

# 10G SFP+ Direct Attach Passive Copper Cable

## Features

- Wire AWG:AWG30,AWG28,AWG26,AWG24
- Cable type:Passive Copper Twinax Cable
- Up to 10.3125Gbps data rate
- Low power consumption<0.5W
- Power supply:+3.3V
- Small diameter cable design
- Hot pluggable
- Operating case temperature: 0~+70°C
- RoHS compliant

## Applications

- High-speed storage area networks
- Custom high-speed data pipes
- LTE optical repeater application

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## Compliance

- 1/2/4/8G Fibre Channel
- Compliant with MSA SFF-8472
- Compliant with MSA SFF-8431、SFF-8432

## Description

The SFP+ passive cable assemblies are high performance, cost effective I/O solutions for 10G Ethernet and 10G Fiber Channel applications. SFP+ copper modules allow hardware manufactures to achieve high port density, configurability and utilization at a very low cost and reduced power budget. The high speed cable assemblies meet and exceed Gigabit Ethernet and Fiber Channel industry standard requirements for performance and reliability.

## General Product Characteristics

| SFP+ DAC Specifications |                          |
|-------------------------|--------------------------|
| Number of Lanes         | Tx & Rx                  |
| Channel Data Rate       | 10.3125Gbps              |
| Operating Temperature   | 0 to + 70°C              |
| Storage Temperature     | -40 to + 85°C            |
| Supply Voltage          | 3.3 V nominal            |
| Electrical Interface    | 20 pins edge connector   |
| Management Interface    | Serial, I <sup>2</sup> C |

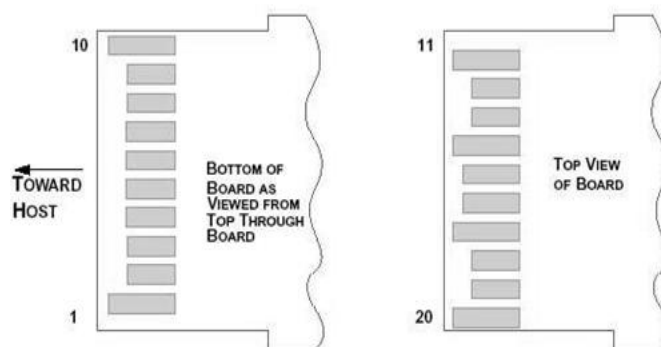
## High Speed Characteristics

| Table1-High Speed Characteristics      |        |                                                |         |      |      |             |
|----------------------------------------|--------|------------------------------------------------|---------|------|------|-------------|
| Parameter                              | Symbol | Min.                                           | Typical | Max. | Unit | Note        |
| Differential Impedance                 | Zd     | 90                                             | 100     | 110  | Ω    |             |
| Differential Input Return Loss         | SDDXX  | $< 12 + 2 * \sqrt{f}$ with f in GHz            |         |      | dB   | 0.01~4.1GHz |
|                                        |        | $< -6.3 + 13 * \log_{10}(f/5.5)$ with f in GHz |         |      | dB   | 4.1~11.1GHz |
| Common Mode Output Return Loss         | SCCXX  | $< -7 + 1.6 * f$ with f in GHz                 |         |      | dB   | 0.01~2.5GHz |
|                                        |        |                                                |         | -3   | dB   | 2.5~11.1GHz |
| Difference Waveform Distortion Penalty | dWDPc  |                                                |         | 6.75 | dB   |             |
| VMA Loss                               | L      |                                                |         | 4.4  | dB   |             |
| VMA Loss to Crosstalk Ratio            | VCR    | 32.5                                           |         |      | dB   |             |

## Pin Descriptions

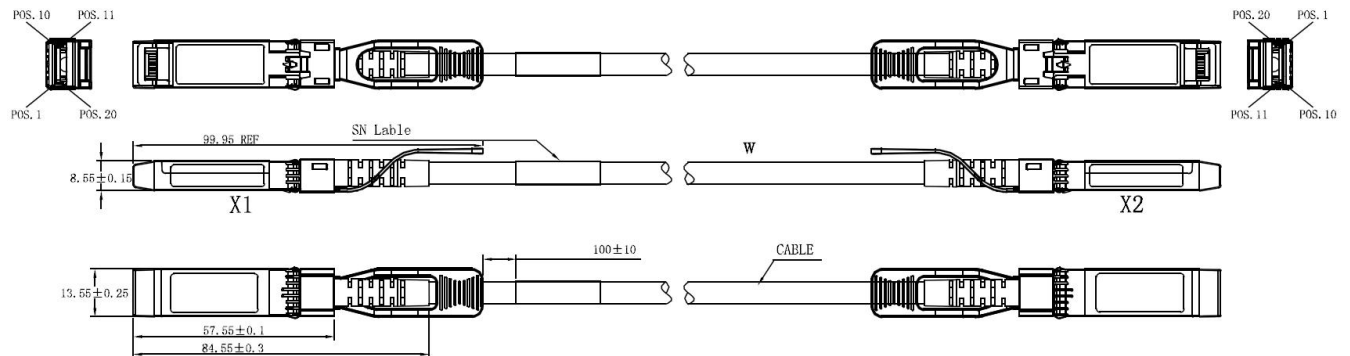
**Table2- Pin Function Definition**

| Pin | Logic     | Symbol     | Description                                                                                                 |
|-----|-----------|------------|-------------------------------------------------------------------------------------------------------------|
| 1   |           | VeeT       | Module Transmitter Ground                                                                                   |
| 2   | LVTTL-0   | Tx_Fault   | Module Transmitter Fault                                                                                    |
| 3   | LVTTL-I   | Tx_Disable | Transmitter disable; Turns off transmitter laser output                                                     |
| 4   | LVTTL-I/O | SDA        | 2-wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i)                                           |
| 5   | LVTTL-I/O | SCL        | 2-wire Serial Interface Clock (Same as MOD-DEF1 in INF-8074i)                                               |
| 6   |           | Mod_ABS    | Module Absent, connected to VeeT or VeeR in the module                                                      |
| 7   | LVTTL-I   | RS0        | Rate Select 0, optionally controls SFP+ module receiver                                                     |
| 8   | LVTTL-0   | Rx_LOS     | Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as Signal Detect) |
| 9   | LVTTL-I   | RS1        | Rate Select 1, optionally controls SFP+ module transmitter                                                  |
| 10  |           | VeeR       | Module Receiver Ground                                                                                      |
| 11  |           | VeeR       | Module Receiver Ground                                                                                      |
| 12  | CML-0     | RD-        | Receiver Inverted Data Output                                                                               |
| 13  | CML-0     | RD+        | Receiver Non-Inverted Data Output                                                                           |
| 14  |           | VeeR       | Module Receiver Ground                                                                                      |
| 15  |           | VccR       | Module Receiver 3.3 V Supply                                                                                |
| 16  |           | VeeT       | Module Transmitter 3.3 V Supply                                                                             |
| 17  |           | VeeT       | Module Transmitter Ground                                                                                   |
| 18  | CML-I     | TD+        | Transmitter Non-Inverted Data Input                                                                         |
| 19  | CML-I     | TD-        | Transmitter Inverted Data Input                                                                             |
| 20  |           | VeeT       | Module Transmitter Ground                                                                                   |



## Mechanical Specifications

The connector is compatible with the SFF-8432 specification.



| Length (m) | Cable AWG |
|------------|-----------|
| 1          | 30        |
| 3          | 30        |
| 5          | 24        |
| 7          | 24        |

## Regulatory Compliance

| Feature                                              | Test Method                                                   | Performance                                                                     |
|------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------|
| Electrostatic Discharge (ESD) to the Electrical Pins | MIL-STD-883C Method 3015.7                                    | Class 1(>2000 Volts)                                                            |
| Electromagnetic Interference(EMI)                    | FCC Class B<br>CENELEC EN55022 Class B<br>CISPR22 ITE Class B | Compliant with Standards                                                        |
| RF Immunity(RFI)                                     | IEC61000-4-3                                                  | Typically Show no Measurable Effect from a 10V/m Field Swept from 80 to 1000MHz |
| RoHS Compliance                                      | RoHS Directive 2011/65/EU and it's Amendment Directives 6/6   | RoHS 6/6 compliant                                                              |