



Features

- Compliant with SFF-8402 and SFF-8432.
- Up to 25.78125 Gbps data rate per channel
- Up to 5m transmission
- Single 3.3V power supply
- Lowest total system EMI solution
- Optimized design for signal integrity
- Operating temperature: -5~70°C
- RoHS compliant

Applications

- 25G Ethernet

General Product Characteristics

SFP28 Copper Specifications

| | |
|----------------------------|--------------------------|
| Number of Lanes | Tx & Rx |
| Channel Data Rate | 25.78125 Gbps/channel |
| Operating Case Temperature | -5 to +70°C |
| Storage Temperature | -40 to +85°C |
| Supply Voltage | 3.3V nominal |
| Electrical Interface | 20 pin edge connector |
| Management Interface | Serial, I ² C |

High Speed Characteristics

| Parameter | Symbol | Min. | Max. | Units | Note |
|---|--------------|------|-------|----------|----------------------|
| Differential Impedance | $R_{IN,P-P}$ | 90 | 110 | Ω | |
| Insertion loss | $SDD21$ | | 22.48 | dB | At 12.8906 GHz |
| Differential Return Loss | $SDD11$ | | See 1 | dB | At 0.05 to 4.1 GHz |
| | $SDD22$ | | See 2 | dB | At 4.1 to 19 GHz |
| Common-mode to common-mode output return loss | $SCC11$ | 2 | | dB | At 0.2 to 19 GHz |
| | $SCC22$ | | | | |
| Differential to common-mode return loss | $SCD11$ | | See 3 | dB | At 0.01 to 12.89 GHz |
| | $SCD22$ | | See 4 | | At 12.89 to 19 GHz |
| Differential to common Mode Conversion Loss | $SCD21$ | | 10 | dB | At 0.01 to 12.89 GHz |
| | | | See 5 | | At 12.89 to 15.7 GHz |
| | | | 6.3 | | At 15.7 to 19 GHz |
| Channel Operating Margin | COM | 3 | | dB | |

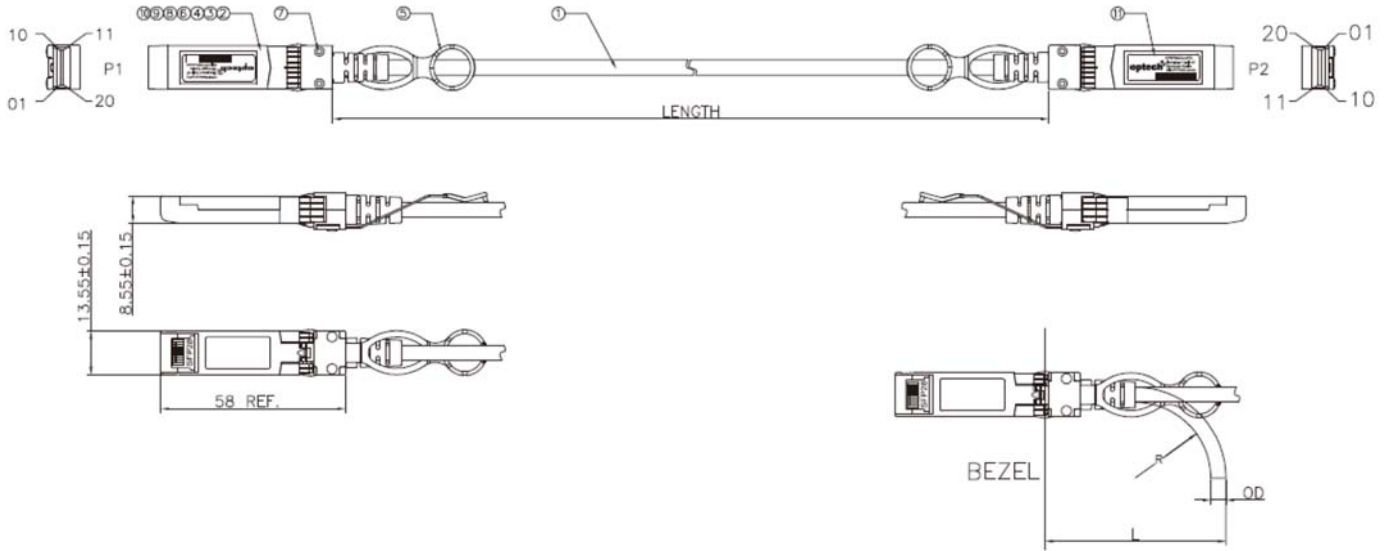
Notes:

1. Reflection Coefficient given by equation $SDD11(\text{dB}) < 16.5 - 2 \times \text{SQRT}(f)$, with f in GHz
2. Reflection Coefficient given by equation $SDD11(\text{dB}) < 10.66 - 14 \times \log_{10}(f/5.5)$, with f in GHz
3. Reflection Coefficient given by equation $SCD11(\text{dB}) < 22 - (20/25.78) \times f$, with f in GHz
4. Reflection Coefficient given by equation $SCD11(\text{dB}) < 15 - (6/25.78) \times f$, with f in GHz
5. Reflection Coefficient given by equation $SCD21(\text{dB}) < 27 - (29/22) \times f$, with f in GHz

Pin Descriptions

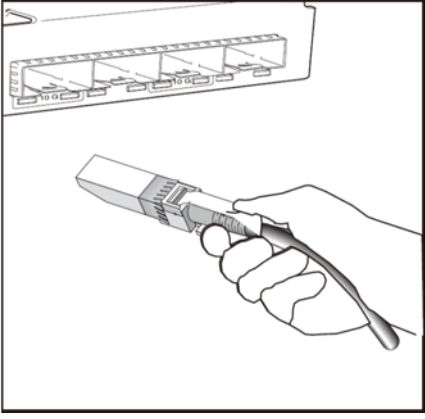
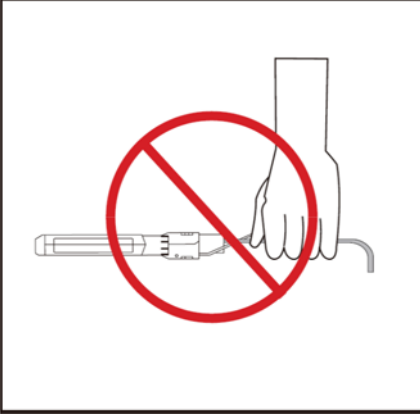
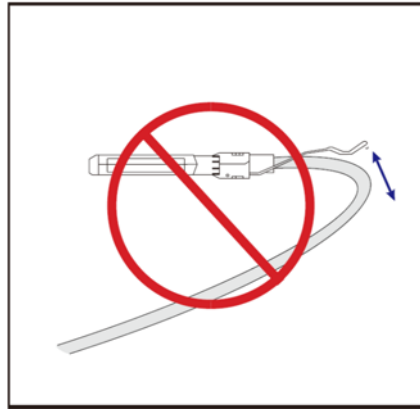


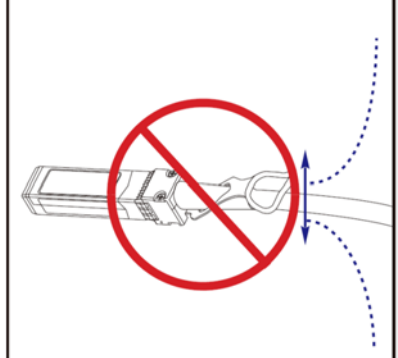
| <i>Pin</i> | <i>Logic</i> | <i>Symbol</i> | <i>Description</i> |
|------------|--------------|---------------|---|
| 1 | | VeeT | Module Transmitter Ground |
| 2 | LVTTL-O | Tx_Fault | Module Transmitter Fault |
| 3 | LVTTL-I | Tx_Disable | Transmitter disable; Turns off transmitter laser output |
| 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 SFP28 module receiver |
| 8 | LVTTL-O | 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 SFP28 module transmitter |
| 10 | | VeeR | Module Receiver Ground |
| 11 | | VeeR | Module Receiver Ground |
| 12 | CML-O | RD- | Receiver Inverted Data Output |
| 13 | CML-O | RD+ | Receiver Non-Inverted Data Output |
| 14 | | VeeR | Module Receiver Ground |
| 15 | | VccR | Module Receiver 3.3 V Supply |
| 16 | | VccT | 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 |

Dimensions

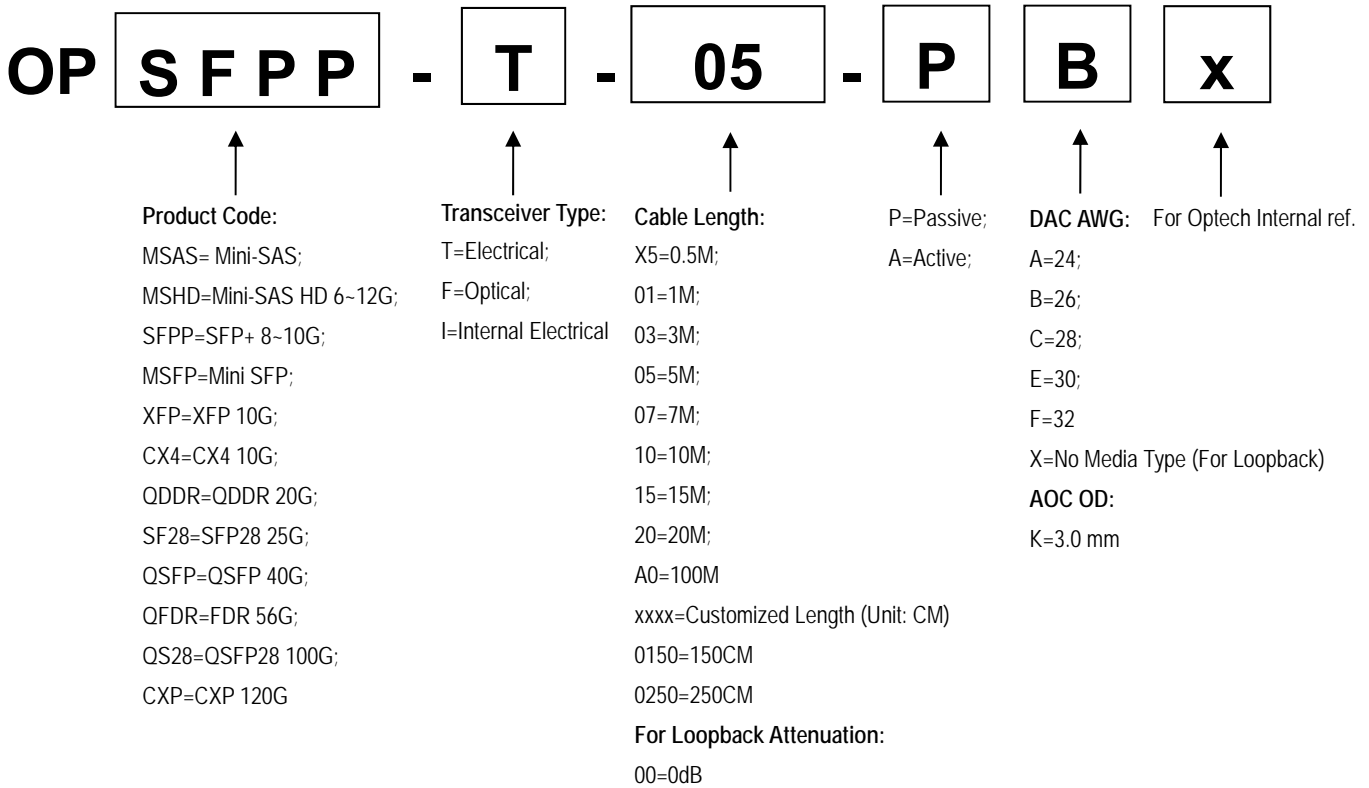


UNIT: MM

Important Notice

| | | |
|--|---|---|
|  |  |  |
| <p>Holding the SFP+ connector by its sides, insert the connector into the port on the switch</p> | <p>Do not handle by cable</p> | <p>DO NOT Over-bend the cable behind the connector</p> |
|  |  |  |
| <p>DO NOT twist the cable</p> | <p>DO NOT kink the cable</p> | <p>DO NOT bend up and down the cable</p> |

Ordering Information



| Part Number | Length (M) | AWG | Voltage | Temperature |
|-----------------|------------|-----|---------|--------------|
| OPSF28-T-01-PEL | 1 | 30 | 3.3V | 0°C to 70 °C |
| OPSF28-T-02-PEL | 2 | 30 | 3.3V | 0°C to 70 °C |
| OPSF28-T-03-PEL | 3 | 30 | 3.3V | 0°C to 70 °C |
| OPSF28-T-05-PBL | 5 | 26 | 3.3V | 0°C to 70 °C |

Note: All information contained in this document is subject to change without notice.