

## 400G Active Optical Cable (Breakout Cable 2x200G - QSFP112 Version)

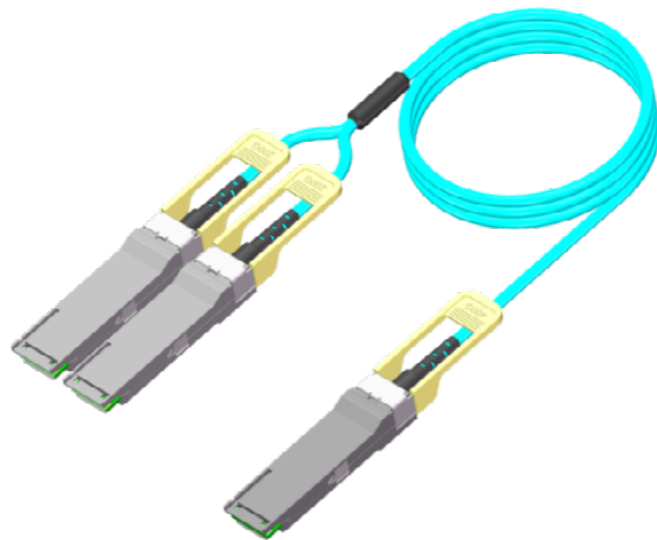
Jabil Photonic 400G Active Optical Cable (Breakout Cable 2x200G - QSFP112 version) provides optimized solutions for interconnections inside datacenter up to 50M on OM4 fiber. Products are both in QSFP112 form factor to satisfy the different host system requirements. Transmission is based on VCSEL 850nm with electrical driver, while Receiver side is based on PIN photodetector and TIA. Module is equipped with DSP to provide channel equalization, PAM4 retimer and supports electrical lanes loss on host system with up to 30dB.

### FEATURES

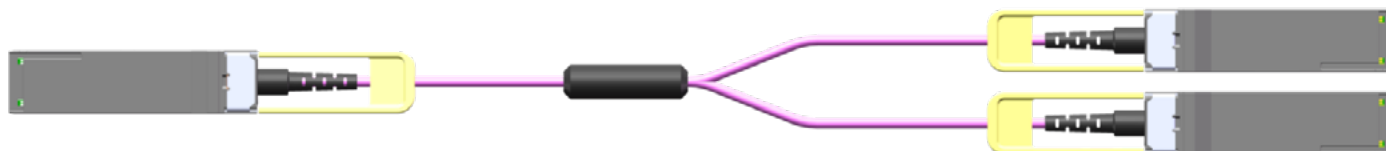
- QSFP112 MSA compliant
- 106.25Gb/s transmission for each direction
- Host side up to 30dB of electrical loss
- DSP for equalization and performance
- Cable length: 3m, 10m, 50m,
- Operating temperature 0° to 70°C
- CMIS 5.0 standard interface

### APPLICATIONS

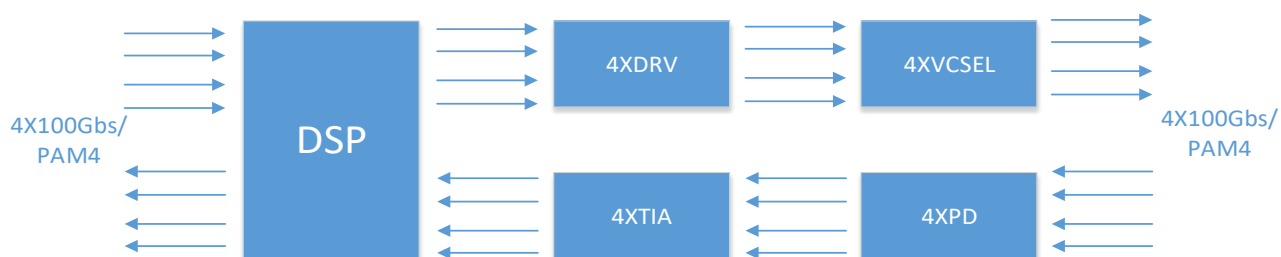
- Intra-datacenter short connections



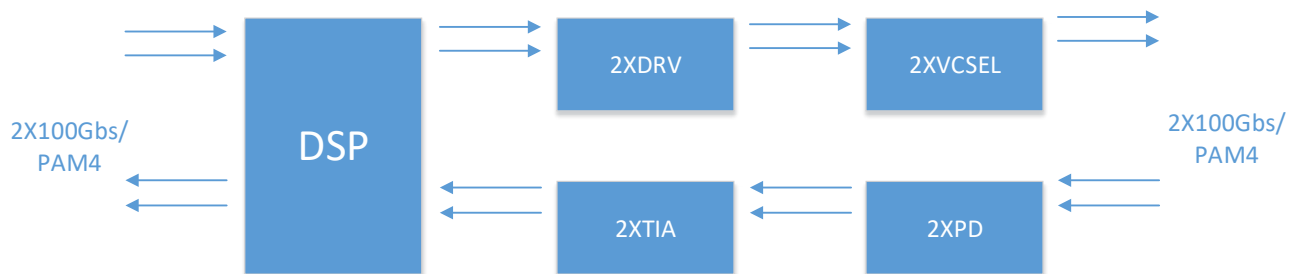
## PRODUCT ARCHITECTURE



### 400G END



### 200G END (CHANNEL 1/2 ARE USED)



## PIN DIAGRAM



## QSFP112 PIN DESCRIPTIONS

PAD	LOGIC	SYMBOL	DESCRIPTION	PLUG SEQUENCE	NOTES
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	3
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	3
7		GND	Ground	1	1
8	LVTTL-I	ModSell	Select	3	
9	LVTTL-I	ResetL	Reset	3	
10		Vcc Rx	+3.3 V Power supply receiver	2	2

(1) GND is the symbol for signal and supply (power) common for the QSFP112 module. All are common within the QSFP112 module and all voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

(2) Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently.

(3) Not defined on the 200G end.

For additional information, visit [jabil.com](http://jabil.com)

PAD	LOGIC	SYMBOL	DESCRIPTION	PLUG SEQUENCE	NOTES
11	LVC MOS-I/O	SCL	2-wire serial interface clock	3	
12	LVC MOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	3
15	CML-O	Rx3n	Receiver Inverted Data Output	3	3
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	3
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	3
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Present	3	
28	LVTTL-O	IntL/RxLOS	Interrupt/optional RxLOS	3	
29		Vcc Tx	+3.3 V Power supply transmitter	2	2
30		Vcc1	+3.3 V Power Supply	2	2
31	LVTTL-I	LPMode/ Tx Dis	Low Power Mode/optional TX Disable	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	3
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	3
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	

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(2) Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently.

(3) Not defined on the 200G end.

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## ABSOLUTE MAXIMUM RATINGS

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Storage Temperature	$T_s$	-40		85	°C	
Storage Ambient Humidity	$H_A$	0		85	%	
Maximum Supply Voltage	$V_{CC}$	-0.5		3.6	V	

## RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Operating Case Temperature	$T_{case}$	0	25	70	°C	
Supply Voltage	VCC	3.135	3.3	3.465	V	
Relative Humidity	RH	5		85	%	
Data Rate (Optical)	DRO		4x106.25		Gbps	400G end
			2x106.25			200G end
Data Rate (Electrical)	DRE		4x106.25		Gbps	400G end
			2x106.25			200G end

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Power Dissipation	$P_d$			8	W	400G end
				4	W	200G end
<b>TRANSMITTER</b>						
Data Rate, each lane	DRE		106.25		Gbps	
Differential Voltage pk-pk	VIN	40		900	mV	
Input differential impedance	ZIN		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
<b>RECEIVER</b>						
Data Rate, each lane	DRE		106.25		Gbps	
Output differential impedance	$Z_{OUT}$		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
Differential output voltage	$V_{OUT}$			1000	mV	

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### OPTICAL CHARACTERISTICS

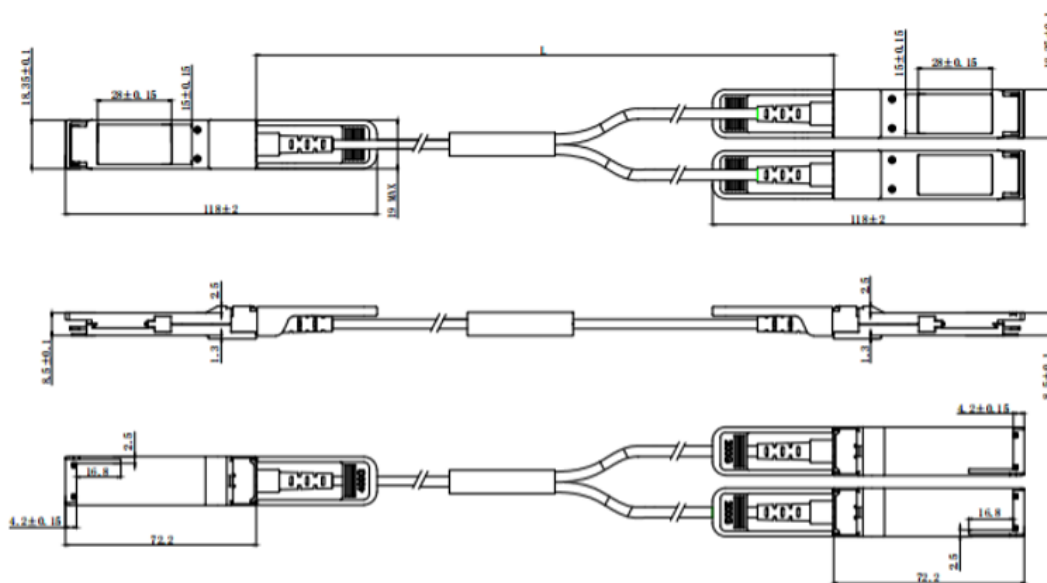
PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Signaling Speed per Lane	DRO		106.25		Gbps	
Center Wavelength	$\lambda$		850		nm	
RMS Spectral Width	$\Delta\lambda$			0.6	nm	
Average launch power		-1		4	dBm	
TX TDECQ				4.4	dB	
TX ER		2.5			dB	

### ORDERING INFORMATION

JABIL PART NUMBER	PACKAGE	REACH	OTHER INFO
QD4CXXACC00Y2ZZ	400G QSFP to 2*200G BREAKOUT	Xx=AOC length	C-temp AOC

Note: additional cable lengths can be provided on request.

### AOC MECHANICAL SPECIFICATIONS



Unit:mm  
 Unspecified  
 Tolerance:±0.1mm

For additional information, visit [jabil.com](http://jabil.com)

## REGULATORY COMPLIANCE

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FEATURE	REFERENCE STANDARDS	PERFORMANCE
ESD-HBM	JESD22-A114-B	1KV high speed Pins, 2KV other Pins
ESD-Air Discharge	IEC 61000-4-2	+/-15KV
ESD-Contact Discharge	IEC 61000-4-2	+/-8KV
EMC-RE	FCC Part 15 Class B	
EMC-RS	IEC 61000 4-3	
ROHS 2.0	2011/65/EU	

For additional information, visit [jabil.com](https://www.jabil.com)

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