

QSFP-100G-AOCxM-FL Quick Spec:

Part Number: QSFP-100G-AOCxM-FL
 Form Factor: QSFP28
 TX : 850nm
 Cable Type: MMF
 Rate Category: 100G
 Lengths: 1, 3, 5, 7, 10, 15, 20, 25, 30, 50, 70, 100m



QSFP-100G-AOCxM-FL Features

- Four-channel full-duplex active optical cable
- Multirate capability: 10 Gb/s to 25 Gb/s per channel
- QSFP28 high-density form factor
- Reliable VCSEL array technology using multimode fiber
- Round OFNP-rated cable
- Hot Pluggable
- Low power dissipation: <2.5W per cable end
- Commercial operating case temperature range: 0°C to 70°C
- RoHS-6 Compliant
- Operating Case Temperature
 - Standard: 0°C to +70 °C

QSFP-100G-AOCxM-FL Applications

- 10/25/40/100G Ethernet

Pin Descriptions

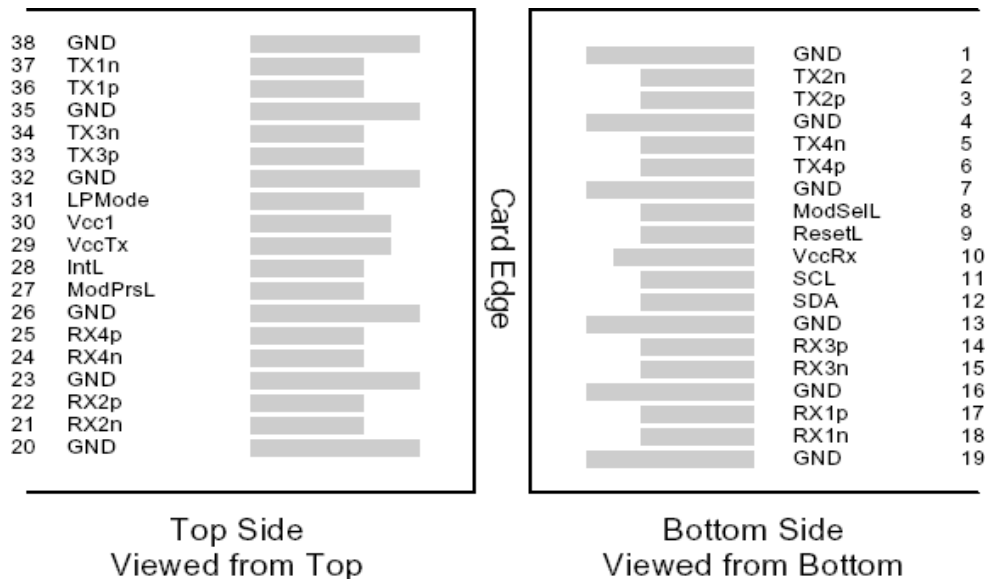


Figure 1 – QSFP28-compliant 38-pin connector (per SFF-8679)

Pin	Symbol	Name/Description	Notes
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	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3 V 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	Vcc Tx	+3.3 V Power supply transmitter	
30	Vcc1	+3.3 V 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. Circuit ground is internally isolated from chassis ground.

General Product Characteristics

Parameter	Value	Unit	Notes
Module Form Factor	QSFP28		As defined by SFF-8661
Number of Lanes	4 Tx and 4 Rx		
Maximum Aggregate Data Rate	103.125	Gb/s	
Maximum Data Rate per Lane	25.781	Gb/s	
Standard Cable Lengths	1, 3, 5, 10, 15, 20, 30, 50, 100	meters	Other lengths may be available upon request
Protocols Supported	Typical applications include 10/25/40G/100G Ethernet		
Electrical Interface and Pin-out	38-pin edge connector		Pin-out as defined by SFF-8679
Standard Optical Cable Type	Multimode round fiber cable, plenum-rated		OFNP. Low Smoke Zero Halogen (LSZH), round fiber cable also available
Maximum Power Consumption per End	3.5 (retimed Tx) 2.5 (unretimed)	Watts	Varies with output voltage swing and pre-emphasis settings
Management Interface	Serial, I2C-based, 450 kHz maximum frequency		As defined by SFF-8636

Data Rate Specifications	Symbol	Min	Typ	Max	Units	Ref.
Bit Rate per Lane	BR	10.00		25.78	Gb/sec	1
Pre-FEC Bit Error Ratio	BER			5×10^{-5}		2
Post-FEC Bit Error Ratio	BER			10^{-12}		2, 3

Notes:

2. Supports 10/25/40/100 Gigabit Ethernet applications.
3. Tested with a PRBS $2^{31}-1$ test pattern.
4. Assumes FEC provided by host system.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc1, VccTx, VccRx	-0.5		3.6	V	
Storage Temperature	T _s	-40		85	□ C	1
Case Operating Temperature	TOP	0		70	□ C	
Relative Humidity	RH	0		85	%	2

Notes:

1. Assumes no mechanical load force on the unit. Ensuring no mechanical load force requires a cable bend radius of >70 mm.
2. Non-condensing.

Electrical Characteristics (T_{OP} = 0 to 70□C, V_{CC} = 3.3 ± 5% Volts)

NOTE: The 100G Quadwire requires an electrical connector compliant with SFF-8662 or SFF-8672 be used on the host board to guarantee its electrical interface specification. Please check with your connector supplier.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc1, VccTx, VccRx	3.135		3.465	V	
Supply Current	I _{cc}			0.8	A	
Power Dissipation per cable end	P			2.5	W	1, 2
Link Turn-On Time						
Transmit turn-on time				2000	ms	3
Input electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Common Mode Noise RMS				17.5	mV	
Differential Termination Resistance Mismatch				10	%	
Differential Return Loss	SDD22	Per OIF CEI-28G-VSR and CAUI-4 requirements			dB	
Common Mode to Differential conversion and Differential to Common Mode Conversion	SDC22, SCD22				dB	
Common Mode Return Loss	SCC22				dB	
Transition Time, 20 to 80%	Tr, Tf	10			ps	

Common Mode Voltage	Vcm	-0.3		2.8	V	
Eye Width at 1E-15 probability	EW1 5	0.4 6			UI	
Eye Height at 1E-15 probability	EH1 5	94			mV	
Output electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Common Mode Voltage	Vcm	- 350		2850	mV	
Common Mode Noise RMS				17.5	mV	
Differential Termination Resistance Mismatch				1 0	%	
Differential Return Loss	SD D22	Per OIF CEI-28G-VSR and CAUI-4 requirements			dB	
Common Mode to Differential conversion and Differential to Common Mode Conversion	SDC22, SCD22					
Common Mode Return Loss	SCC 22			-2	dB	
Transition Time, 20 to 80%	Tr, Tf	9.5			ps	
Vertical Eye Closure	VEC			5.5	dB	
Eye Width at 1E-15 probability	EW1 5	0.5 7			UI	
Eye Height at 1E-15 probability	EH1 5	228			mV	

Notes:

1. Maximum total power value is specified across the full operational temperature and voltage range when CDRs are locked or a lack of input signal results in squelch being activated. If incorrect frequencies cause the CDRs to continuously attempt to lock, maximum power dissipation may reach 3.5 W.
2. Settable in various discrete steps via the I2C interface.
3. From power-on and end of any fault conditions.

Memory Map and Control Registers

Compatible with SFF-8636. Please see Finisar Application Note AN-2150⁷.

Regulatory Compliance

100G Quadwire Active Optical Cables are Class 1 laser eye safety compliant per IEC 60825-1.

Standard fiber cable type is round-section construction, plenum-rated. Other cable types can be supported upon request such as LSZH, round-section construction.

Mechanical Specifications

The 100G Quadwire mechanical specifications are compliant with the QSFP28 transceiver module specifications (as defined in SFF-8661), substituting the MPO12 receptacle with a fiber optics cable connecting both ends.

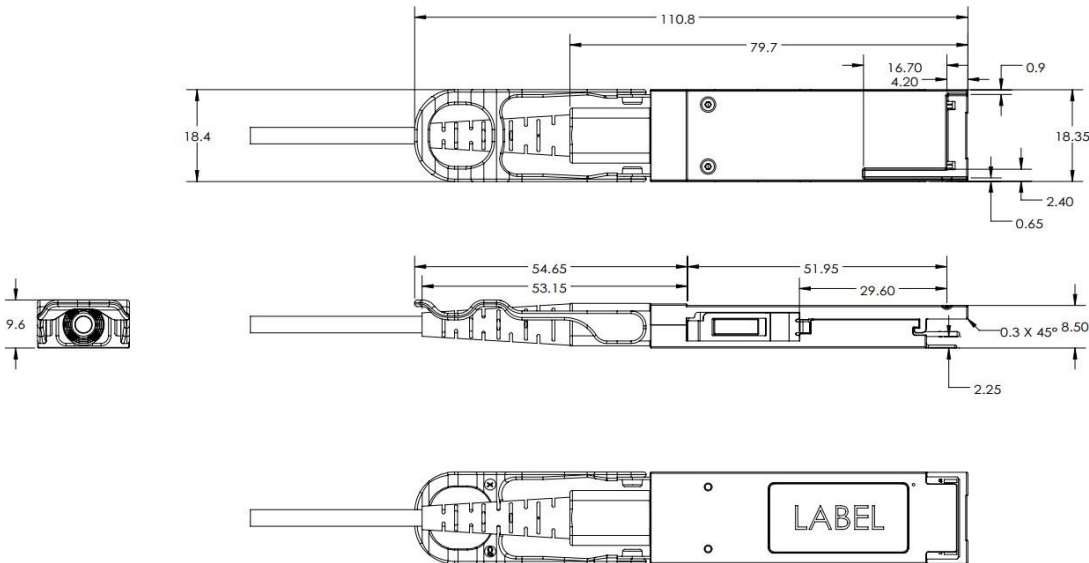


Figure 2 – 100G Quadwire mechanical drawing

Insertion, Extraction and Retention Forces	Min	Max	Units	Notes
Cable Proof (Tensile) Test (0°)		44.0	Newtons	
Cable Proof (Tensile) Test (90°)		33.0	Newtons	
Impact		8	Cycles	1.5m drop
Flex		8.9	Newtons	
Twist		13.0	Newtons	
Module retention	90	N/A	Newtons	No damage below 90N
Host Connector Retention	180	N/A	Newtons	No damage below 180N

ESD

This transceiver is specified as ESD threshold 1kV for high speed data pins and 2kV for all other electrical input pins, tested per MIL-STD-883, Method 3015.4 /JESD22- A114-A (HBM). However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Laser Safety

This is a Class 1 Laser Product according to EN 60825-1:2014. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Licensing

The following U.S. patents are licensed by <Brand> to FluxLight, Inc.:

U.S. Patent Nos: 7,184,668, 7,079,775, 6,957,021, 7,058,310, 6,952,531, 7,162,160, 7,050,720