800G OSFP112 Active Electrical Copper Cable

Features

- 8 independent full-duplex passive copper cable transceiver
- Support 112G (PAM4) electrical data rates/channel
- I2C for EEPROM communication
- Pull to Release latch design
- Excellent EMI/EMC performance 360 degree cable shield termination
- Advantage dual side pre-solder automated assembly technologies
- Low loss, stronger mechanical features, more flexible

Standards Compliance

- IEEE802.3ck compliant
- OSFP MSA 5.0 and CMIS 5.1 compliant

Applications

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers

General Description

In an effort to keep up with the demands of higher performance and increasing amounts of memory bus bandwidth, VITAL designers are working to revise, extend and update the solution. VITAL O112 To O112 active Electrical cable assembly can provide new generation performance of OSFP112 by higher date transfer rate.

At the same time,VITAL O112 To O112 AEC cable choose dual side drain cable and self-designed PCBA, provide low loss， less skew and better NEXT. 360 degree EMI crimping shielding and Zinc Die-cast shell designing make the product high-performance. And all the designing is based on the industry standard specifications, such as OSFP CMIS&MSA,VITAL high-quality solutions provide a powerefficient replacement for active power connectivity such as fiber optic cables for short distances. Optimizing systems to operate with VITAL Active Electrical Copper cables significantly reduces power consumption and EMI emission.

Part No.	Specifications				
	Package	Data rate	Conductor Size	Temp	Lengths
VE5Q-5QDP007	OSFP-Finned\800G to 800G	850Gbps	28AWG	0~70℃	7m

1 Absolute Maximum Ratings and Operation Conditions

Table 1.1 Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Supply Voltage	V_{CC}	V	-0.5	3.6
Storage Temperature	Tsto	℃	-40	85
RelativeHumidity (Non-condensing)	RH	%	5	85

Table 1.2 Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max	NOTE
Power Supply Voltage	V_{CC}	V	3.135	3.3	3.465	
Case Operating Temperature	T_C	℃	0		70	
Power Dissipation	P	W			10	800G, per end
Power Dissipation	P	W			6	400G, per end
Data Rate per Lane		GBd		53.125		
Bit Error Ratio, Pre-FEC				<1E-8		Tested with PRBS31Q
Bit Error Ratio, Post-FEC				<1E-15		Tested with PRBS31Q

2 Pin Descriptions

The OSFP module is based on a 60 pin electrical connector with pin out as specified in OSFP Hardware specification. The 60 electrical pins allow exchanging high speed data, control and alarm signals between module and host board. The pin-outs are summarized below：

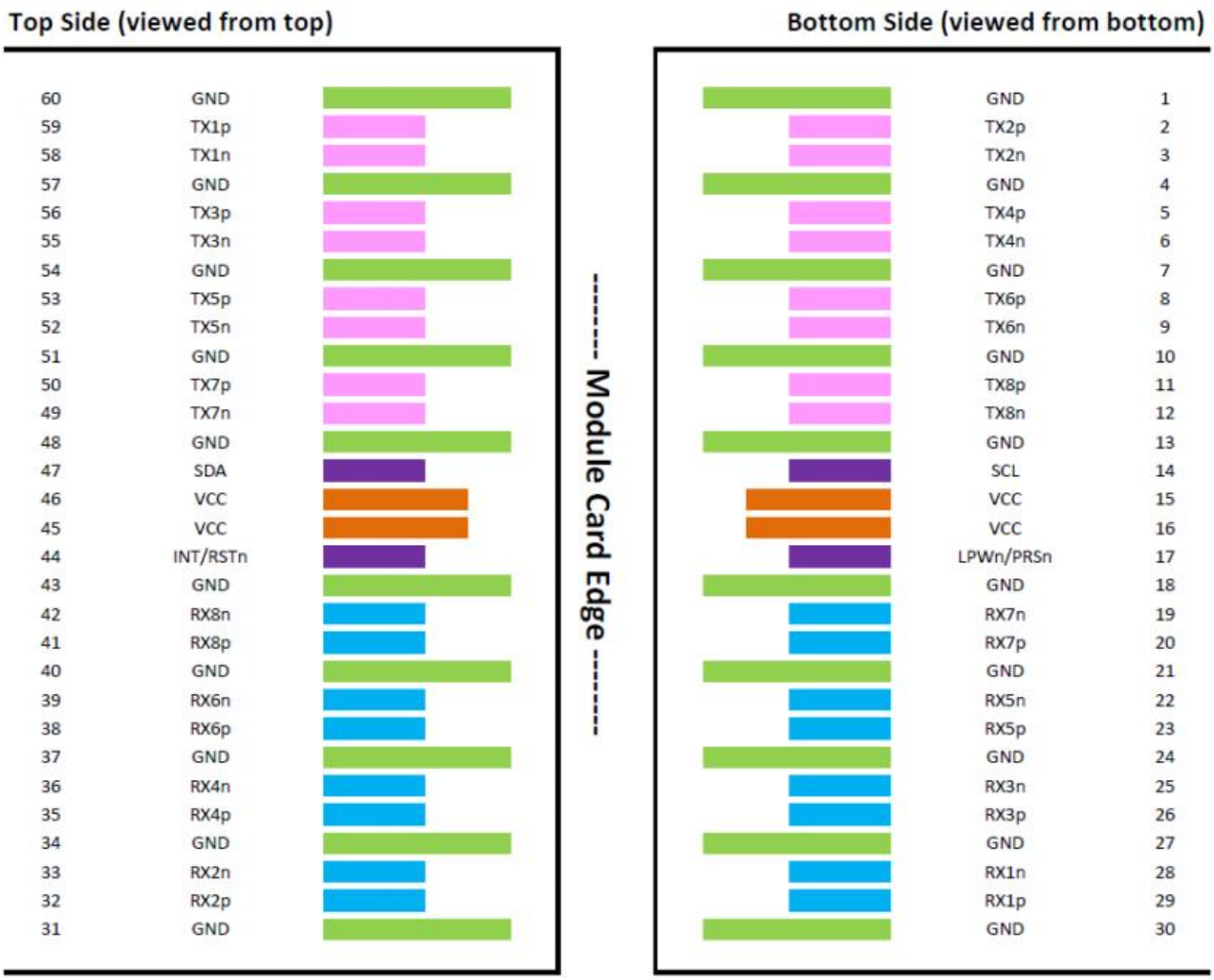

Figure 2.1 OSFP module pinout

Pad#	Symbol	Description	Logic	Direction	Plug Sequence	Notes
1	GND	Ground				
2	TX2p	Transmitter Data Non-Inverted	CML-I	Input from Host	3	
3	TX2n	Transmitter Data Inverted	CML-I	nput from Host	3	
4	GND	Ground			1	
5	TX4p	Transmitter Data Non-Inverted	CML-I	nput from Host	3	
6	TX4n	Transmitter Data Inverted	CML-I	Input from Host	3	
7	GND	Ground			1	
8	TX6p	Transmitter Data Non-Inverted	CML-I	nput from Host	3	
9	TX6n	Transmitter Data Irverted	CML-I	nput from Host	3	
10	GND	Grounc			1	
11	TX6p	Transmitter Data Non-Inverted	CML-I	Input from Host	3	
12	TX6n	Transmitter Data Inverted	CML-I	nput from Host	3	
13	GND	Ground				
14	SCL	2-wire serial interface clock	LVCMOS-VO	Bi-directional	3	Open-Drain with pull-up resistor on Host
15	VCC	+3.3V Power		Power from Host	2	
16	VCC	+3.3V Power		Power from Host	2	
17	LPWn/PRSn	Low-Power Mode/Module Present	Multi-Level	Bi-directional	3	See pin description for reguired circ uit
18	GND	Ground			1	

19	RX7n	Receiver Data Inverted	CML-O	Output to Host	3	
20	RX7p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
21	GND	Ground				
22	RX5n	Receiver Data Irverted	CML-O	Output to Host	3	
23	RX5p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
24	GND	Ground			1	
25	RX3n	Receiver Data Irverted	CML-O	Output to Host	3	
26	RX3p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
27	GND	Ground				
28	RX1n	Receiver Data Inverted	CML-O	Output to Host	3	
29	RX1p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
30	GND	Ground				
31	GND	Ground				
32	RX2p	Receiver Data Non-Irverted	CML-O	Output to Host	3	
33	RX2n	Receiver Data Inverted	CML-O	Output to Host	3	
34	GND	Ground			1	
35	RX4p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
36	RX4n	Receiver Data Irverted	CML-O	Output to Host	3	
37	GND	Ground			1	
38	RX6p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
39	RX6n	Receiver Data Irverted	CML-O	Output to Host	3	
40	GND	Ground				
41	RX8p	Receiver Data Non-Inverted	CML-O	Output to Host	3	
42	RX8n	Receiver Data Inverted	CML-O	Output to Host	3	
43	GND	Ground				

44	INT/RSTn	Module Interrupt/Module Reset	Multi-Level	Bi-directional	3	See pin description for required circuit
45	VCC	+3.3V Power		Power from Host	2	
46	VCC	+3.3V Power		Power from Host	2	
47	SDA	2-wire serial interface Data	LVCMOS-VO	Bi-directional	3	Open-Drain with pull-up resistor on Host
48	GND	Ground				
49	TX7n	Transmitter Data Inverted	CML-I	Input from Host	3	
50	TX7p	Transmitter Data Non-Inverted	CML-I	Input from Host	3	
51	GND	Ground				
52	TX5n	Transmitter Data Inverted	CML-I	Input from Host	3	
53	TX5p	Transmitter Data Non-Inverted	CML-I	Input from Host	3	
54	GND	Ground				
55	TX3n	Transmitter Data Inverted	CML-I	Input from Host	3	
56	TX3p	Transmitter Data Non-Inverted	CML-I	Input from Host	3	
57	GND	Ground				
58	TX1n	Transmitter Data Inverted	CML-I	Input from Host	3	
59	TX1p	Transmitter Data Non-Inverted	CML-1	Input from Host	3	
60	GND	Ground				

3 Environment Regulation Compliance and product Safety

Category	Standard
Radiated Emissions	EN 55032 Class B CISPR 32 Class B FCC rules 47 CFR Part15

Radiated Immunity	EN 55035 CISPR 35 IEC/EN 61000-4-3
RoHS	EU RoHS 2.0 (2011/65/EU) REACH (EC 1907/2006) China RoHS SJ/T 11363
Laser Safety	IEC 60825-1:2014+A11:2021 FDA/CDRH Class 1 Laser Product, 21 CFR 1040.10 & 1040.11
ESD	IEC 61000-4-2； ANSI/ESDA/JEDEC JS-001； MIL-STD-883C Contact ±8kV, Air ±15kV
Flammability (PCB)	UL Class 94 V-0
Reliability	GR-468-CORE、IEC 61300-2

4 Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by VITAL before they become applicable to any particular order or contract. In accordance with the VITAL policy of continuous improvement specifications may change without notice.

The publication of information in this data sheet does not imply freedom from patent or other protective rights of VITAL or others. Further details are available from any VITAL sales representative.

5 Revision History

Revision	Date	Description
V1.0	2026.5.21	Advance Release.