

200G QSFP56 Active Optical Cable

Features

- Support IBTA InfiniBand HDR application
- Compliant to QSFP56 Electrical MSA SFF-8665
- 4x50Gbps PAM4 modulation
- Multi-rate up to 200Gbps
- 3.3V power supply
- Power consumption $\leq 4.5W$ each end
- Operating case temperature: 0°C to 70°C
- RoHS compliant

Applications

- 200Gbps InfiniBand HDR
- Other optical links

Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Supply Voltage	V_{cc}	-0.5	-	3.6	V	
Storage Temperature	T_s	-5	-	75	°C	
Operating Humidity	RH	5	-	85	%	Non-condensing

Recommended Operating Conditions

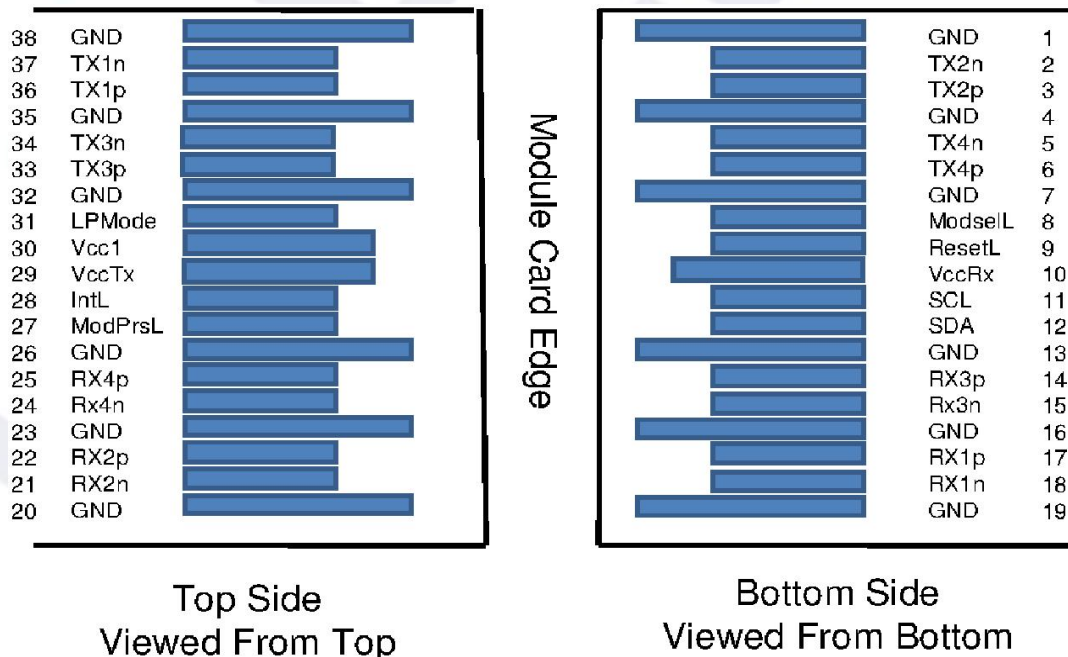
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	T_c	0		70	°C	
Power Supply Voltage	V_{cc}	3.14	3.3	3.47	V	
Power Dissipation	P_d			4.5	W	Each end

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Notes
Transmitter						
Differential Data Input Swing	$V_{out,pp}$	900			mV	
Bit Rate(each lane)	BR	$26.5625 \pm 100\text{ppm}$			GBd	
Differential termination mismatchal				10	%	
Single-ended voltage tolerance range		0.4		3.3	V	
DC common mode voltage		350		2850	mV	
Receiver						
Differential Data Output Swing	$V_{in,pp}$		-	900	mV	
Bit Rate(each lane)	BR	$26.5625 \pm 100\text{ppm}$			GBd	1
Differential termination mismatchal		-	-	10	%	
Transition time(min, 20% to 80%)		9.5			ps	
DC common mode voltage		-350		2850	mV	
Bit Error Rate	BER			$2.4\text{E-}4$		1

1. PRBS31Q @ 26.5625 GBd PAM4

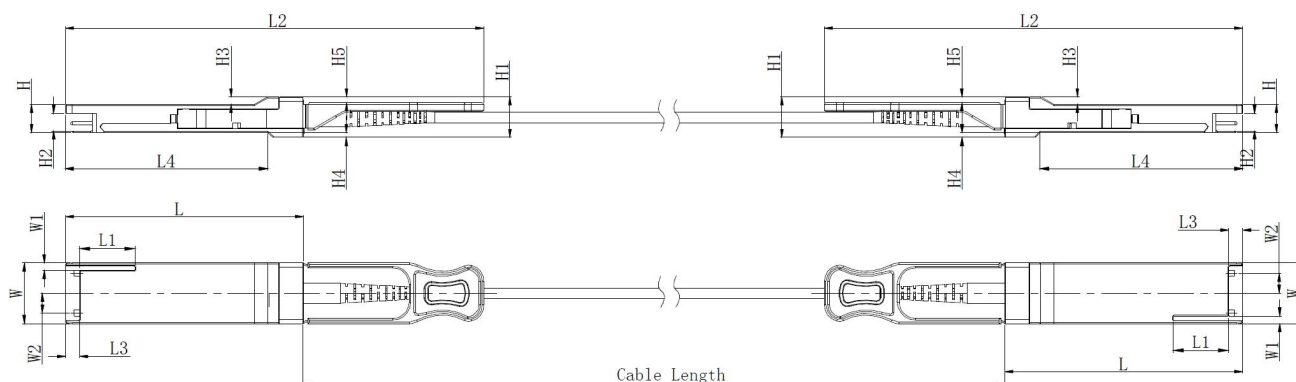
Electrical Input/Output



Pin	Symbol	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	+3.3V 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	Vcc Tx	+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

1. Circuit ground is internally isolated from chassis ground.

Mechanical



	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
Typical	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

Units = mm

Cable Specifications

Parameter		Value	Units
Diameter		3 ± 0.2	mm
Minimum bend radius		30	mm
Length tolerance	1m ≤ Length < 5m	+15 / -0	cm
	5m ≤ Length < 15m	+30 / -0	cm
	Length ≥ 15m	+2% / -0	m
Cable color		Aqua (OM3 MMF)	

ESD Warning

This device is susceptible to damage from electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety

This is a Class 1 Laser Product as defined by IEC 60825-1:2014. When operated within the limits of this specification is is considered non-hazardous. Operating this product in a manner inconsistent with specifications and intended usage may result in hazardous radiation exposure.



Ordering Information

Part No.	Data Rate	Wavelength	Cable Length	Case Temperature Range
HSQ3-200-1-MF5M	200Gbps	850	1m to 100m	0°C to 70°C

Notice

Hyper Photonix reserves the right to make change to products identified in this datasheet without notice. Applications described herein are for illustrative purposes only, and Hyper Photonix makes no warranty that identified products will be suitable for the described applications without further testing and/or modification.

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