

100G QSFP28-to-QSFP28 Direct Attach Cable Specification

HTDC-QQA5-xx01MB

Feature

- ◆ Low insertion loss and crosstalk
- ◆ 4-Channel Full-Duplex Passive Copper Cable Transceiver
- ◆ Maximum aggregate data rate: 100Gb/s (4 x 25.78Gb/s)
- ◆ IEEE 802.3bj 100GEBASE-CR4
- ◆ Copper link x (x=1m, 2m, 3m, 5m)
- ◆ Power Supply :+3.3V
- ◆ I2C based two-wire serial interface for EEPROM signature which can be customized
- ◆ Operating Temperature: 0~ 70 °C
- ◆ RoHS Compliant
- ◆ LSZH
- ◆ Compatible to QSFP28 MSA

Applications

- ◆ Data center network
- ◆ 100 Gigabit Ethernet
- ◆ Other high speed data connections

Standards

- ◆ SFF-8665
- ◆ IEEE 802.3bj
- ◆ ROHS

Description

The Hirundo' s 100G QSFP28-to-QSFP28 Direct Attach Cables are compliant with the SFF-8665 specifications. Various choices of wire gauge are available from 30 to 26 AWG with various choices of cable length (up to 5m).

1. Ordering Information

Table 1.1 Ordering Information

Part No.	Specifications						Application
	Package	Data rate	Wire gauge	Cable length	Temp	Others	
QSD-DAXG1-XXXC ^[1]	QSFP28	103.1Gbps	30 to 26 AWG	up to 5m	0~70 °C	RoHS	100 Gigabit Ethernet
PN	QSD-DAXG1-XXXC ^[1]						
Description	100G QSFP28-to-QSFP28 Direct Attach Cables,30 to 26 AWG, up to 5m, 0-70°C						
SAP No	-						
Customer PN	-						

Notes:

1. Refer to Chapter 7st Ordering Information

2. Revision History

Table 2.1 Revision History

Version	Initiated	Reviewed	Revision	Date
V1.0	Leo	Virgil	LiuSJ	2020.10.24

3. Absolute Maximum Ratings

Table 3.1 Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	°C	-40	+85
Operating Temperature	T	°C	0	+70
Power Supply Voltage	Vcc	V	-	3.47
Data Rate Per Lane (Per channel)		Gbps		25.78

4. High Speed Characteristics

Table 4.1 High Speed Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Differential Impedance	RIN, P	9	100	110	Ω	
Insertion loss	SDD21	8		22.48	dB	At 12.8906 GHz
Differential Return Loss	SDD11	12.45		See 1	dB	At 0.05 to 4.1 GHz
	SDD22	3.12		See 2		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	12		See 3	dB	At 0.01 to 12.89 GHz
	SCD22	10.58		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
Channel Operating Margin	COM	3			dB	

Notes:

1. Reflection Coefficient given by equation $SDD11(dB) < 16.5 - 2 \times \text{SQRT}(f)$, with f in GHz.
2. Reflection Coefficient given by equation $SDD11(dB) < 10.66 - 14 \times \log_{10}(f/5.5)$, with f in GHz.
3. Reflection Coefficient given by equation $SCD11(dB) < 22 - (20/25.78) \times f$, with f in GHz.
4. Reflection Coefficient given by equation $SCD11(dB) < 15 - (6/25.78) \times f$, with f in GHz.
5. Reflection Coefficient given by equation $SCD21(dB) < 27 - (29/22) \times f$, with f in GHz.

5. Pin Assignment and Pin Description

5.1 Pin Assignment

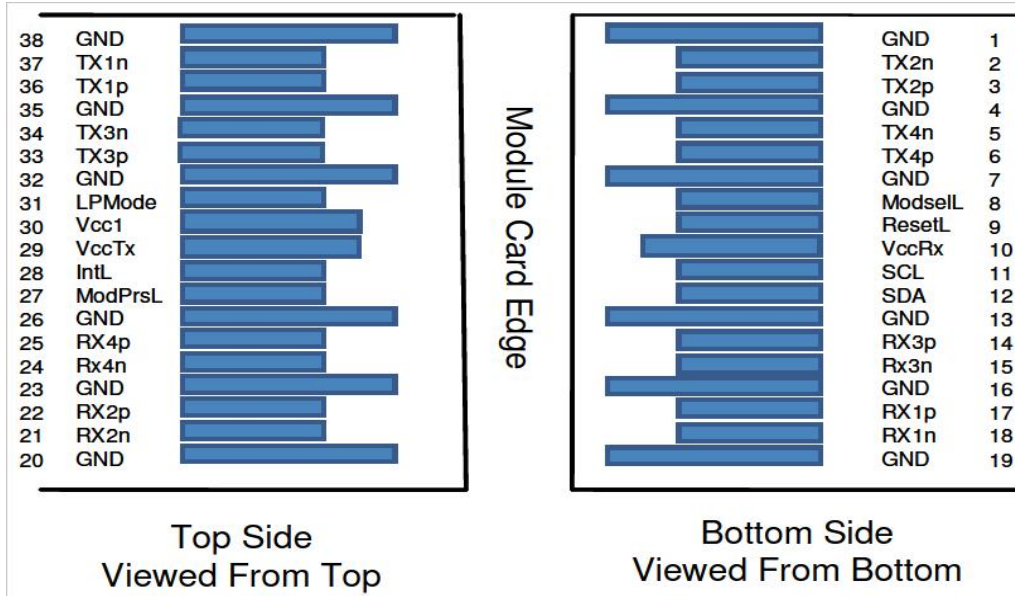


Figure 1 Electrical Pin-out Details

5.2 Pin Description

Table 5.1 Pin Description

Pin	Symbol	Name/Description	Note
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSe1L	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power supply receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	

29	VccTx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power Supply	
31	LPMODE	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane. Circuit ground is internally isolated from chassis ground.

6. Mechanical Specifications

The connector is compatible with the SFF-8665 specification.

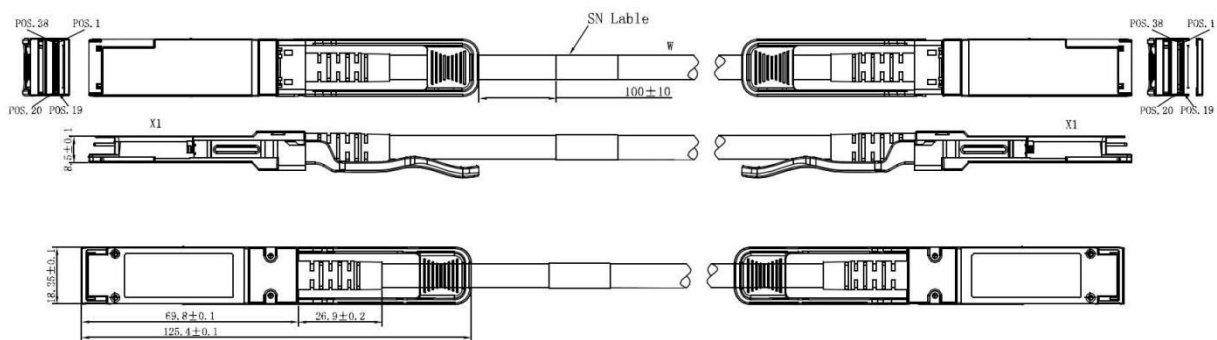


Figure 2 Mechanical Dimensions

Table 6.1 Length and related Cable AWG

Length (m)	Cable AWG
1	30
2	30
3	30
5	26

7. Ordering Information:

Table 7.1 Ordering Information

Part Number	Description
HTDC-QQA5-3001MB	100G QSFP28 1m 30AWG DAC Cable
HTDC-QQA5-3002MB	100G QSFP28 2m 30AWG DAC Cable
HTDC-QQA5-3003MB	100G QSFP28 3m 30AWG DAC Cable
HTDC-QQA5-2605MB	100G QSFP28 5m 26AWG DAC Cable

8. For More Information

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