

# 400G OSFP Passive Direct Attach Copper Cable

## Features

- Compatible with IEEE 802.3ck
- Supports aggregate data rates of 400Gbps(PAM4)
- Optimized construction to minimize insertion loss and crosstalk
- Pull-to-release slide latch design
- Straight and break out assembly configurations available
- Customized cable braid termination limits EMI radiation
- Customizable EEPROM mapping for cable signature
- 26AWG and 30AWG cable
- 3.3V Power supply
- Temperature Range: 0~ 70 °C
- RoHs Compliant

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## Applications

- Switches, servers and routers
- Data Center networks

## Description

400G OSFP passive copper cable assembly feature eight differential copper pairs, providing four data transmission channels at speeds up to 100Gbps(PAM4) per channel, and meets 400G Ethernet requirements. Available in 26AWG and 30AWG wire gauges, this 400G copper cable assembly features low insertion loss and low crosstalk.

OSFP passive copper cable uses PAM4 signals for transmission, which doubles the rate. However, there are more stringent requirements for cable insertion loss. For detailed requirements, please see High Speed Characteristics.

## General Product Characteristics

OSFP DAC Specifications	
Number of Lanes	Tx4 & Rx4
Channel Data Rate	106.25Gbps
Operating Temperature	0 to + 70°C
Storage Temperature	-40 to + 85°C
Supply Voltage	3.3 V nominal
Electrical Interface	60pins edge connector
Management Interface	Serial, I <sup>2</sup> C

## High Speed Characteristics

Table1-Absolute Maximum Specifications						
Parameter	Symbol	Min	Typical	Max.	Unit	Note
Differential Impedance	TDR	90	100	110	Ω	
Insertion loss	SDD21	-19.75			dB	At 26.56 GHz
Differential Return Loss	SCD11			See 1	dB	At 0.05 to 26.56GHz
	SCD22			See 2	dB	At 26.56 to 40 GHz
Common-mode to common-mode output return loss	SCD11			-1.8	dB	At 0.2 to 40GHz
	SCD22					
Differential to common Mode	SCD11			-10	dB	At 0.05 to 12.89 GHz
Conversion Loss	SCD22			See3	dB	At 12.89 to 40 GHz

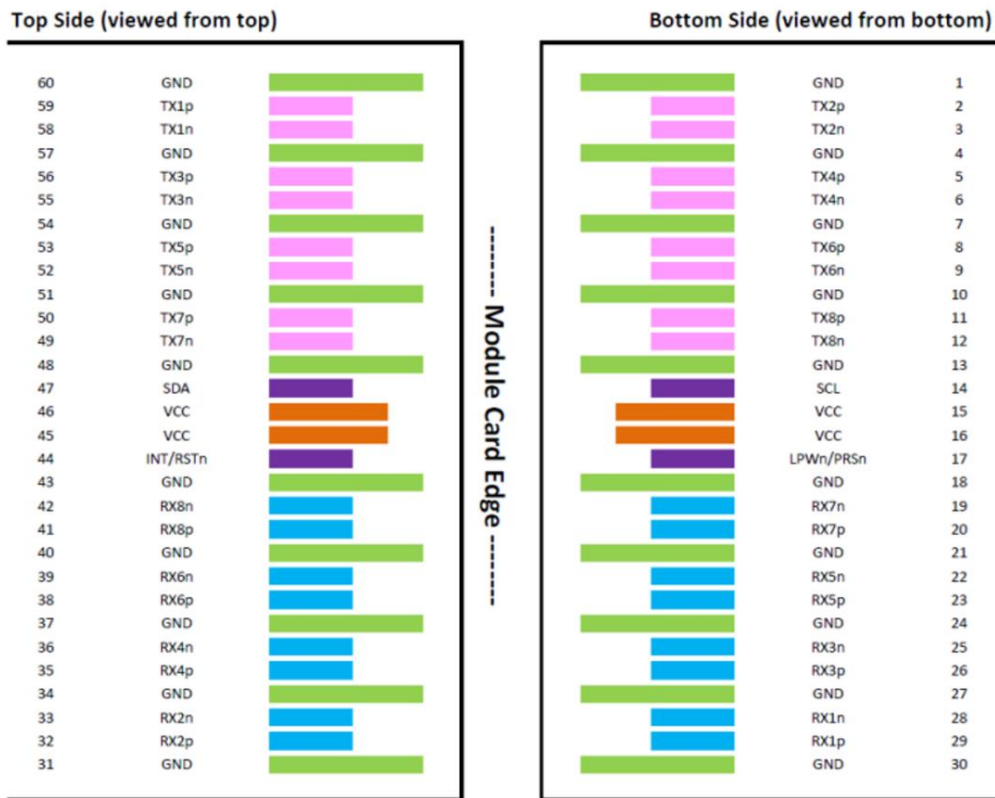
Notes:

- 1.Reflection Coefficient given by equation  $SCD11(dB) < 22 - 10(f/26.56)$ , with f in GHz
- 2.Reflection Coefficient given by equation  $SCD11(dB) < 15 - 3(f/26.5)$ , with f in GHz
- 3.Reflection Coefficient given by equation  $SCD21-CDD21(dB) < 14 - 0.3108*f$ , with f in GHz

## Pin Descriptions

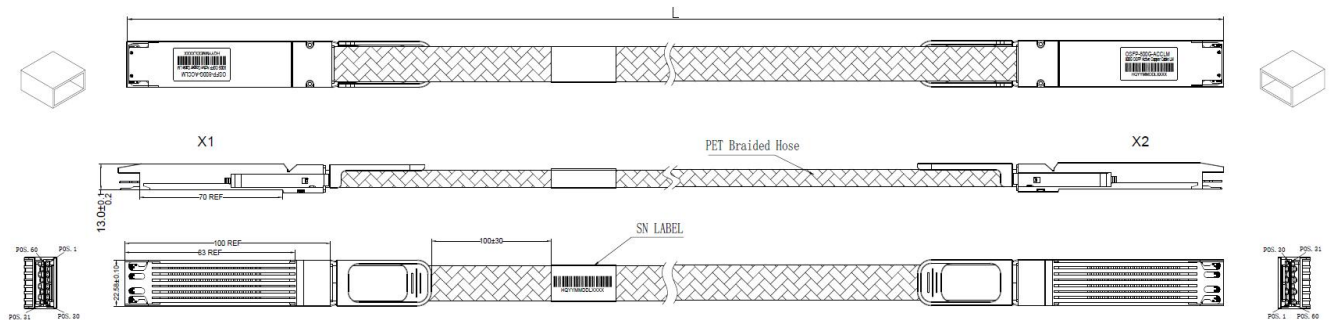
Table2-Pin Description					
Pin	Symbol	Description	Pin	Symbol	Description
1	GND	Ground	31	GND	Ground
2	Tx2p	Transmitter Non-Inverted Data Input	32	Rx2p	Receiver Non-Inverted Data Output

3	Tx2n	Transmitter Inverted Data Input	33	Rx2n	Receiver Inverted Data Output
4	GND	Ground	34	GND	Grounds
5	Tx4p	Transmitter Non-Inverted Data Input	35	Rx4p	Receiver Non-Inverted Data Output
6	Tx4n	Transmitter Inverted Data Input	36	Rx4n	Receiver Inverted Data Output
7	GND	Ground	37	GND	Ground
8	Tx6p	Transmitter Non-Inverted Data Input	38	Rx6p	Receiver Non-Inverted Data Output
9	Tx6n	Transmitter Inverted Data Input	39	Rx6n	Receiver Inverted Data Output
10	GND	Ground	40	GND	Ground
11	Tx8p	Transmitter Non- Inverted Data input	41	Rx8p	Receiver Non-Inverted Data Output
12	Tx8n	Transmitter Inverted Data Input	42	Rx8n	Receiver Inverted Data Output
13	GND	Ground	43	GND	Ground
14	SCL	2-wire serial interface clock	44	INT / RSTn	Module Interrupt / Module Reset
15	VCC	+3.3V Power	45	VCC	+3.3V Power
16	VCC	+3.3V Power	46	VCC	+3.3V Power
17	LPWn / PRSn	Low- Power Mode / Module Present	47	SDA	2-wire Serial interface data
18	GND	Ground	48	GND	Ground
19	Rx7n	Receiver Inverted Data Output	49	Tx7n	Transmitter Inverted Data Input
20	Rx7p	Receiver Non-Inverted Data Output	50	Tx7p	Transmitter Non-Inverted Data Input
21	GND	Ground	51	GND	Ground
22	Rx5n	Receiver Inverted Data Output	52	Tx5n	Transmitter Inverted Data Input
23	Rx5p	Receiver Non-Inverted Data Output	53	Tx5p	Transmitter Non-Inverted Data Input
24	GND	Ground	54	GND	Ground
25	Rx3n	Receiver Inverted Data Output	55	Tx3n	Transmitter Inverted Data Input
26	Rx3p	Receiver Non-Inverted Data Output	56	Tx3p	Transmitter Non-Inverted Data Input
27	GND	Ground	57	GND	Ground
28	Rx1n	Receiver Inverted Data Output	58	Tx1n	Transmitter Inverted Data Input
29	Rx1p	Receiver Non-Inverted Data Output	59	Tx1p	Transmitter Non-Inverted Data Input
30	GND	Ground	60	GND	Ground



## Mechanical Specifications

The connector is compatible with the SFF8024 specification.



## Regulatory Compliance

OSFP DAC Specifications	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	Compliant with Standards
	CENELEC EN55022 Class B	
	CISPR22 ITE Class B	

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 (EU) 2015/863	RoHS (EU) 2015/863 compliant
REACH Compliance	REACH Regulation (EC) No 1907/2006	REACH (EC) No 1907/2006 compliant

## Length Information

No.	Part Number	OD	Length	AWG	Tolerance
1	OSFP-400G-CU0-5	10MM	0.5 meter	30AWG	+/-0.05 meter
2	OSFP-400G-CU1	10MM	1 meter	30AWG	+/-0.05 meter
3	OSFP-400G-CU1-5	12.5MM	1.5 meter	26AWG	+/-0.05 meter
4	OSFP-400G-CU2	12.5MM	2 meter	26AWG	+/-0.05 meter
5	OSFP-400G-CU3	12.5MM	3 meter	26AWG	+/-0.05 meter

## Further Information:

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