

# 800G Twin-port 2x400Gb/s OSFP to 2x400Gb/s OSFP Breakout Active Copper Cable

## Features

- Transmission data rate up to PAM4 106.25Gbps per channel
- Linear PAM4 programmable equalizer optimized for 56GBaud copper link up to max length 5M
- Enable Auto-Negotiation and Link Training
- Low latency<10ps
- Supports device programming by MCU with I<sup>2</sup>C
- Power consumption: 1.5 Watts max(OSFP-IHS) ,0.7Watts max(OSFP-RHS)
- OSFP Finned Top(IHS) to OSFP Flat Top(RHS)
- Operating case temperature 0-70°C
- Single 3.3V supply voltage
- Hot pluggable
- OSFP MSA Rev5.0, CMIS Rev5.0, IEEE802.3ck compliant

## Applications

- 2x400Gb/s OSFP Ethernet switch-to-OSFP adapters

## Description

O20112-800G-ACC is a high-speed active copper cabling solution designed for AI/HPC high-performance computing clusters and next-generation data center architectures, enabling high-density, low-latency interconnection between switches and servers. The product employs active signal conditioning and equalization technology to effectively compensate for high-speed electrical signal loss in short-distance transmission scenarios, ensuring high signal integrity and stable bit error rate performance. The ACC offers advantages such as lower power consumption, better cost-effectiveness, and plug-and-play deployment, enabling efficient and scalable computing network construction.

## Absolute Maximum Specifications

Table1-Absolute Maximum Specifications

Parameter	Min.	Typical	Max.	Unit	Note
Storage Temperature	-40		+85	°C	
Operating Case Temperature	0		70	°C	
Supply voltage	-0.3	3.3	3.6	V	
Relative Humidity (non- condensing)	5		85	%	
Data Rate		800		Gbps	
Length	0.5		5	M	
AWG	32		26	AWG	
Jacket material	Braided Sleeve				

## Electrical Specifications

Table2-Electrical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit
Power supply voltage	VCC	3.1	3.3	3.5	V

Input Amplitude		800		1200	mVpp
Input LOW Voltage	V <sub>IL</sub>	-0.3		0.35*V <sub>CC</sub>	V
Input HIGH Voltage	V <sub>IH</sub>	0.65*V <sub>CC</sub>		V <sub>CC</sub> +0.3	V
Output Logic LOW	V <sub>OL</sub>			0.25*V <sub>CC</sub>	V
I <sup>2</sup> C Master Mode Output Frequency			400		kHz
800G end Power consumption			1.2	1.5	W
400G end Power consumption			0.6	0.7	W

## High-Speed Specifications

Table3-High-Speed Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit
Raw cable impedance	Z <sub>ca</sub>	90	100	110	ohm
Mated connector Impedance	Z <sub>mated</sub>	85	100	115	ohm
Maximum insertion Loss at 26.56 GHz	SDD21	11		19.75	dB
Differential to common-mode return loss	SCD11/22	$RL_{cd}(f) \geq \begin{cases} 22 - 10(f/26.56) & 0.05 \leq f < 26.56 \\ 15 - 3(f/26.56) & 26.56 \leq f \leq 40 \end{cases}$ <p>For 0.05 ≤ f ≤ 40 GHz, Where f is the frequency in GHz</p>			dB
Differential to common-mode conversion loss	SCD21-SDD21	$Conversion\_loss(f) - IL(f) \geq \begin{cases} 10 & 0.05 \leq f < 12.89 \\ 14 - 0.3108f & 12.89 \leq f \leq 40 \end{cases}$ <p>For 0.05 ≤ f ≤ 40 GHz, Where f is the frequency in GHz</p>			dB
Common-mode to common-mode return loss	SCC11/22	$RL_{cc}(f) \geq 1.8$ <p>For 0.05 ≤ f ≤ 40 GHz, Where f is the frequency in GHz</p>			
Minimum COM	COM	3			dB
Minimum cable assembly ERL	ERL	8.25			dB

## OSFP Pin Definition

Table4-OSFP Pin Definition

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

## OSFP Module Pad Layout

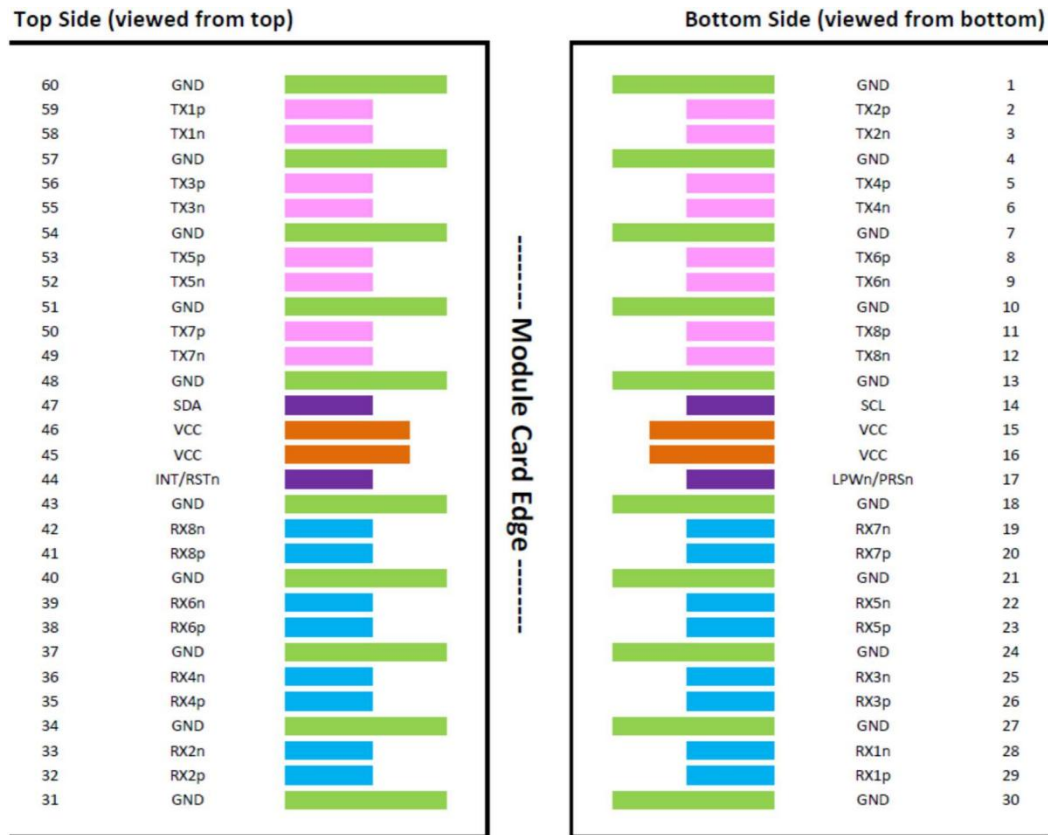


Figure 1 OSFP Module Pad Layout

## Ordering Information

Table5-Ordering Information

OPN	Description
O20112-800G-ACA	0.5m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable
O20112-800G-AC1	1m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable
O20112-800G-AC2	2m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable
O20112-800G-AC3	3m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable
O20112-800G-AC4	4m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable
O20112-800G-AC5	5m Twin-port 800Gb/s OSFP Finned Top to 2x400Gb/s OSFP Flat Top Active Copper Cable

## Mechanical Dimensions

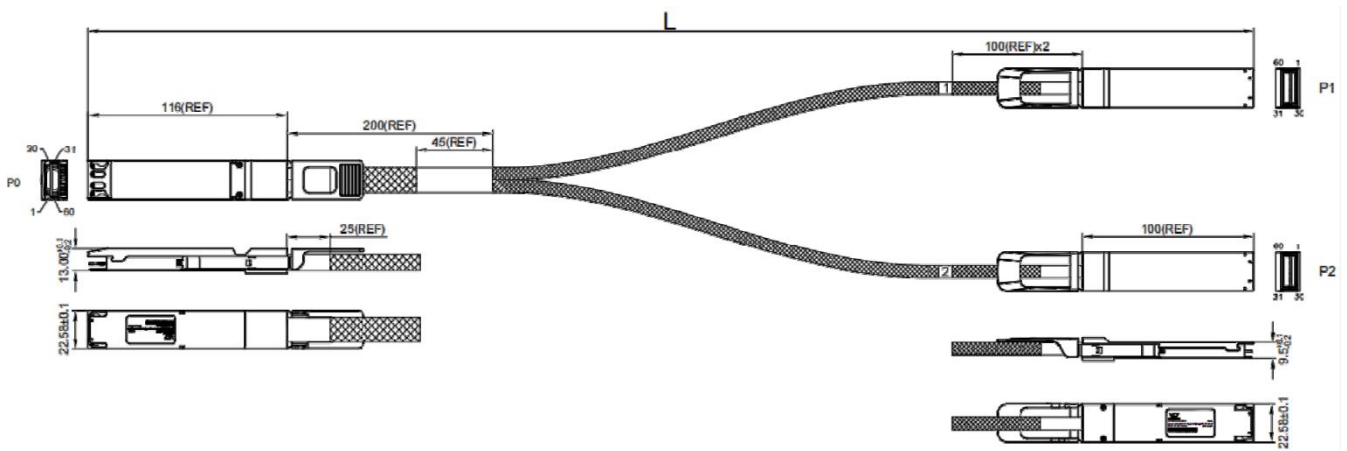


Figure 2 Mechanical Dimensions

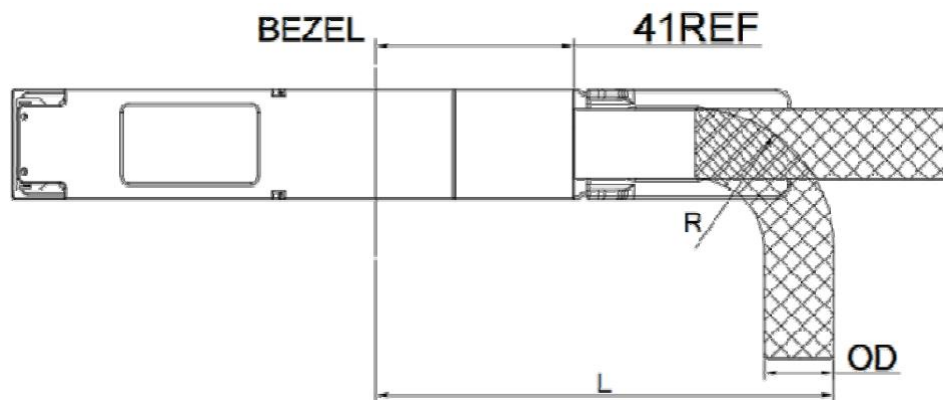


Figure 3 OSFP-IHS Bend Radius

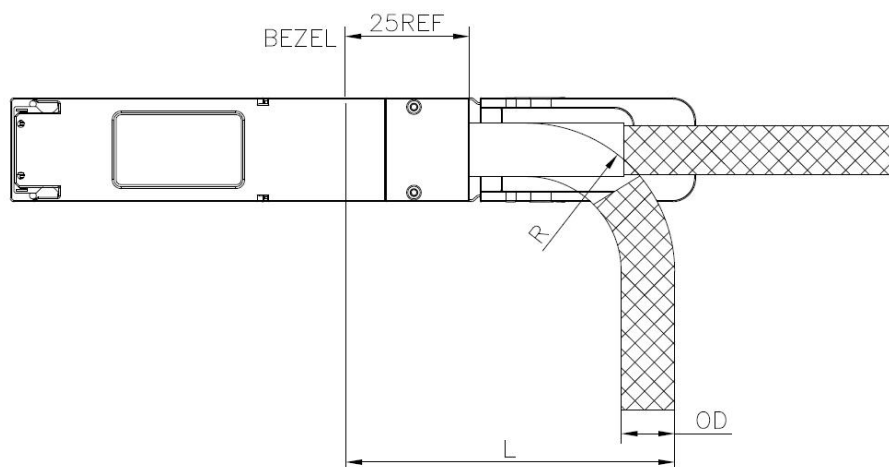


Figure 4 OSFP-RHS Bend Radius

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