

QSFP28-1SFP28-PDACXM-C

MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, Up to 5m)

Features

- QSFP28 End: Compliant with QSFP28 MSA specifications
- SFP28 End: Compliant with SFP28 MSA specifications
- 1 independent duplex channels operating at 25Gbps
- AC coupled inputs and outputs
- 100 Ohm differential impedance
- 26AWG to 30AWG Wire Gauge
- All-metal housing for superior EMI performance
- Single power supply 3.3V, low power consumption
- Operating Temperature: 0°C to 70°C
- ROHS Compliant



Applications

- Serial Data Transmission Storage
- Fiber Channel

Product Description

This is an MSA compliant 25GBase-CU QSFP28 to 1xSFP28 direct attach cable that operates over passive copper with a maximum reach up to 5.0m (16.4ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' direct attach cables 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."



Order Information

| Part Number | Description |
|--------------------------|---|
| QSFP28-1SFP28-PDAC0-5M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 0.5m) |
| QSFP28-1SFP28-PDAC1M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 1m) |
| QSFP28-1SFP28-PDAC1-5M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 1.5m) |
| QSFP28-1SFP28-PDAC2M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 2m) |
| QSFP28-1SFP28-PDAC2-5M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 2.5m) |
| QSFP28-1SFP28-PDAC3M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 3m) |
| QSFP28-1SFP28-PDAC4M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 4m) |
| QSFP28-1SFP28-PDAC5M-C | MSA and TAA Compliant 25GBase-CU QSFP28 to 1xSFP28 Direct Attach Cable (Passive Twinax, 5m) |

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compliant with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

General Specifications

| Parameter | Symbol | Min. | Typical | Max. | Unit | Notes |
|-----------------------|------------------|------|---------|------------|------|-------|
| Bit Error Rate | BER | | | 10^{-12} | | |
| Operating Temperature | T _c | 0 | | 70 | °C | 1 |
| Storage Temperature | T _{STO} | -40 | | 85 | °C | 2 |
| Input Voltage | V _{CC} | 3.14 | 3.3 | 3.46 | V | |

Notes:

1. Case temperature
2. Ambient temperature

Insertion Loss Level and Wire Gauge

| Cable Length | Wire Gauge | Insertion Loss Level |
|--------------|------------|----------------------|
| 0.5m | 30AWG | CA-25G-N |
| 1m | 30AWG | CA-25G-N |
| 1.5m | 30AWG | CA-25G-N |
| 2m | 30AWG | CA-25G-N |
| 2.5m | 28AWG | CA-25G-N |
| 3m | 28AWG | CA-25G-S |
| 4m | 26AWG | CA-25G-L |
| 5m | 26AWG | CA-25G-L |

Notes:

1. Cable insertion loss classification standard: IEEE 802.3by 110-10

Weight

| Parameter | Symbol | Typ Max | Unit | Notes |
|---------------------------|----------------|---------|-------|-------|
| 30AWG Product Weight | GD30 | 96 | g/PCS | 1 |
| 28AWG Product Weight | GD28 | 105 | g/PCS | 1 |
| 26AWG Product Weight | GD26 | 110 | g/PCS | 1 |
| 30AWG Cable Weight | GC30 | 32 | g/M | 2 |
| 28AWG Cable Weight | GC28 | 38 | g/M | 2 |
| 26AWG Cable Weight | GC26 | 43 | g/M | 2 |
| SFP28 END Dust CapWeight | G _s | 0.80 | g/PCS | |
| QSFP28 END Dust CapWeight | G _Q | 1.40 | g/PCS | |

Notes:

1. The weight of the product.
2. The weight of unit length cable (two sticks). For example: the weight of 26AWG cable is: $110+43*(5-1)+0.80+1.40=284.2g$

Cable Specifications

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|-----------------|--------|-----|-----|-----|------|-------|
| Wire Gauge | | 30 | | 26 | AWG | |
| Cable Impedance | Z | 90 | 100 | 110 | Ohm | |

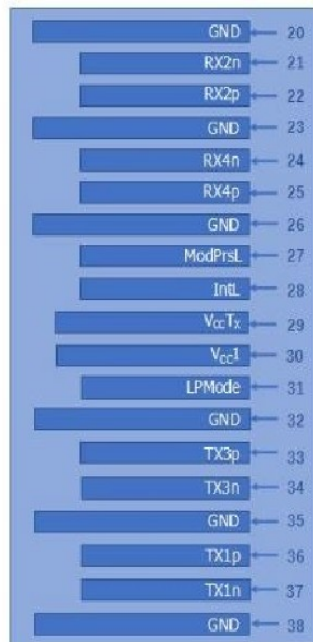
Cable Dimension

| Serial number | Standard Wire Gauge(AWG) | Cable diameter OD(mm) | Minimum bendingradius R (mm) |
|---------------|--------------------------|-----------------------|------------------------------|
| 1 | 30 | 4.6 | 26 |
| 2 | 28 | 5.0 | 28 |
| 3 | 26 | 5.6 | 30 |

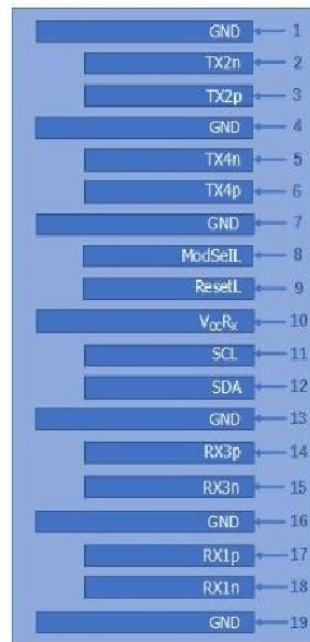
Nominal Length

| Serial number | Module nominal length L1 (cm) | Tolerance range ±(cm) |
|---------------|-------------------------------|-----------------------|
| 1 | $L1 \leq 3$ | 2 |
| 2 | $3 < L1 \leq 4$ | 4 |
| 3 | $4 < L1 \leq 5$ | 6 |

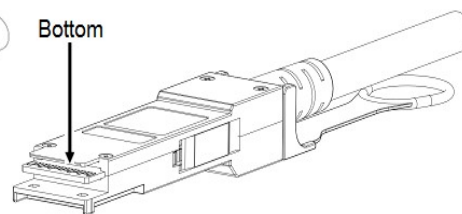
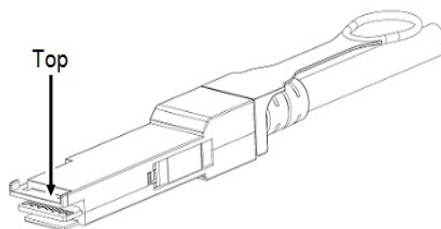
Electrical Pin-out Details (QSFP28 END)



Top of Board



Bottom of Board



Pin Descriptions (QSFP28 END)

| Pin | Symbol | Descriptions | Notes |
|-----|--------------------|--|-------|
| 1 | GND | Ground | 5 |
| 2 | Tx2n | Transmitter Inverted Data Input, LAN2 | |
| 3 | Tx2p | Transmitter Non-Inverted Data Input, LAN2 | |
| 4 | GND | Ground | 5 |
| 5 | Tx4n | Transmitter Inverted Data Input, LAN4 | |
| 6 | Tx4p | Transmitter Non-Inverted Data Input, LAN4 | |
| 7 | GND | Ground | 5 |
| 8 | ModSelL | Module select pin, the module responds to two-wire serial communication when low level | 1 |
| 9 | ResetL | Module Reset | 2 |
| 10 | V _{cc} RX | +3.3V Power Supply Receiver | |
| 11 | SCL | 2-wire serial interface clock | |
| 12 | SDA | 2-wire serial interface data | |
| 13 | GND | Ground | 5 |
| 14 | Rx3p | Receiver Non-Inverted Data Output, LAN3 | |
| 15 | Rx3n | Receiver Inverted Data Output, LAN3 | |
| 16 | GND | Ground | 5 |
| 17 | Rx1p | Receiver Non-Inverted Data Output, LAN1 | |
| 18 | Rx1n | Receiver Inverted Data Output, LAN1 | |
| 19 | GND | Ground | 5 |
| 20 | GND | Ground | 5 |
| 21 | Rx2n | Receiver Inverted Data Output, LAN2 | |
| 22 | Rx2p | Receiver Non-Inverted Data Output, LAN2 | |
| 23 | GND | Ground | 5 |
| 24 | Rx4n | Receiver Inverted Data Output, LAN4 | |
| 25 | Rx4p | Receiver Non-Inverted Data Output, LAN4 | |
| 26 | GND | Ground | 5 |
| 27 | ModPrsL | The module is inserted into the indicate pin and grounded in the module. | 3 |
| 28 | IntL | Interrupt | 4 |
| 29 | V _{cc} TX | +3.3V Power Supply transmitter | |
| 30 | VCC1 | +3.3V Power Supply | |
| 31 | LPMODE | Low Power Mode | 5 |
| 32 | GND | Ground | 5 |
| 33 | Tx3p | Transmitter Non-Inverted Data Input, LAN3 | |
| 34 | Tx3n | Transmitter Inverted Data Input, LAN3 | |
| 35 | GND | Ground | 5 |
| 36 | Tx1p | Transmitter Non-Inverted Data Input, LAN1 | |
| 37 | Tx1n | Transmitter Inverted Data Input, LAN1 | |
| 38 | GND | Ground | 5 |

Notes:

1. ModSelL is the input pin. The module responds to 2-wire serial communication commands when it is held low by the host. ModSelL allows multiple QSFP modules to be used on a single 2-wire interface bus. If ModSelL is High, the module will not respond to any 2-wire interface communication from the host. ModSelL has internal pull-up resistors in the module
2. The module restart pin, when the low level on the ResetL pin lasts longer than the minimum pulse length, resets the module and restores all user modules to their default state. When performing reset device, the host should ignore all status bits. Until the module reset interrupt is completed, please note that during hot plugging, the module will issue this information to complete the reset interrupt without resetting
3. This pin is active high, indicating that the module is running under a low power module. The signal has no effect on the functionality of this product.
4. IntL is the output pin, which is the open collector output and must be pulled up to Vcc with a 4.7k Ω -10k Ω resistor on the motherboard. When it is low, it indicates that the module may malfunction. The host uses a 2-wire serial interface to identify the interrupt source
5. Circuit ground is internally isolated from chassis ground.

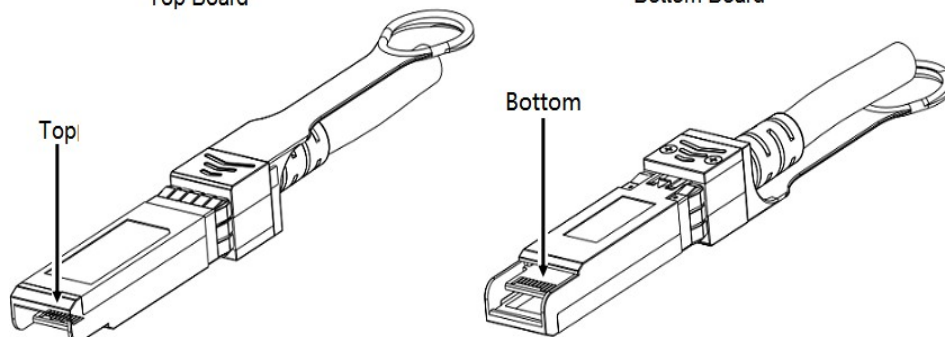
Electrical Pin-out Details (SFP28 END)

| | |
|----|------------------|
| 20 | TX GND |
| 19 | TD- TX DATA IN- |
| 18 | TD+ TX DATA IN+ |
| 17 | TX GND |
| 16 | Vcc TX |
| 15 | Vcc RX |
| 14 | RX GND |
| 13 | RD+ RX DATA OUT+ |
| 12 | RD- RX DATA OUT- |
| 11 | RX GND |

Top Board

| | |
|----|------------|
| 1 | TX GND |
| 2 | TX FAULT |
| 3 | TX DISABLE |
| 4 | SDA |
| 5 | SCL |
| 6 | MOD_ABS |
| 7 | RS0 |
| 8 | RX_LOS |
| 9 | RS1 |
| 10 | RX GND |

Bottom Board



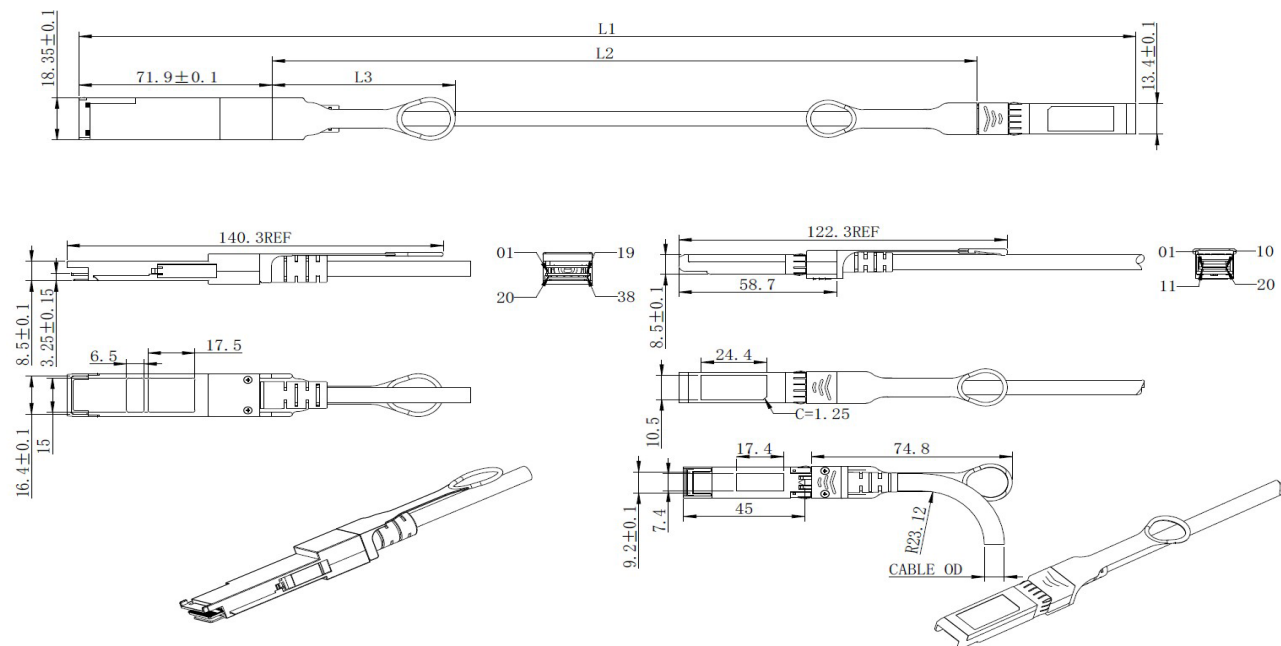
Pin Descriptions (SFP28 END)

| Pin | Symbol | Descriptions | Notes |
|-----|------------|--|-------|
| 1 | VEET | Transmitter ground (common with receiver ground) | 1 |
| 2 | TX_FAULT | Transmitter failure alarm, not used | |
| 3 | TX_DISABLE | The signal turns off the module transmitter when it is high or open, not used. | |
| 4 | SDA | Data line for serial ID | 2 |
| 5 | SCL | Clock line for serial ID | 2 |
| 6 | MOD_ABS | Module Absent. Grounded within the module | 2 |
| 7 | RS0 | No connection required | |
| 8 | LOS | Loss of Signal indication. Logic 0 indicates normal operation | |
| 9 | RS1 | No connection required | |
| 10 | VEER | Receiver ground (common with transmitter ground) | 1 |
| 11 | VEER | Receiver ground (common with transmitter ground) | 1 |
| 12 | RD- | Receiver Inverted DATA out. AC coupled | |
| 13 | RD+ | Receiver Non-inverted DATA out. AC coupled | |
| 14 | VEER | Receiver ground (common with transmitter ground) | 1 |
| 15 | VCCR | Receiver power supply | |
| 16 | VCCT | Transmitter power supply | |
| 17 | VEET | Transmitter ground (common with receiver ground) | 1 |
| 18 | TD+ | Transmitter Non-Inverted DATA in. AC coupled | |
| 19 | TD- | Transmitter Inverted DATA in. AC coupled | |
| 20 | VEET | Transmitter ground (common with receiver ground) | 1 |

Notes:

1. Circuit ground is isolated from chassis ground
2. Should Be pulled up with 4.7k - 10k ohm on host board to a voltage between 2V and 3.6V

Mechanical Specifications



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

About ProLabs

Our experience comes as standard; for over 15 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 over 90 optical switching and transport platforms.

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 400G 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.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. 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.

Contact Information

ProLabs US

Email: sales@prolabs.com

Telephone: 952-852-0252

ProLabs UK

Email: salesupport@prolabs.com

Telephone: +44 1285 719 600

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Amphenol:](#)

[QSFP28-1SFP28-PDAC4M-C](#)