

100Gb/s QSFP28 Active Optical Cable

Features

- Compliant to the industry standard SFF-8636 QSFP28 Transceiver Specification
- Four-channel full-duplex active optical cable
- Hot pluggable
- Low power dissipation: < 3.5W per cable end (< 2.5W with CDRs off)
- Commercial operating case temperature range: 0°C to 70°C
- RoHS-6 compliant (lead-free)
- Metal enclosure for low EMI
- Length available up to 100 meters

Applications

- 100GBASE-SR4 at 25.78125Gbps per lane
- Other optical links

Compliance

- Compliant with SFF-8636
- Compliant with IEEE 802.3bm
- GR-468-CORE
- RoHS Compliance

Absolute Maximum Ratings

Table1-Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	V _{CC3}	-0.5	-	+3.6	V	
Storage Temperature	T _S	- 5	-	+75	°C	
Operating Humidity	RH	+5	-	+85	%	1

Note:

[1] No condensation

Recommended Operating Conditions

Table2-Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Operating Case Temperature	T _C	0	-	+70	°C	
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V	
Power Dissipation	P _d	-	-	2.5	W	1
Bit Rate	BR	10.3125	25.78125	-	Gbps	

Note:

[1] Per terminal

Characteristics

Table3-Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Differential Data Input Swing	V _{out}	200		1000	mV	
Input Differential Impedance	Z _D	90	100	110	Ω	
Module Select	V _{OL}	V _{EE} -0.3		0.4	V	
Module Unselect	V _{OH}	2.0		V _{CC} +0.3	V	
Low Power Mode	V _{IL}	V _{EE} -0.3		0.8	V	
Normal Operation	V _{IH}	2.0	-	V _{CC} +0.3	V	
Reset	V _{IL}	V _{EE} -0.3		0.8	V	
Normal Operation	V _{IH}	2.0		V _{CC} +0.3	V	
Receiver						
Differential Data Output Swing	V _{in,P-P}	200		1000	mV _{PP}	
Output Differential Impedance	Z _D	90	100	110	Ω	1
ModPrsL	V _{OL}	V _{EE} -0.3		0.4	V	
Interrupt	V _{OL}	V _{EE} -0.3		0.4	V	

Normal Operation	VoH	2.0	VCC+0.3	V	
Bit Error Rate	- BER		E-12		1

Note: PRBS2^31-1 @ 25.78125 Gbps

Recommended Interface

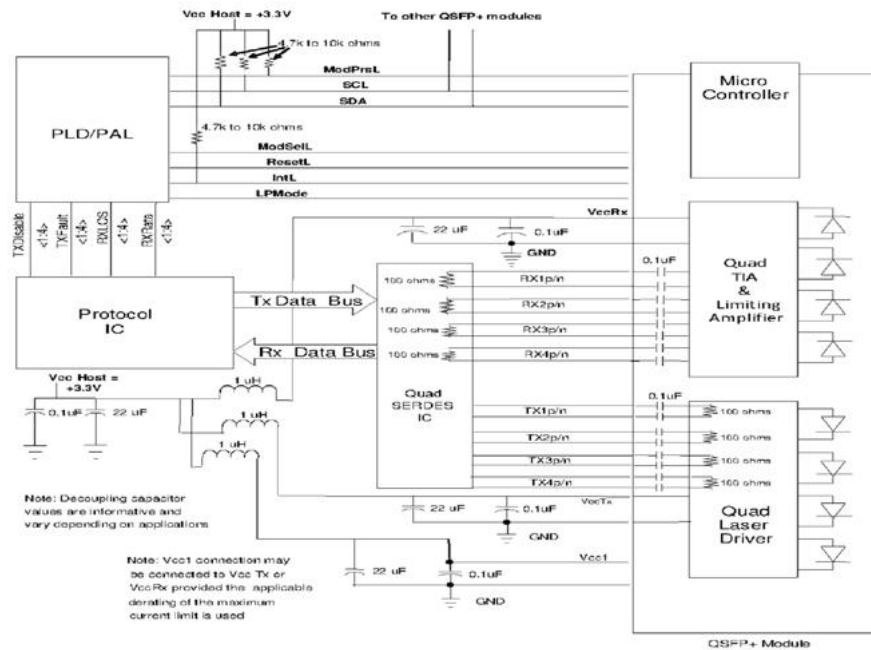


Figure 1 Recommended Interface Circuit

Pin arrangement

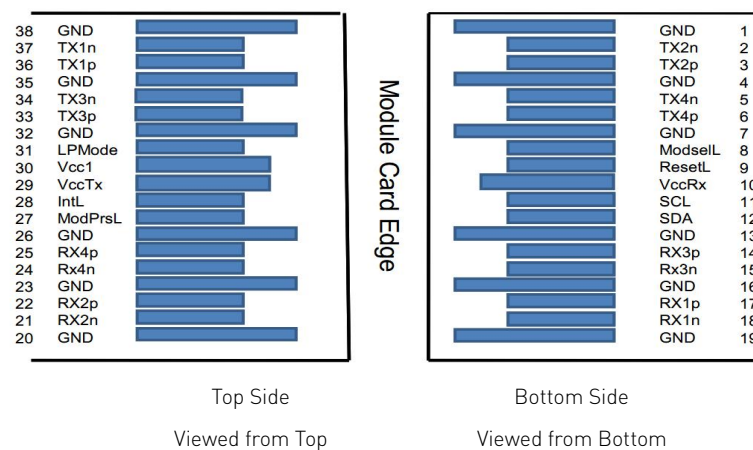


Figure 2 Pin View

Pin Descriptions

Table4-QSFP-DD Pin Function Definition

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

33	S	Tx3p	Transmitter Non-Inverted Data Input	
34	S	Tx3n	Transmitter Inverted Data Input	
35	G	GND	Ground	1
36	S	Tx1p	Transmitter Non-Inverted Data Input	
37	S	Tx1n	Transmitter Inverted Data Input	
38	G	GND	Ground	1

Monitoring Specification

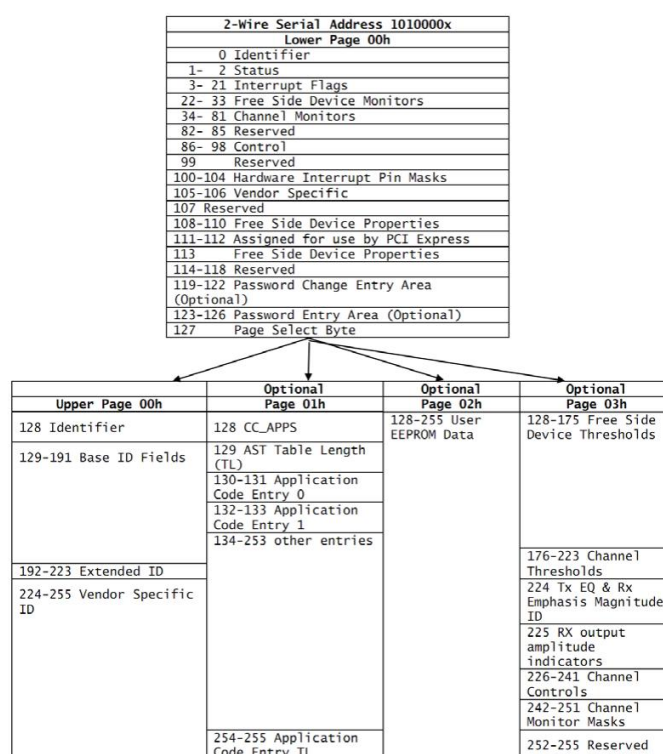


Figure 3 Monitoring Specification

Mechanical

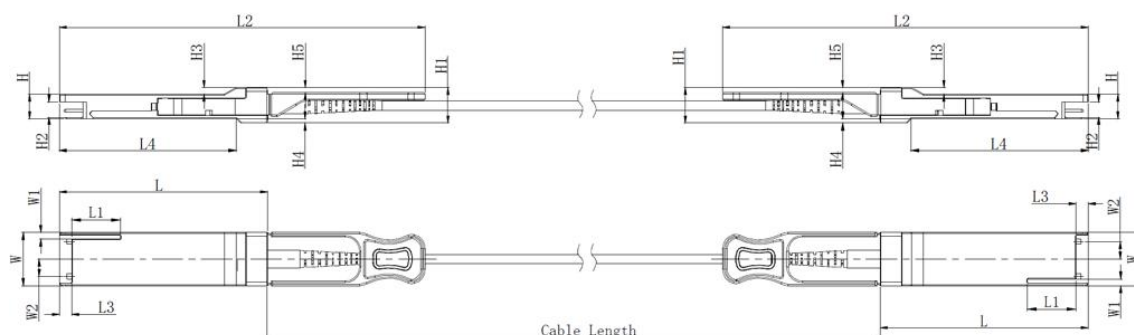


Figure 4 Mechanical Diagram

Unit mm

	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5
Max	72.2	-	128	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6	2.0
Type	72.0	-	-	4.20	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5	1.8
Min	68.8	16.5	124	4.05	61.0	18.25	2.2	5.8	8.4	12.0	5.05	2.1	1.3	1.6

Cable Length

Parameter	Value	Units
Diameter	3	mm
Minimum bend radius	30	mm
Length tolerance	Length $\leq$ 1 m:	+5 / -0
	1 m $\leq$ length $\leq$ 4.5 m:	+15 / -0
	5 m $\leq$ length $\leq$ 14.5 m:	+30 / -0
	Length $>$ 15.0 m	+2% / -0
Cable color	Orange(OM2),Aqua(OM3),Magenta(OM4)	

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.