



SFPDD-50GB-PDAC1M-OPC

MSA and TAA 50GBase-CU SFP-DD to SFP-DD Direct Attach Cable (Passive Twinax, 1m, 30AWG)

Features

- SFP-DD module compliant to SFP-DD MSA Rev. 2.1ls
- Compliant to IEEE802.3cd & IEEE802.3bj high-frequency test standards
- SFP-DD-MIS Rev. 2.0
- 50Gbps transmission
- 30AWG
- Passive twinax
- Built-in EEPROM functions
- Operating Temperature 0 to 70 Celsius
- RoHS compliant and lead-free



Applications:

- 50GBase Ethernet

Product Description

This is an MSA compliant 50GBase-CU SFP-DD to SFP-DD direct attach cable that operates over passive copper with a maximum reach of 1.0m (3.3ft). 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.

OptioConnect's transceivers are RoHS compliant and lead-free.

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|--------|------|------|------|------|
| Supply Voltage | Vcc | 3.13 | 3.3 | 3.47 | V |
| Storage Temperature | Tstg | -40 | | 85 | °C |
| Operating Case Temperature | Tc | 0 | | 70 | °C |
| Humidity | RH | 5 | | 85 | % |
| Data Rate (FDR10) | | | 50 | | Gbps |

Physical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|-----------------|-----------|------|------|------|------|
| Length | L | | | 1 | m |
| AWG | | | | 30 | AWG |
| Jacket Material | Black PVC | | | | |
| Flame Rating | VW-1 | | | | |

Electrical Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|-------------|---|------|-------|------|
| Resistance | Rcon | | | 3 | Ω |
| Insulation Resistance | Rins | | | 10 | MΩ |
| Raw Cable Impedance | Zca | 95 | | 110 | Ω |
| Mated Connector Impedance | Zmated | 85 | | 110 | Ω |
| Maximum Insertion Loss at 13.28GHz | SDD21 | 8 | | 17.16 | dB |
| Differential to Common-Mode Return Loss | SCD11/22 | $\text{Return_loss}(f) \geq \begin{cases} 22 - \left(\frac{20}{25.78}\right)f, & 0.01 \leq f < 12.89 \\ 15 - \left(\frac{6}{25.78}\right)f, & 12.89 \leq f \leq 19 \end{cases}$ | | | dB |
| Differential to Common-Mode Conversion Loss | SCD21-SDD21 | $\text{Conversion_loss}(f) - \text{IL}(f) \geq \begin{cases} 10, & 0.01 \leq f < 12.89 \\ 27 - \left(\frac{29}{22}\right)f, & 12.89 \leq f < 15.7 \\ 6.3, & 15.7 \leq f \leq 19 \end{cases}$ | | | dB |
| Minimum COM | COM | 3 | | | dB |
| Rise Time (20-80%) | | | | 25 | ps |

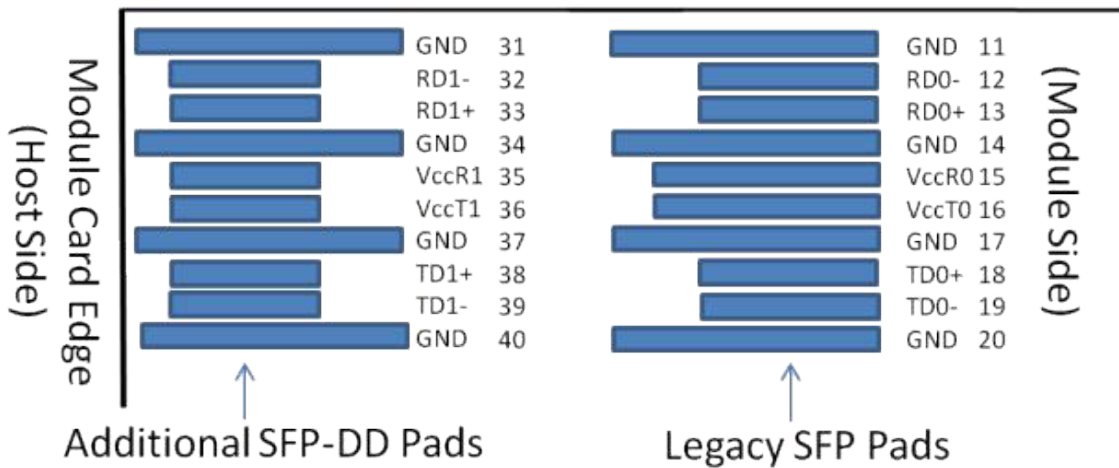
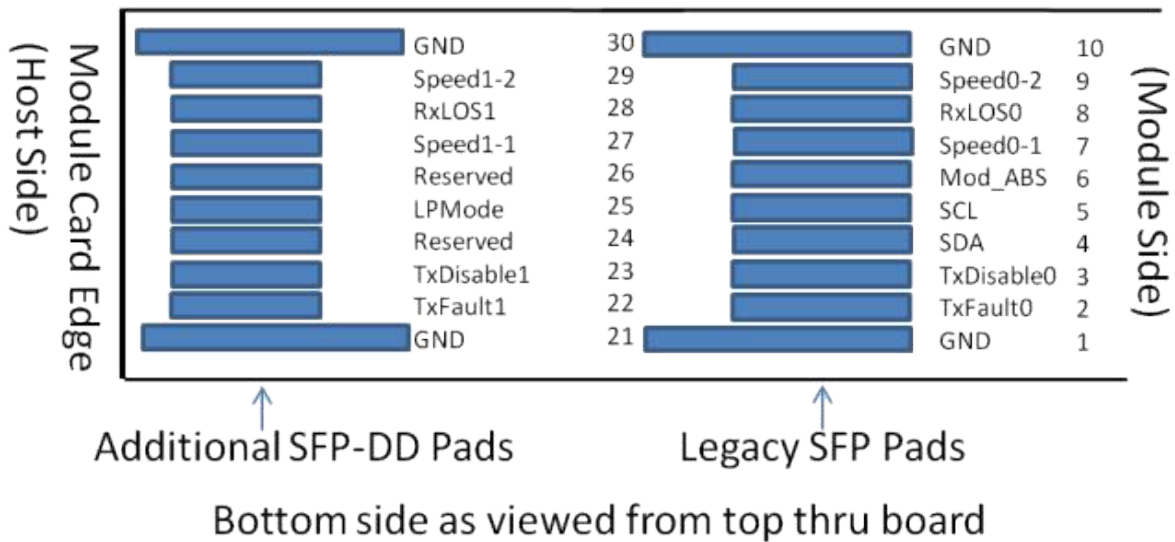
Pin Descriptions

| Pin | Logic | Symbol | Name/Description | Plug Sequence | Notes |
|-----|-------------|-------------|---|---------------|-------|
| 1 | | GND | Module Ground. | 1A | 1 |
| 2 | LVTTL-O | Tx_Fault0 | Transmitter Fault Indication for Channel 0. | 3A | |
| 3 | LVTTL-I | Tx_Disable0 | Transmitter Disable for Channel 0. | 3A | |
| 4 | LVC MOS-I/O | SDA | Management I/F Data. | 3A | |
| 5 | LVC MOS-I/O | SCL | Management I/F Clock. | 3A | |
| 6 | LVTTL-O | MOD_ABS | Module Absent. | 3A | |
| 7 | LVTTL-I | Speed0-1 | Rx Rate Select for Channel 0. | 3A | |
| 8 | LVTTL-O | RxLOS0 | Rx Loss of Signal for Channel 0. | 3A | |
| 9 | LVTTL-I | Speed0-2 | Tx Rate Select for Channel 0. | 3A | |
| 10 | | GND | Module Ground. | 1A | 1 |
| 11 | | GND | Module Ground. | 1A | 1 |
| 12 | CML-O | RD0- | Inverse Received Data Out for Channel 0. | 3A | |
| 13 | CML-O | RD0+ | Received Data Out for Channel 0. | 3A | |
| 14 | | GND | Module Ground. | 1A | 1 |
| 15 | | VccR0 | Receiver Power. | 2A | 2 |
| 16 | | VccT0 | Transmitter Power. | 2A | 2 |
| 17 | | GND | Module Ground. | 1A | 1 |
| 18 | CML-I | TD0+ | Transmit Data In for Channel 0. | 3A | |
| 19 | CML-I | TD0- | Inverse Transmit Data In for Channel 0. | 3A | |
| 20 | | GND | Module Ground. | 1A | 1 |
| 21 | | GND | Module Ground. | 1B | 1 |
| 22 | LVTTL-O | Tx_Fault1 | Transmitter Fault Indication/Interrupt for Channel 1. | 3B | |
| 23 | LVTTL-I | Tx_Disable1 | Transmitter Disable for Channel 1. | 3B | |
| 24 | | Reserved | Reserved for Future Use. | 3B | |
| 25 | LVTTL-I | LPMode | Low-Power Mode Control. | 3B | |
| 26 | | Reserved | Reserved for Future Use. | 3B | |
| 27 | LVTTL-I | Speed1-1 | Rx Rate Select for Channel 1. | 3B | |
| 28 | LVTTL-O | RxLOS1 | Loss of Signal for Channel 1. | 3B | |
| 29 | LVTTL-I | Speed1-2 | Tx Rate Select for Channel 1. | 3B | |
| 30 | | GND | Module Ground. | 1B | 1 |
| 31 | | GND | Module Ground. | 1B | 1 |
| 32 | CML-O | RD1- | Inverse Received Data Out for Channel 1. | 3B | |
| 33 | CML-O | RD1+ | Received Data Out for Channel 1. | 3B | |
| 34 | | GND | Module Ground. | 1B | 1 |
| 35 | | VccR1 | Receiver Power for Channel 1. | 2B | 2 |
| 36 | | VccT1 | Transmitter Power for Channel 1. | 2B | 2 |
| 37 | | GND | Module Ground. | 1B | 1 |
| 38 | CML-I | TD1+ | Transmit Data In for Channel 1. | 3B | |
| 39 | CML-I | TD1- | Inverse Transmit Data In for Channel 1. | 3B | |
| 40 | | GND | Module Ground. | 1B | 1 |

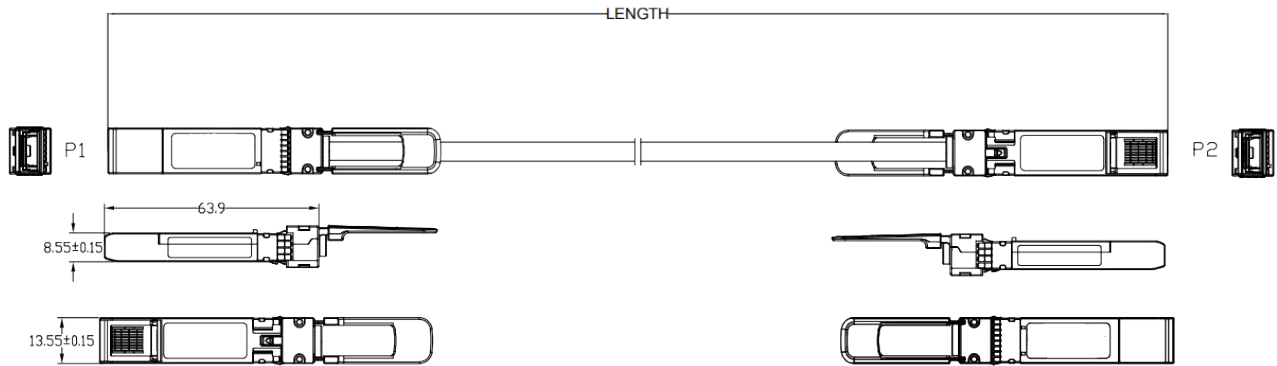
Notes:

- 1. GND is the symbol for signal and supply (power) common for the module. All are common within the 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. VccT0, VccT1, VccR0, and VccR1 are applied concurrently and may be internally connected within the module in any combination.

Electrical Pin-Out Details



Mechanical Specifications



Notes:

1. 4 pairs, black PVC jacket, and RoHS 2.0 compliant.
2. 100% conductor test conditions: voltage of 5V, insulation resistance of $10M\Omega$, and a conduction resistance of maximum 3Ω .
3. High-frequency test according to IEEE802.3bj & IEEE802.3cd standards.

OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

www.optioconnect.com | info@optioconnect.com

