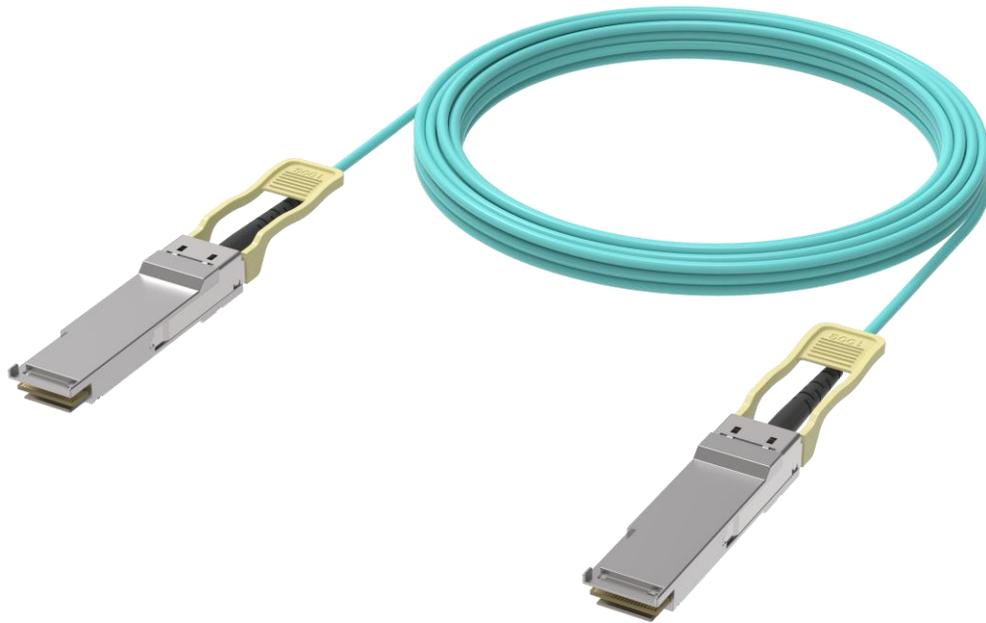


## Product Datasheet

# 100G QSFP28 Active Optical Cable



### Application

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers
- Telecom Central Offices (CO)
- Test and Measurement Equipment

### Standards Compliance

- IEEE 802.3bm
- QSFP MSA
- SFF8636

### Features

- Four-channel full-duplex active optical cable
- 25.78Gb/s data rate per channel
- SFF-8636 compliant I2C management
- Single 3.3V power supply
- Power dissipation < 2.5W per end
- Operating case temperature: 0°C to +70 °C
- Hot pluggable

## 1.0 Product Specification

### 1.1 Absolute Maximum Ratings (TC=25°C, unless otherwise noted)

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings will cause permanent damage and/or adversely affect device reliability.

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	TS	-40	-	+85	°C	
Maximum Supply Voltage	Vcc	-0.5	-	3.6	V	
Operating Relative Humidity	RH	+5	-	+85	%	No condensation

### 1.2 General Specifications (Tc=25°C, Unless Otherwise Noted)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	Tc	0	-	70	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.47	V	
Maximum Power Dissipation	P <sub>D</sub>	-	-	2.5	W	
Lane Baud Rate	BR <sub>LANE</sub>		25.78125		Gbps	
Pre-FEC Bit Error Ratio				5E-5		
Post-FEC Bit Error Ratio				1E12		

Notes: FEC provided by host system.

### 1.3 PIN Descriptions

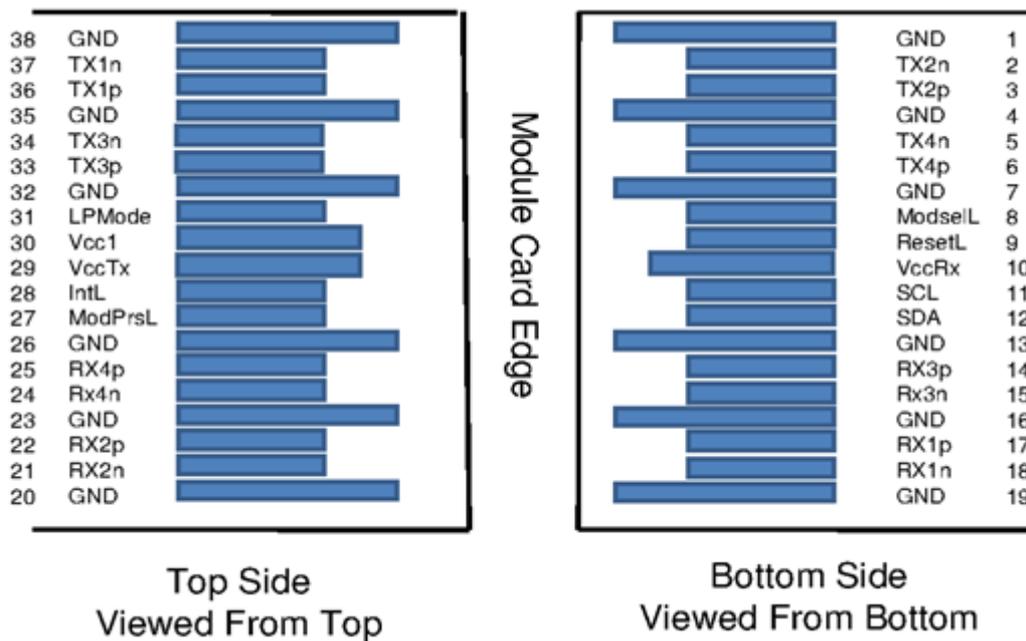


Figure 1 – Pin Definitions

Pin	Symbol	Name/Description	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+ 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

Pin	Symbol	Name/Description	Ref.
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	+3.3 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 Output	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Ground	1

Notes:[1] Circuit ground is internally isolated from chassis ground.

### 1.4 Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Differential input impedance	Zin		100		ohm	
Differential Output impedance	Zout		100		ohm	
Differential input voltage amplitude	$\Delta V_{in}$	200	-	900	mVp-p	
Differential output voltage amplitude	$\Delta V_{out}$	400	-	800	mVp-p	
LOS On	V <sub>IH</sub>	2.0	-	VCC	V	
LOS Off	V <sub>IL</sub>	0	-	0.8	V	

### 1.5 Digital Diagnostic Functions

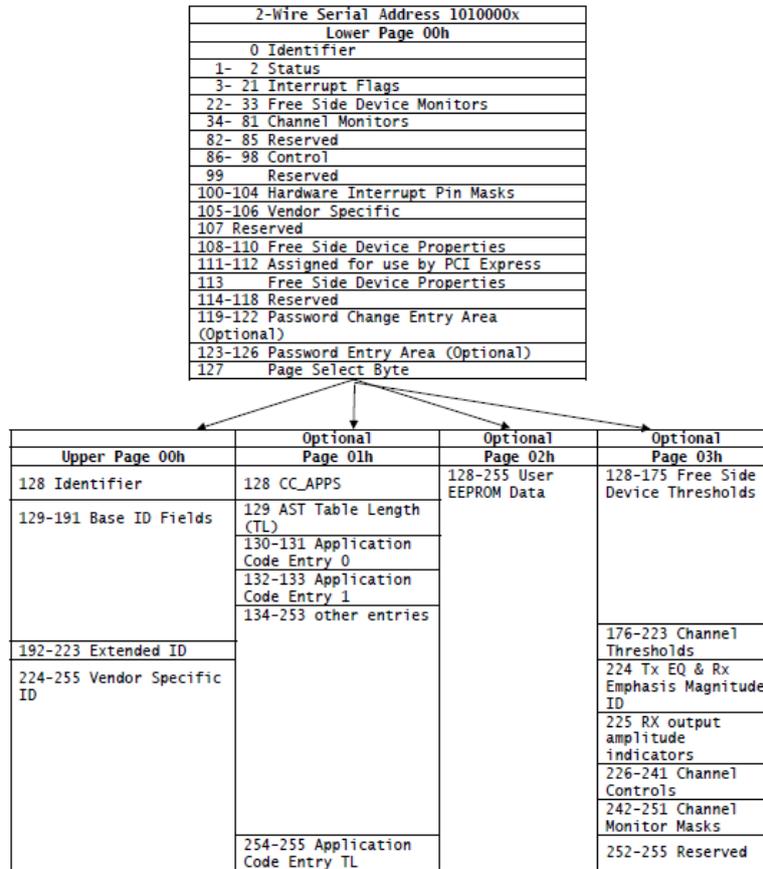


Figure 2 - Two-Wire Interface Fields

### 1.6 Digital Diagnostic Specification

Parameter	Symbol	Accuracy	Units	Notes
Transceiver Case Temperature	DMI_TEMP	±5	°C	Over operating temp
Supply voltage monitor absolute error	DMI_VCC	±3	%	Full operating range
Channel Bias current monitor	DMI_IBIAS	±10	%	Per channel
Channel RX power monitor absolute error	DMI_RX	±3	dB	Per channel
Channel TX power monitor absolute error	DMI_TX	±3	dB	Per channel

### 1.7 Mechanical Specifications

Unit: mm

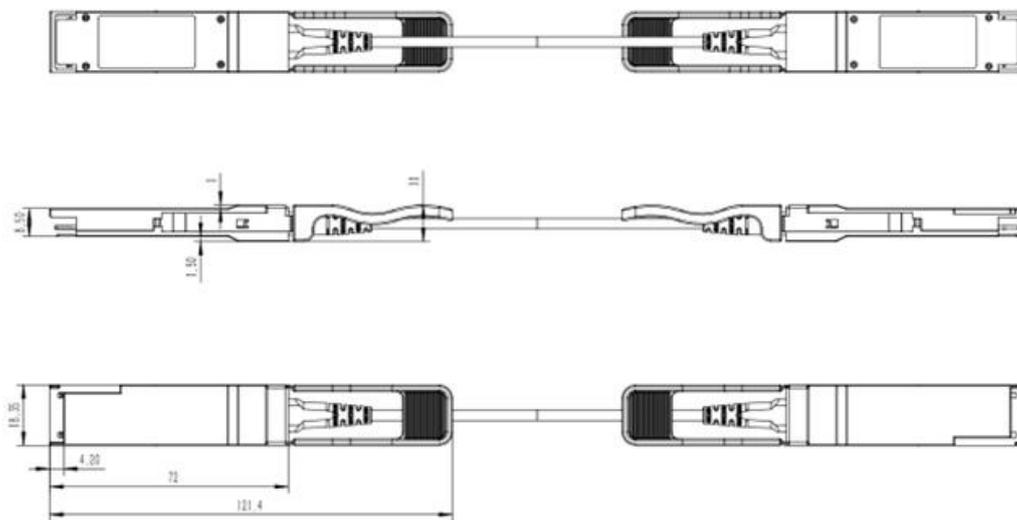


Figure 3 - Mechanical Specifications

## 2.0 Product Information

Data Rate	Factor		Optical	Wavelength	Reach
100G	QSFP28 to QSFP28	AOC	N/A	850nm	1m~100m

### ESD Safety Cautions

This transceiver is specified as ESD threshold 1KV for high speed data pins and 2KV for all others 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.

### Important Notice

The performance figures, data, and any illustrative material presented in this datasheet are typical and must be explicitly confirmed in writing by ZHAOLONG before they are deemed applicable to any specific order or contract.

By ZHAOLONG's policy of continuous improvement, specifications may change without prior notice. The publication of information in this datasheet does not imply exemption from patent or other protective rights held by ZHAOLONG or other parties. Additional details can be obtained from any ZHAOLONG sales representative.

### 3.0 Revision Record

Rev.	Comments	Author	Date
A01	Initial Release	James Chen	10/01/2023