

# DAOQQxxxC00D – QSFP28 Active Optical Cable

1 to 100m / 100x Gigabit Ethernet

For your product safety, please read the following information carefully before any manipulation of the cable:



#### ESD

This cable is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



#### LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

## 1. Overview

DAOQQxxxC00D is a high performance Active Optical Cable (AOC) for 100x Gigabit Ethernet data links. Several cable lengths between 1 and 100m are available.

This transceiver module is compliant with the QSFP28 Multisource Agreement (MSA) and hot pluggable. Always contact Skylane Optics-commercial agents for compatibility with different equipment platforms.

## 2. Features

- Four channel full-duplex AOC (Electrical Interface Only)
- Compliant to SFF-8665 QSFP28 Specification Revision 1.8
- QSFP28 footprint (Quad small form-factor, pluggable)
- Up to 103.125 Gbps Aggregated Data Rate
- Link Length up to 100m
- Operating Temperature Range: 0°C to 70°C
- Low power dissipation (<2.5 W each terminal)
- Digital Diagnostic Monitoring (DDM)
- RoHS Compliant

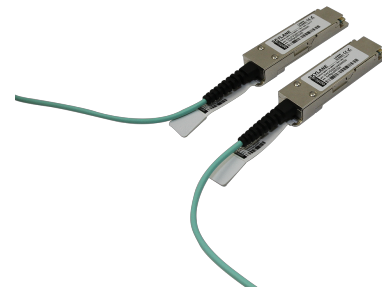


Figure 1. QSFP28 Active Optical Cable  
(non-binding illustration)

## 3. Applications

- 100GBase Ethernet
- Infiniband
- Data centre
- Intra & Inter-Racks connection

## 4. Technical Parameters

4.1. Recommended Operating Conditions					
Parameter	Min	Typ	Max	Unit	Notes
Storage temperature	-40		85	°C	
Operating Case Temperature	0		70	°C	
Relative Humidity	5		85	%	Non condensing
Power Supply Voltage	3.135	3.3	3.465	V	
Power Supply Current			760	mA	Each terminal
Power Dissipation			2.5	W	Each terminal

4.2. General Specifications					
Parameter	Min	Typ	Max	Unit	Notes
Data Rate, each Lane		25.781		Gbps	
Aggregate Data Rate		103.125		Gbps	

4.3. High-speed Electrical Interface, Host to QSFP28					
Parameter	Min	Typ	Max	Unit	Notes
Transmitter Differential Voltage peak-peak			900	mV	
Transmitter Common Mode Voltage	-350		2850	mV	
Common Mode to Differential Conversion and Differential to Common Mode Conversion	Per OIF CEI-28G-VSR & CAUI-4 requirements			dB	SDC22 & SCD22
Receiver Differential Voltage peak-peak			900	mV	
Receiver Differential Output Voltage Swing	-350		2850	mV	
Common Mode to Differential Conversion and Differential to Common Mode Conversion	Per OIF CEI-28G-VSR & CAUI-4 requirements			dB	SDC22 & SCD22

## 5. Transceiver Electrical Pad Layout

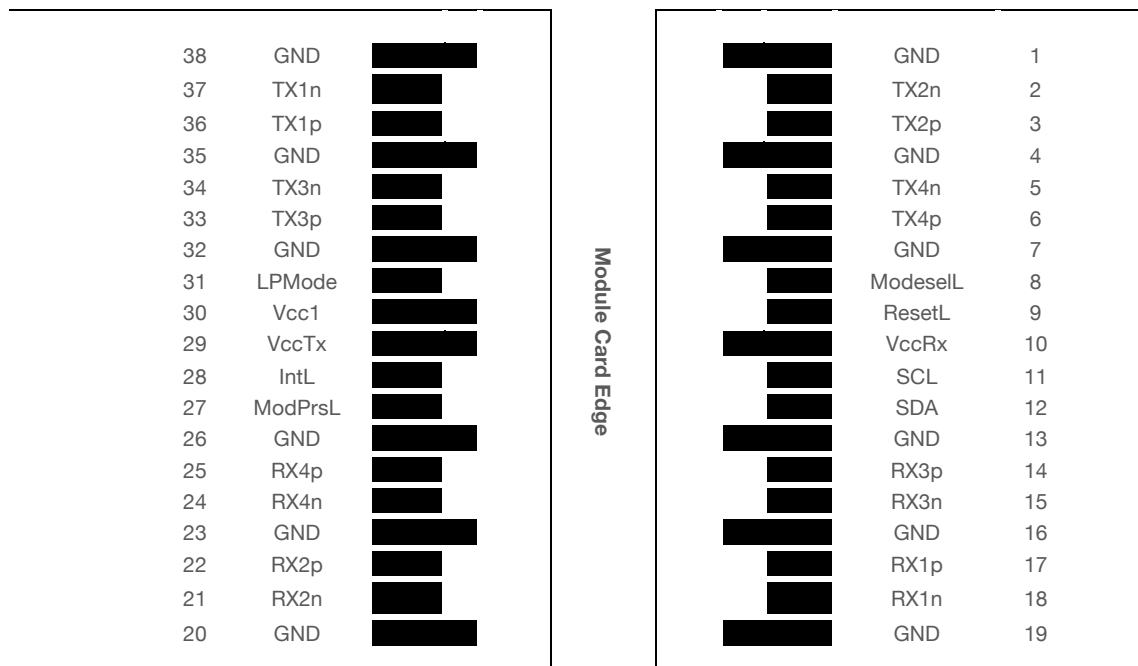


Figure 2. QSFP28 Electrical Pad Layout

## 6. Module Electrical Pin Definition

QSFP28 MSA (SFF-8679)

Pin	Symbol	Description	Pin	Symbol	Description
1	GND	Ground	20	GND	Ground
2	TX2n	Transmitter Inverted Data Input	21	RX2n	Receiver Inverted Data Output
3	TX2p	Transmitter Non-Inverted Data Input	22	RX2p	Receiver Non-Inverted Data Output
4	GND	Ground	23	GND	Ground
5	TX4n	Transmitter Inverted Data Input	24	RX4n	Receiver Inverted Data Output
6	TX4p	Transmitter Non-Inverted Data Input	25	RX4p	Receiver Non-Inverted Data Output
7	GND	Ground	26	GND	Ground
8	ModSelL	Module Select	27	ModPrsL	Module Present
9	ResetL	Module Reset	28	Int	Interrupt
10	VccRx	Receiver Power Supply	29	VccTx	Transmitter Power supply
11	SCL	Two-Wire Serial Interface Clock (SCL)	30	Vcc1	Power supply
12	SDA	Two-wire Serial Interface Data (SDA)	31	LPMODE	Low Power Mode
13	GND	Ground	32	GND	Ground
14	RX3p	Receiver Non-Inverted Data Output	33	TX3p	Transmitter Non-Inverted Data Input
15	RX3n	Receiver Inverted Data Output	34	TX3n	Transmitter Inverted Data Input
16	GND	Ground	35	GND	Ground
17	RX1p	Receiver Non-Inverted Data Output	36	TX1p	Transmitter Non-Inverted Data Input
18	RX1n	Receiver Inverted Data Output	37	TX1n	Transmitter Inverted Data Input
19	GND	Ground	38	GND	Ground

7. EEPROM

QSFP28 MSA (SFF-8636)

2-Wire Serial  
Address :1010000x

0	ID and status	(3 Bytes)
2		
21	Interrupt Flags	(19 Bytes)
33	Module Monitors	(12 Bytes)
81	Channel Monitors	(48 Bytes)
85	Reserved	(4 Bytes)
97	Control	(12 Bytes)
99	Reserved	(2 Bytes)
106	Free Side Device and Channel Mask	(7 Bytes)
107	Reserved	(1 Byte)
111	Free Side Device and Channel Mask	(4 Bytes)
118	Reserved	(7 Bytes)
122	Password Change Entry Area (Optional)	(4 Bytes)
126	Password Entry Area (Optional)	(4 Bytes)
127	Page Select Byte	(1 Byte)

Page 00

Page 01 (Optional)

Page 02 (Optional)

Page 03

128	Base ID Fields	(64 Bytes)	128	CC_APPS	(1 Byte)	128	User EEPROM Data	(128 Bytes)	128	CC_APPS	(48 Bytes)
191			Extended ID			(32 Bytes)			128		
223			Vendor Specific ID	(32 Bytes)	129	Application Code Entry 0	(2 Bytes)	223	Reserved	(2 Bytes)	225
255			131	Application Code Entry 1	(2 Bytes)	241	Channel Monitor mask	(12 Bytes)	253	Reserved	(2 Bytes)
			133	Other Entries		255					
			255	Application Code Entry TL	(2 Bytes)						

Figure 3. EEPROM of a QSFP28

## 8. Ordering Information

Part Number	Description
DAOQQM01C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>1m</b> , 0 to 70°C, DDM
DAOQQM03C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>3m</b> , 0 to 70°C, DDM
DAOQQM05C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>5m</b> , 0 to 70°C, DDM
DAOQQM10C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>10m</b> , 0 to 70°C, DDM
DAOQQM15C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>15m</b> , 0 to 70°C, DDM
DAOQQM30C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>30m</b> , 0 to 70°C, DDM
DAOQQM50C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>50m</b> , 0 to 70°C, DDM
DAOQQM75C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>75m</b> , 0 to 70°C, DDM
DAOQQP10C00D	QSFP28 to QSFP28 AOC, 100GBASE, <b>100m</b> , 0 to 70°C, DDM

## 9. Document Revision Information

Revision	Description
A	Initial release

Skylane Optics supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:  
**support@skylaneoptics.com**

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