Product Specification

100G Quadwire® QSFP28 Direct Attach Cable

FDBC425QE1Cxx

PRODUCT FEATURES

- Up to 25.78125Gb/s per Channel
- Up to 5-meter transmission length
- Cable AWG from 26 to 30
- Compatible to QSFP28 MSA
- Compatible to SFF-8665 and 8661
- Temperature Range: 0°C-70°C
- RoHS Compatible

APPLICATIONS

- 100G Ethernet

100G Quadwire® FDBC425QE1Cxx are QSFP28 direct-attach cables designed for 100G Ethernet links. These copper cables are compliant with SFF-8665 specifications. Various choices of wire gauge are available from 30 to 26 AWG with various choices of cable length (up to 5m).

PRODUCT SELECTION

	Cable Length Options	
FDBC425QE1Cxx	xx = 01 → 1.0m	xx = Z5 → 0.5m
	xx = 02 → 2.0m	xx = A5 → 1.5m
	xx = 03 → 3.0m	xx = B5 → 2.5m
	xx = 04 → 4.0m	xx = C5 → 3.5m
	xx = 05 → 5.0m	xx = D5 → 4.5m

Please contact Coherent for other custom options.

I. Pin Descriptions

Pin	Logic	Symbol	Description
1		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Ground
8	LVTTL-I	ModSelL	Module Select
9	LVTTL-I	ResetL	Module Reset
10		Vcc Rx	+3.3V Power Supply Receiver
11	LVCMOS-I/O	SCL	2-wire serial interface clock
12	LVCMOS-I/O	SDA	2-wire serial interface data
13		GND	Ground
14	CML-O	Rx3p	Receiver Non-Inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output
16		GND	Ground
17	CML-O	Rx1p	Receiver Non-Inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output
19		GND	Ground
20		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-Inverted Data Output
23		GND	Ground
24	CML-O	Rx4n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-Inverted Data Output
26		GND	Ground
27	LVTTL-O	ModPrsL	Module Present
28	LVTTL-O	IntL	Interrupt
29		Vcc Tx	+3.3V Power supply transmitter
30		Vcc1	+3.3V Power supply
31	LVTTL-I	LPMode	Low Power Mode
32		GND	Ground
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input

35		GND	Ground
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input
38		GND	Ground

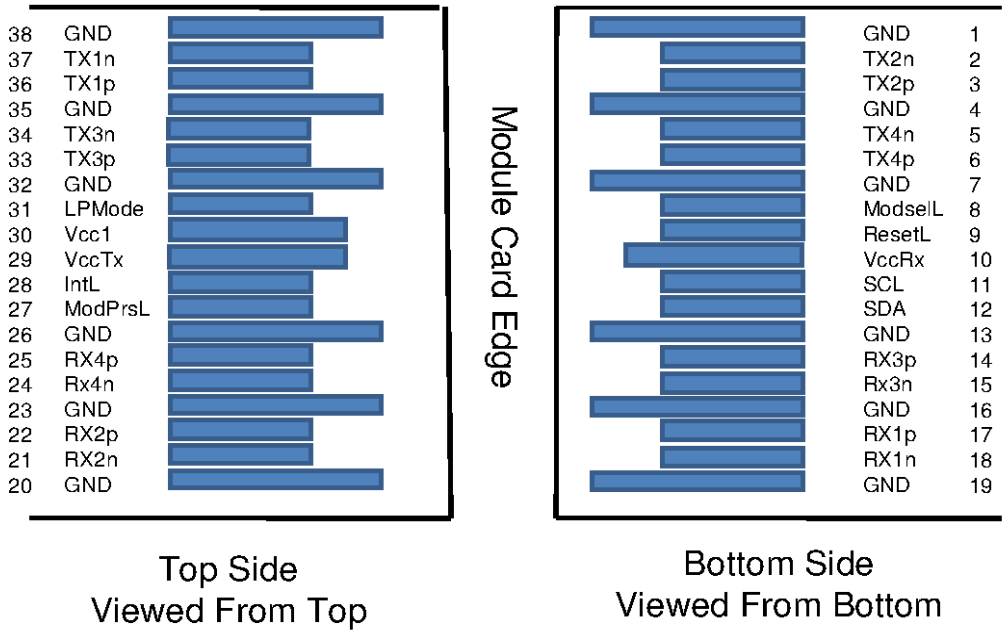


Figure 1. Diagram of Host Board Connector Block Pin Numbers and Names.

II. General Product Characteristics

QSFP+ DAC Specifications	
Number of Lanes	Tx*4 & Rx*4
Channel Data Rate	25.78125 Gbps
Operating Temperature	0 to + 70°C
Storage Temperature	-40 to + 85°C
Supply Voltage	3.3 V nominal
Electrical Interface	38 pins edge connector
Management Interface	I^2C

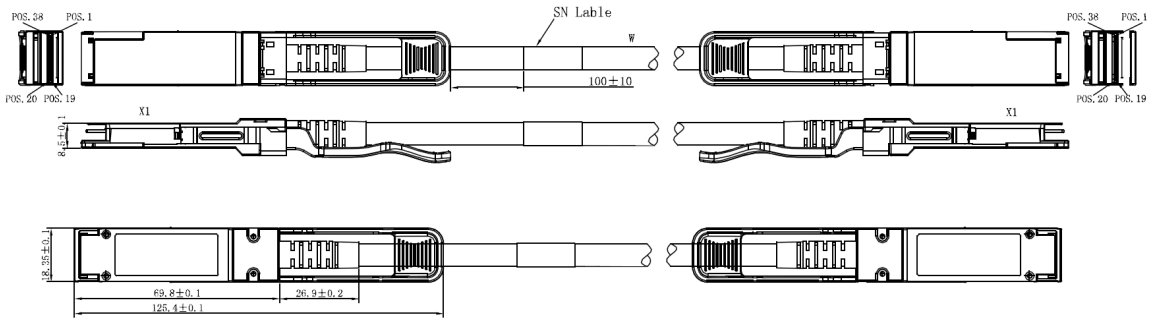
III. High Speed Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Differential Impedance	TDR	90	100	110	Ω	
Insertion loss	SDD21	-22.48			dB	At 12.8906 GHz
Differential Return Loss	SDD11 SDD22			See 1	dB	At 0.05 to 4.1 GHz
				See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode output return loss	SCC11 SCC22			-2	dB	At 0.2 to 19 GHz
Differential to common-mode return loss	SCD11 SCD22			See 3	dB	At 0.01 to 12.89 GHz
				See 4		At 12.89 to 19 GHz
Differential to common Mode Conversion Loss	SCD21-IL			-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

Notes:
1. Reflection Coefficient given by equation SDD11(dB) < -16.5 + 2 × SQRT(f), with f in GHz
2. Reflection Coefficient given by equation SDD11(dB) < -10.66 + 14 × log10(f/5.5), with f in GHz
3. Reflection Coefficient given by equation SCD11(dB) < -22 + (20/25.78)*f, with f in GHz
4. Reflection Coefficient given by equation SCD11(dB) < -15 + (6/25.78)*f, with f in GHz
5. Reflection Coefficient given by equation SCD21(dB) < -27 + (29/22)*f, with f in GHz

IV. Mechanical Specifications

The connector is compatible with the SFF-8661 specification.



Cable length (m)	Cable AWG	Cable length (m)	Cable AWG
1.0	30	3.5	26
1.5	30	4.0	26
2.0	30	4.5	26
2.5	30	5.0	26
3.0	30		

V. Regulatory Compliance

Feature	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 CENELEC EN55022 Class CISPR22 ITE Class B	Compliant with Standards
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

VI. References

1. SFF-8665 – QSFP+ 28Gb/s 4X Pluggable Transceiver Solution (QSFP28), Rev 1.8, May, 2013.

2. SFF-8661 – Specification for Common Management Interface, Rev 1.7, January 2014.

3. "CAUI-4" Retimed 4x25G electrical interface, to be defined by IEEE 802.3

4. CEI-28G-VSR Implementation Agreement, per OIF 2012.290.00

5. Directive 2011/65/EU of the European Council Parliament and of the Council, "on the restriction of the use of certain hazardous substances in electrical and electronic equipment." Certain products may use one or more exemptions as allowed by the Directive.

6. "Application Note AN-2150: EDR Quadwire EEPROM Mapping."

VII. For More Information

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