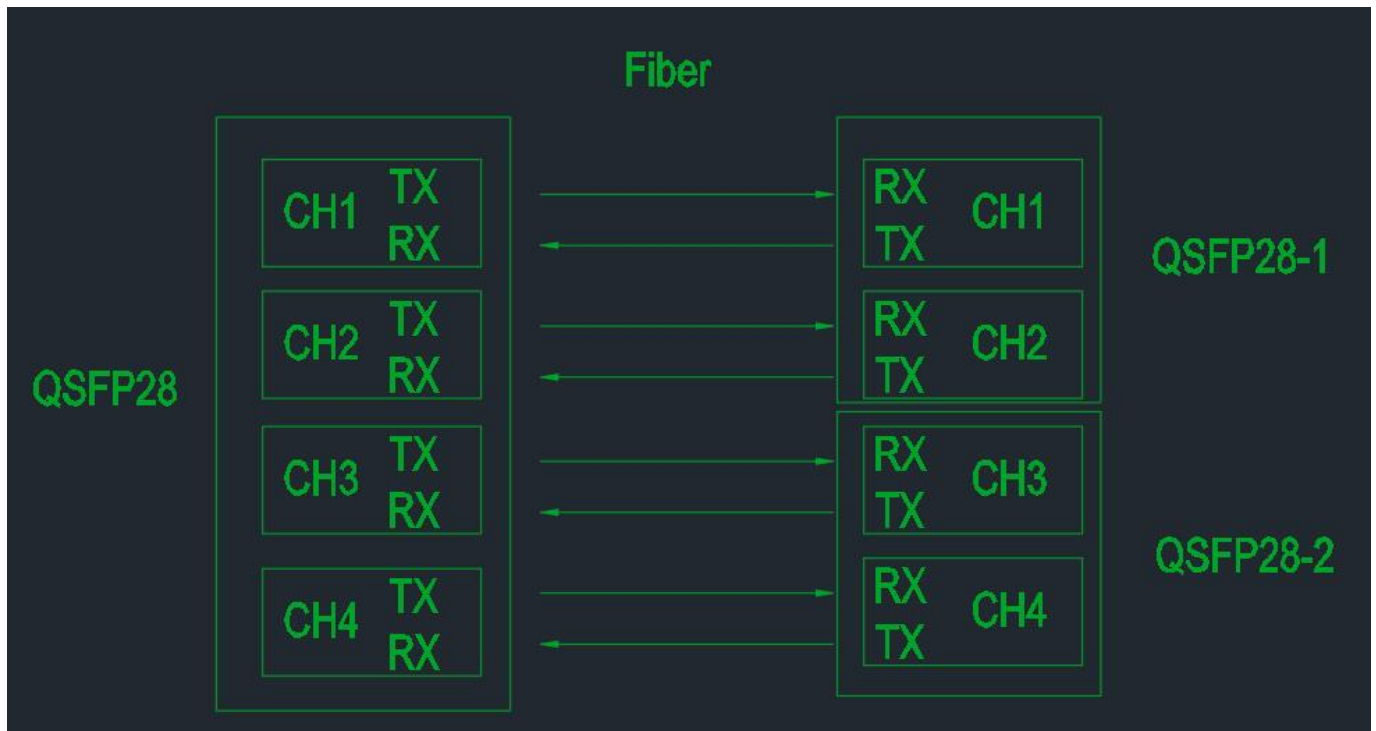
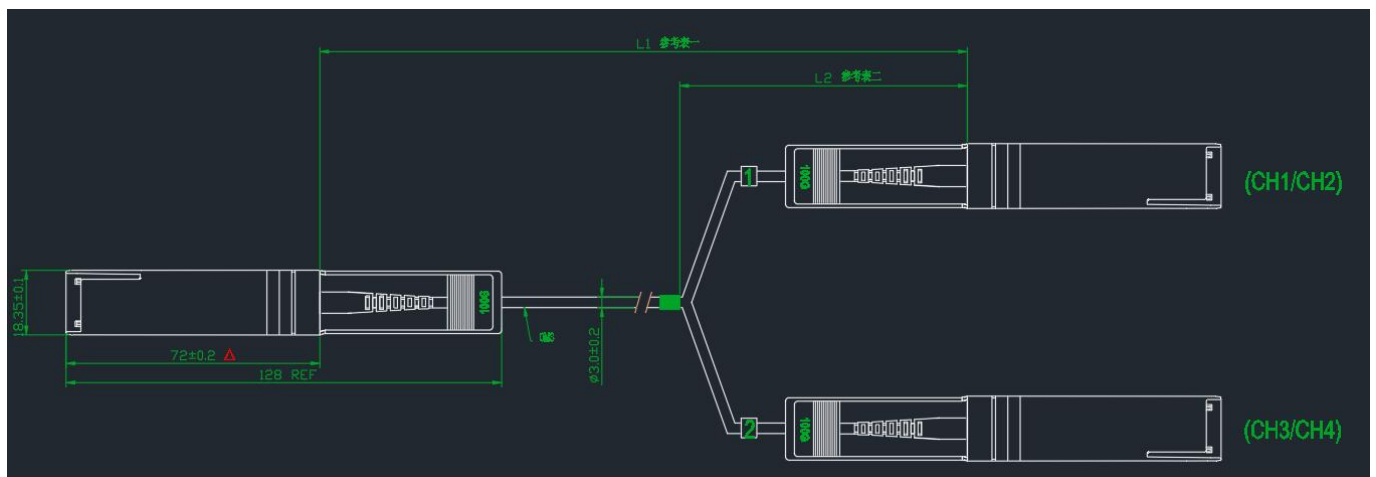


Figure 4 QSFP28 to 2x QSFP28 Active Optical Cable Block Diagram

Outline Dimensions (Unit: mm)



Compatibility Test

In order to ensure the product compatibility, our products will be tested on the switch before shipment. Our modules can be compatible with many mainstream brand switches, such as Cisco, Juniper, Extreme, Brocade, IBM, H3C, HP, Huawei, D-Link, Mikrotik, ZTE, TP-Link...

Our test equipment: VOLKTEK MEN-4110, HP 2530-8G, CRS226-24G-25+RM, Catalyst 2960G Series, Catalyst 3850 XS 10G SFP+, Catalyst 3750-E Series, HUAWEI S5700Series, H3C S3100V2 Series, Juniper-EX4200, etc.



Cisco Catalyst 3850



HUAWEI S5700



H3C S3100V2



HP J9264AR



Juniper EX 4200



Alcatel 6850E-U24X



Mikrotik CR5226-24G-25+RM



Cisco Catalyst 2960G



Volktek MEN-4110

Product Production Process

Quality Assurance

Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.



**Standardized
Production Line**



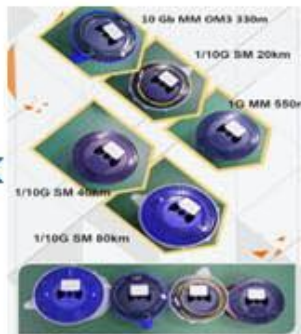
**Professional
Welding**



Assembling



Aging Testing



Distance Testing



Cleaning end face



Product Initial Test



Switch Testing



Product Final Test

Packaging

Individual package.



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