

# 800GTwin-port2x400Gb/sOSFPto4x200Gb/sQSFP112 Passive CopperSplitter Cable

## Features

- 800Gb/s to four 200Gb/s data rates
- Based on 2-channel 100G-PAM4 modulation
- up to 3 meter lengths
- OSFP and QSFP112 ends each consume 0.1Watts
- Operating case temperature 0-70°C
- Hot pluggable
- RoHS compliant
- LF (Lead Free) HF (Halogen Free) PCB
- OSFP head end is CMIS based
- QSFP112 ends are SFF-8636 based

## Applications

- 2x400G OSFP switch-to-four 200Gb/s QSFP112 adapters

## Description

O4Q112-800G-DAC is an 800Gb/s Twin-port OSFP (Octal Small Form-factor Pluggable) to 4x 200Gb/s QSFP112 (Quad Small Form-factor Pluggable 112G) passive Direct Attach Copper (DAC) quad breakout (aka splitter) cable for End-to-End Ethernet solutions.

The 8-channel Twin port OSFP end uses a finned top form-factor for use in OSFP switch cages. The four 200G ends support 2-channels of 100G-PAM4 (200G) and use a flat top QSFP112 connector cage.

DAC cables are the lowest-cost, lowest-latency, near zero power consuming high-speed links available due to their simplicity of design and minimal components. The “passive” term refers to the copper cable containing no electronics in the data path. Each end includes an EEPROM which provides product identification and characteristics to the host system.

## Absolute Maximum Specifications

Absolute maximum ratings are those beyond which damage to the device may occur.

Between the operational specifications and absolute maximum ratings, prolonged operation is not intended and permanent device degradation may occur.

**Table1-Absolute Maximum Specifications**

Parameter	Min.	Typical	Max.	Unit	Note
Supply voltage	-0.3		3.6	V	
Data Input Voltage	-0.3		3.6	V	
Control Input Voltage	-0.3		3.6	V	

## Environmental Specifications

This table shows the environmental specifications for the product

**Table2-Environmental Specifications**

Parameter	Min	Typical	Max.	Units
Storage Temperature	-40		85	°C

## Operational Specifications

**Table3-Optical Specifications**

Parameter	Min.	Typical	Max.	Unit	Note
Supply Voltage (Vcc)	3.135	3.3	3.465	V	
Power Consumption	--	--	0.1	W	
Operating Case Temperature	0		70	°C	
Operating Relative Humidity	5		85	%	

## Electrical Specifications

**Table4-Electrical Specifications**

Parameter	Min.	Typical	Max.	Unit	Note
Characteristic impedance	90	100	110	$\Omega$	
Time propagation delay	-	-	4.5	ns/m	

## Mechanical Performance Requirements

**Table5-Mechanical Performance Requirements**

Parameter	Value	Units
Diameter	30AWG: 7.2 $\pm$ 0.03	mm
	26AWG: 8.9 $\pm$ 0.03	
Length tolerance	length < 2 m, $\pm$ 25	mm
	length $\geq$ 2 m, $\pm$ 50	

## Minimum Bend Radius

**Table6-Minimum Bend Radius**

OPN	Length (m)	AWG (mm)
04Q112-800G-CU1	1.0	30AWG, 4x4pairs
04Q112-800G-CUB	1.5	30AWG, 4x4pairs
04Q112-800G-CU2	2.0	26AWG, 4x4pairs
04Q112-800G-CUC	2.5	26AWG, 4x4pairs
04Q112-800G-CU3	3	26AWG, 4x4pairs

**Note:**

The minimum assembly bending radius (close to the connector) is 10x the cable's outer diameter. The repeated bend (far from the connector) is also 10x the cable's outer diameter. The single bend (far from the connector) is 5x the cable's outer diameter. 'Combined' end is the 'head' where the cables join together, inserted into the switch. 'Single end' is the 'tail' which plugs into the HCA/NIC in a server.

\*\*L = Assembly Space. Minimum value depends on the backshell (connector housing) dimensions

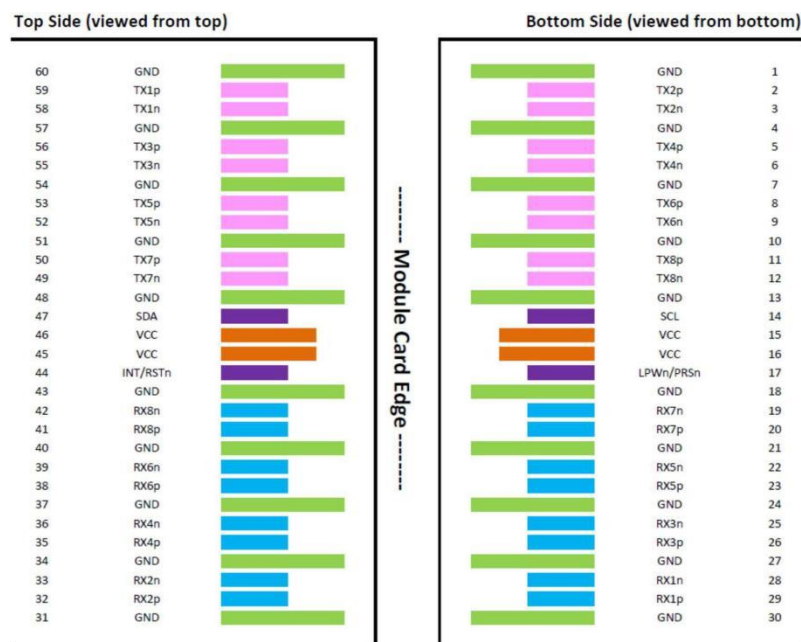
= the space for the cable assembly behind the rack door.

## OSFP Pin Description

**Table7-OSFP 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 / PRS <sub>n</sub>	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



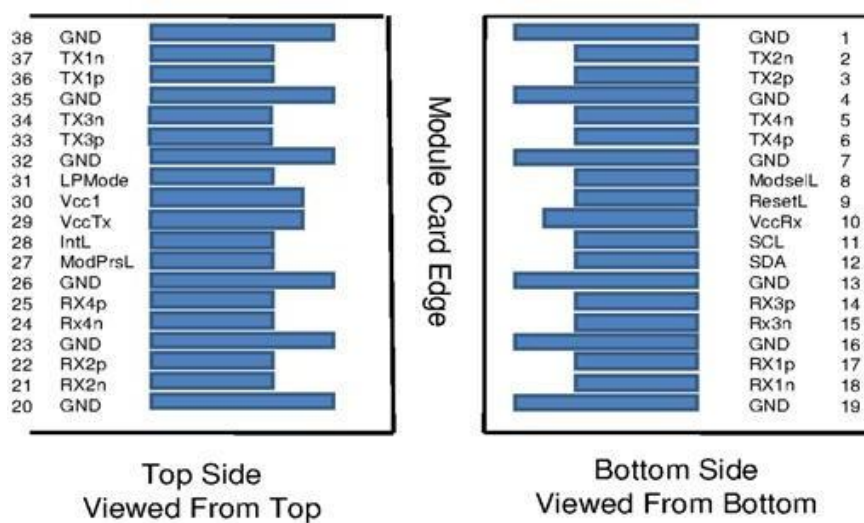
## QSFP112 Pin Description

**Table8-QSFP112 Pin Description**

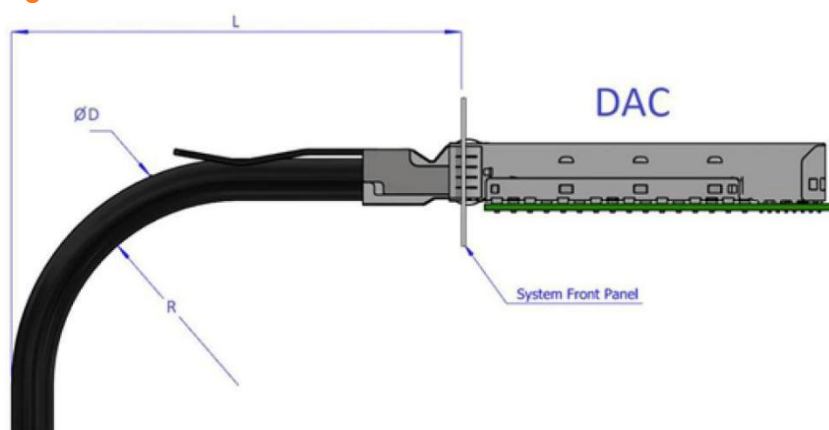
Pin	Symbol	Description	Pin	Symbol	Description
1	Ground	Ground	20	Ground	Ground
2	Tx2n	Connected to Port 1 lane Rx2 Inverted Data	21	Rx2n	Connected to Port 1 lane Tx2 Inverted Data
3	Tx2p	Connected to Port 1 lane Rx2 Non-Inverted Data	22	Rx2p	Connected to Port 1 lane Tx2 Non-Inverted Data
4	Ground	Ground	23	Ground	Grounds
5	Tx4n	Connected to Port 2 lane Rx2 Non-Inverted Data	24	Rx4n	Connected to Port 2 lane Tx2 Inverted Data
6	Tx4p	Connected to Port 2 lane Rx2 Inverted Data	25	Rx4p	Connected to Port 2 lane Tx2 Non-Inverted Data
7	Ground	Ground	26	Ground	Ground
8	Mod-SelL	Cable Select	27	ModPrsL	Cable Present
9	ResetL	Cable Reset	28	IntL	Interrupt
10	Vcc Rx	+3.3V Power supply receiver	29	Vcc Tx	+3.3V Power supply transmitter
11	SCL	2-wire serial interface clock	30	Vcc1	+3.3V Power Supply
12	SDA	2-wire serial interface data	31	LPMODE	Low Power Mode
13	Ground	Ground	32	Ground	Ground
14	Rx3p	Connected to Port 2 lane Tx1 Non-Inverted Data	33	Tx3p	Connected to Port 2 lane Rx1 Non-Inverted Data

15	Rx3n	Connected to Port 2 lane Tx1 Inverted Data	34	Tx3n	Connected to Port 2 lane Rx1 Inverted Data
16	Ground	Ground	35	Ground	Ground
17	Rx1p	Connected to Port 1 lane Tx1 Non-Inverted Data	36	Tx1p	Connected to Port 1 lane Rx1 Non-Inverted Data
18	Rx1n	Connected to Port 1 lane Tx1 Inverted Data	37	Tx1n	Connected to Port 1 lane Rx1 Inverted Data
19	Ground	Ground	38	Ground	Ground

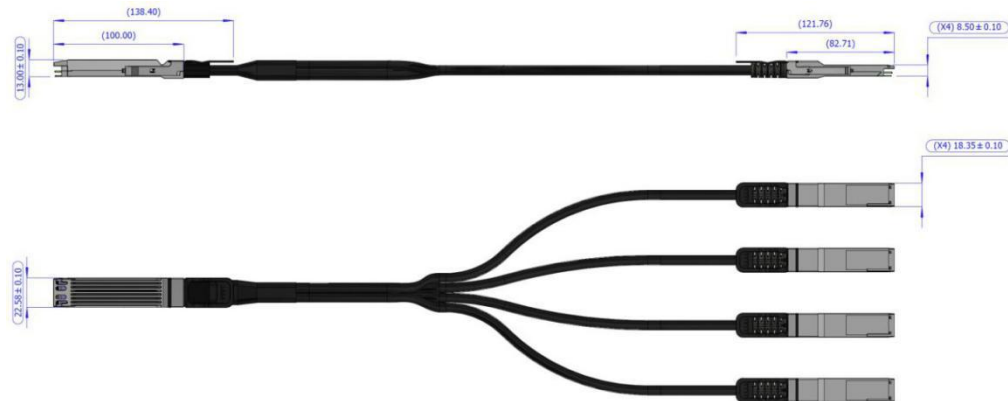
### QSFP112 Module Pad Layout



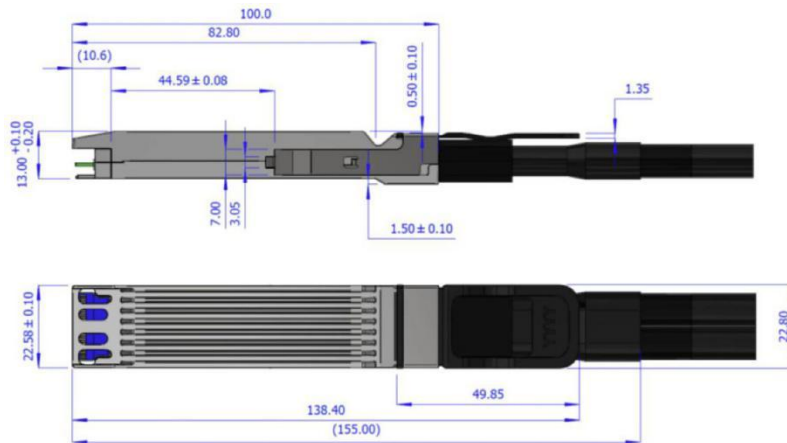
### Assembly Bending Radius



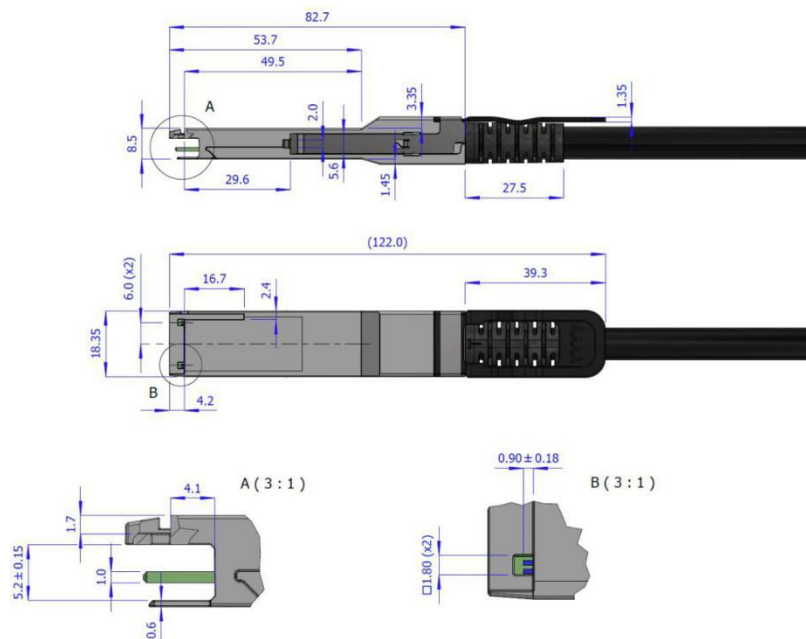
## Cable Dimensions



## QSFP Finned Head Dimensions



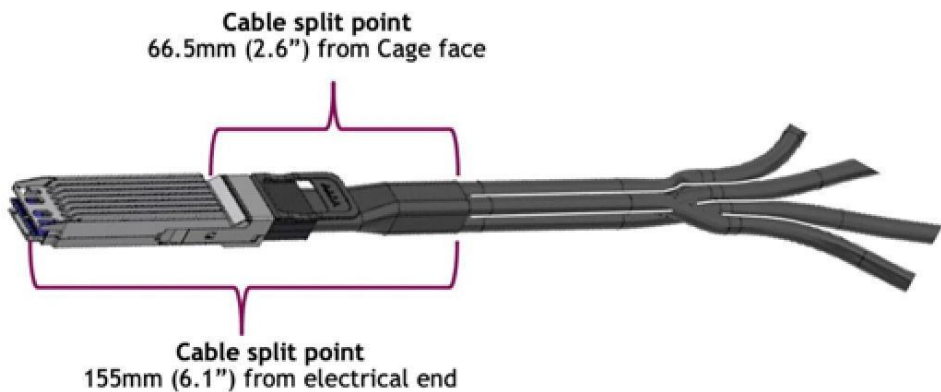
## QSFP112 Flat Ends Dimensions



**Cable Length Definition**



**Cable Splitting Point**



**Ordering Information**

Table9-Ordering Information	
PN	Description
04Q112-800G-CU1	passive copper splitter cable, 800Gb/s to 4x 200Gb/s, OSFP to 4x QSFP112, 1m
04Q112-800G-CUB	passive copper splitter cable, 800Gb/s to 4x 200Gb/s, OSFP to 4x QSFP112, 1.5m
04Q112-800G-CU2	passive copper splitter cable, 800Gb/s to 4x 200Gb/s, OSFP to 4x QSFP112, 2m
04Q112-800G-CUC	passive copper splitter cable, 800Gb/s to 4x 200Gb/s, OSFP to 4x QSFP112, 2.5m
04Q112-800G-CU3	passive copper splitter cable, 800Gb/s to 4x 200Gb/s, OSFP to 4x QSFP112, 3m



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