

Rev	Date	Modified by	Description
A0	2023		

Product Specifications

200/400G QSFP DD Electrical Passive Loopback

PN: EQD40X-LB

Features

- DC Test interval: 100%
- Testing Voltage: 25VDC
- Time: 500μsec
- Lower threshold: 100Ω Upper threshold: 20kΩ
- ROHS-6: Environment Safety
- Operating Case Temperature: 0°C~70°C
- Acc. to QSFP-DD MSA
- Signal Integrity requirements for single Loopback
- acc. to IEEE 802.3 bj and IEEE 802.3 cd

Applications

- Ethernet for 2x100GBASE
- HPC Interconnects
- Proprietary Interconnections

Description

ETU QSFP-DD Loopback module is an 8-channel parallel passive loopback used for storage, data center QSFP-DD port testing. Monitor power supply and operation temperature; over temperature and power supply warning. It offers 8 independent data transmission channels via its internal module, an aggregate data rate of 200Gbps transmission can be achieved by this product. The cage and connector design provide backwards compatibility to QSFP28 modules, which can be inserted into a QSFP-DD port and connected to 4 of the 8 electrical channels. Data is transmitted from the host into TX of this product and then output from RX of this product back to the host.

Recommended Operation Condition

Parameter	Symbol	Notes/Conditions	Min	Type	Max	Units
Operating Temperature	TA	Note 1	0		70	°C
+3.3V Supply Voltage	VCC	Main Supply Voltage	3.15	3.3	3.45	V
Data Rate		Guaranteed to work at 28Gbps per lane	10		224	Gbps
Input/ Output Load Resistance	RL		90	100	110	Ω
Power Level 0		0 A			0	W
1		0.45A			1.5	
2		1.06 A			3.5	
3		1.51 A			5	

*Note 1. Ambient temperature with a minimum of 100 linear feet per minute of air flow



Host board Connector Pinout

Figure 1: MSA compliant Connector

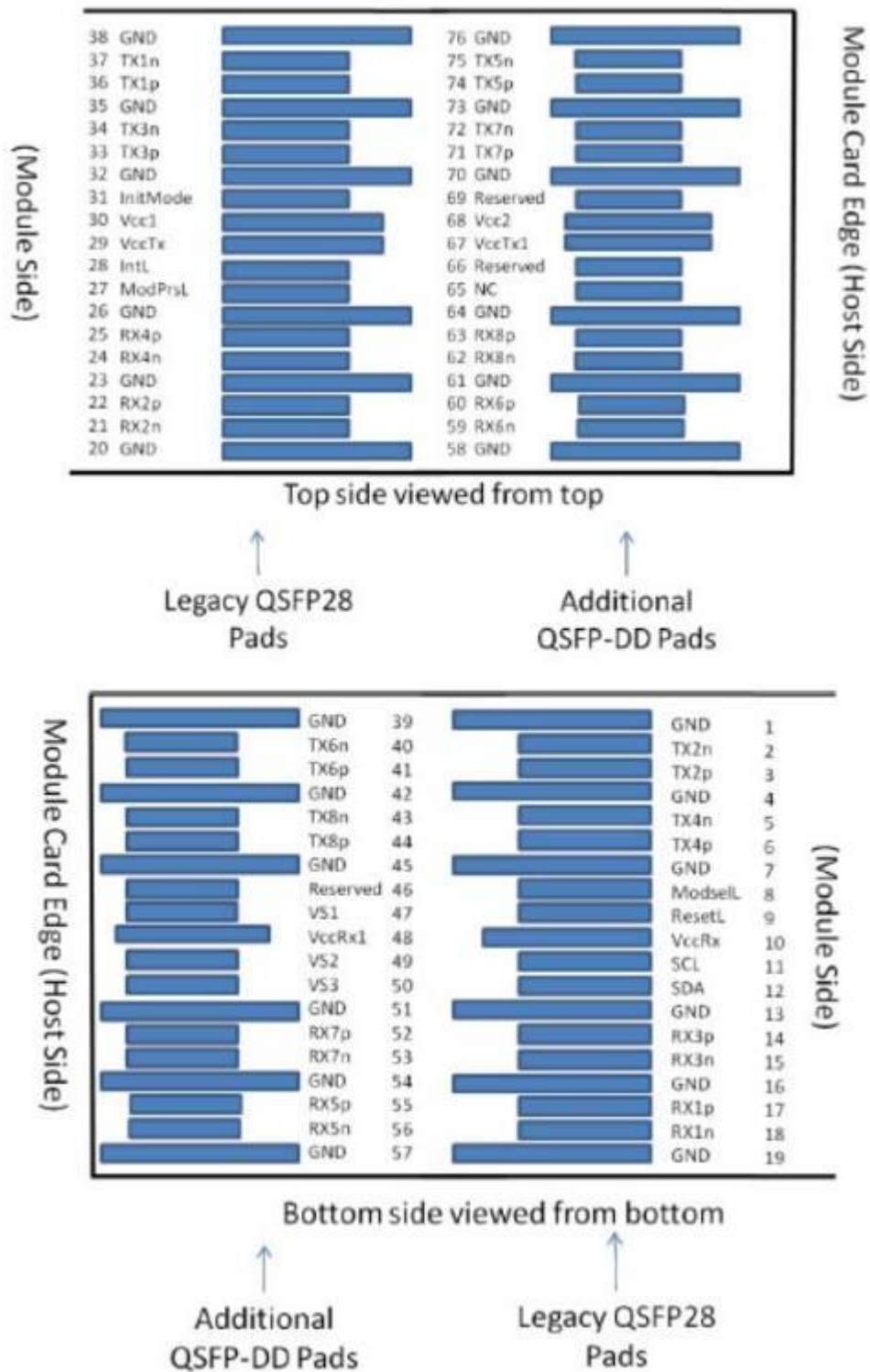


Table 1: Pin Definitions, compliant SFF-8679

PIN	Symbol	Description	Ref.
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	②
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	Mod PrsL	Module Present	
28	IntL	Interrupt	
29	Vcc TX	+3.3V Power supply transmitter	②
30	Vcc1	+3.3V Power supply	②
31	LPMMode	Initialization mode; In legacy QSFP applications, the	
32	GND	InitMoei	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

39	GND	Ground	①
40	Tx6n	Transmitter Inverted Data Input	
41	Tx6p	Transmitter Non-Inverted Data Input	
42	GND	Ground	①
43	Tx8n	Transmitter Inverted Data Input	
44	Tx8p	Transmitter Non-Inverted Data Input	
45	GND	Ground	①
46	Reserved	For future use	③
47	VS1	Module Vendor Specific 1	③
48	3.3V Power Supply	2A	②
49	VS2	Module Vendor Specific 2	③
50	VS3	Module Vendor Specific 3	③
51	GND	Ground	①
52	Rx7p	Receiver Non-Inverted Data Output	
53	Rx7n	Receiver Inverted Data Output	
54	GND	Ground	①
55	Rx5p	Receiver Non-Inverted Data Output	
56	Rx5n	Receiver Inverted Data Output	
57	GND	Ground	①
58	GND	Ground	①
59	Rx6n	Receiver Inverted Data Output	
60	Rx6p	Receiver Non-Inverted Data Output	
61	GND	Ground	①
62	Rx8n	Receiver Inverted Data Output	
63	Rx8p	Receiver Non-Inverted Data Output	
64	GND	Ground	①
65	NC	No Connect	③
66	Reserved	For future use	③
67	VccTx1	3.3V Power Supply	②
68	Vcc2	3.3V Power Supply	②
69	Reserved	For Future Use	③
70	GND	Ground	①
71	Tx7p	Transmitter Non-Inverted Data Input	
72	Tx7n	Transmitter Inverted Data Input	
73	GND	Ground	①
74	Tx5p	Transmitter Non-Inverted Data Input	
75	Tx5n	Transmitter Inverted Data Input	
76	GND	Ground	①

① QSFP-DD uses common ground (GND) for all signals and supply (power). All are common within the QSFP-DD module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

- ② VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 shall be applied concurrently. Requirements defined for the host side of the Host Card Edge Connector are listed in Table 4. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 may be internally connected within the module in any combination. The connector Vcc pins are each rated for a maximum current of 1000 mA.
- ③ All Vendor Specific, Reserved and No Connect pins may be terminated with 50ohms to grounds on the host. Pad 65 (No connect) shall be left unconnected within the module. Vendor specific and Reserved pads shall have an impedance to GND that is greater than 10k ohms and less than 100 pF.
- ④ Plug Sequence specifies the mating sequence of the host connector and module. The sequence is 1A, 2A, 3A, 1B, 2B, 3B. Contact sequence A will make, the break contact with additional QSFP- DD pads. Sequence 1A, 1B will then occur simultaneously, followed by 2A, 2B, followed by 3A,3B.

Memory Map

The memory map is structured as a single address and multiple page approaches, according to the QSFP DD MSA specification as shown in the below. For more detailed description of this memory map or lower pages, please see our Memory Map document with flexible customization settings.

Figure 2. Memory Map (Specific Data Field Descriptions)

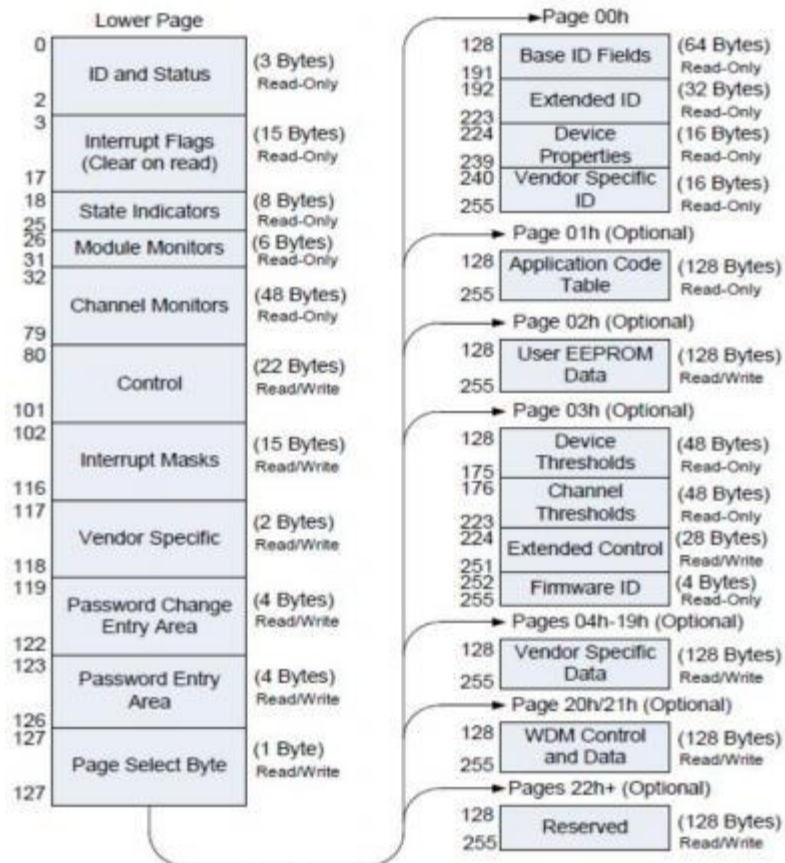


Figure 40: QSFP-DD Memory Map

Table 2 - EEPROM Serial ID Memory Contents (Page00)

ETU CAB-QDD-LBx Upper Page00

Part Number		CAB-QDD-LBx		
Device 0xPage00				
<u>DATA</u> Address <u>(DEC)</u>	<u>DATA</u> Address <u>(HEX)</u>	<u>Name of Field</u>	<u>Value</u> <u>(HEX)</u>	<u>Description</u>
128	80	Identifier	0X18	QSFP-DD Double Density 8X Pluggable Transceiver (INF-8628)
129	81	Vendor name	0X31	ETU
130	82		0X30	
131	83		0X47	
132	84		0X74	
133	85		0X65	
134	86		0X6B	
135	87		0X20	
136	88		0X20	
137	89		0X20	
138	8A		0X20	
139	8B		0X20	
140	8C		0X20	
141	8D		0X20	
142	8E		0X20	
143	8F		0X20	
144	90	0X20		
145	91	Vendor OUI	0X00	Unspecified
146	92		0X00	
147	93		0X00	
148	94		0X43	
149	95		0X41	
150	96		0X42	
151	97		0X2D	
152	98		0X51	

153	99	Vendor PN	0X44	
154	9A		0X44	
155	9B		0X2D	
156	9C		0X4C	
157	9D		0X42	
158	9E		0X78	
159	9F		0X20	
160	A0		0X20	
161	A1		0X20	
162	A2		0X20	
163	A3		0X20	
164	A4	Vendor rev	0X30	01
165	A5		0X31	
166	A6	Vendor SN	0X51	Vendor SN
167	A7		0X44	
168	A8		0X44	
169	A9		0X32	
170	AA		0X31	
171	AB		0X30	
172	AC		0X38	
173	AD		0X30	
174	AE		0X39	
175	AF		0X30	
176	B0		0X30	
177	B1		0X30	
178	B2		0X30	
179	B3		0X31	
180	B4	0X20		
181	B5	0X20		
182	B6		0X32	
183	B7		0X31	
184	B8		0X30	
185	B9		0X38	

186	BA	Date Code	0X30	Date
187	BB		0X39	
188	BC		0X20	
189	BD		0X20	
190	BE	CLEI CODE (options)	0X20	Unspecified
191	BF		0XD4	
192	C0		0X00	
193	C1		0X00	
194	C2		0X00	
195	C3		0X00	
196	C4		0X00	
197	C5		0X00	
198	C6		0X00	
199	C7		0X00	
200	C8	MODULE POWER	0X00	MODULE POWER
201	C9	CHARACTERISTICS	0X06	MODULE POWER
202	CA	Cable assembly length (Multiplier for value in bits 5-0.)	0X05	Cable assembly length
203	CB	Media connector	0X23	No separable connector
204	CC	Copper Cable attenuation	0X00	Unspecified
205	CD		0X00	Unspecified
206	CE		0X00	Unspecified
207	CF		0X00	Unspecified
208	D0		0X00	reserved
209	D1		0X00	reserved
210	D2		Cable Assembly Lane	0X00
211	D3	Information	0X02	
212	D4	Media Interface Technology	0X0A	Copper cable Unequalized
213	D5		0X00	
214	D6		0X00	
215	D7		0X00	
216	D8		0X00	

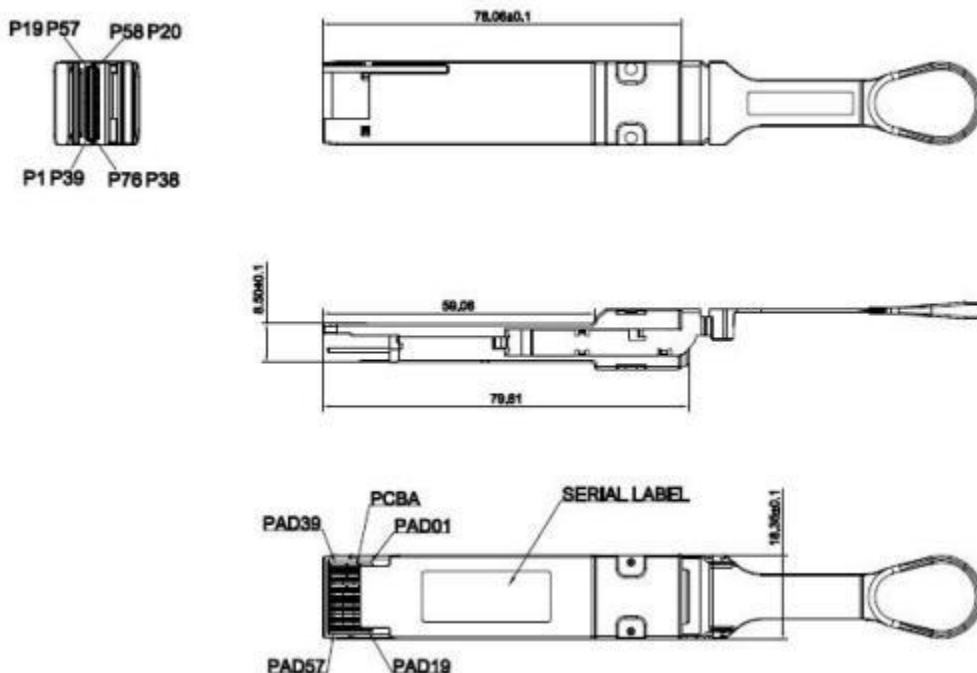
217	D9	Reserved	0X00	Reserved
218	DA		0X00	
219	DB		0X00	
220	DC		0X00	
221	DD	Custom	0X00	
222	DE	Checksum (128-221)		Checksum
223	DF	Custom Info nv	0X00	Custom Info nv
224	E0		0X00	
225	E1		0X00	
226	E2		0X00	
227	E3		0X00	
228	E4		0X00	
229	E5		0X00	
230	E6		0X00	
231	E7		0X00	
232	E8		0X00	
233	E9			
234	EA	0X00		
235	EB	0X00		
236	EC	0X00		
237	ED	0X00		
238	EE	0X00		
239	EF	0X00		
240	F0	0X00		
241	F1	0X00		
242	F2	0X00		
243	F3	0X00		
244	F4	0X00		
245	F5	0X00		
246	F6	0X00		
247	F7	0X00		
248	F8	0X00		
249	F9	0X00		

250	FA	0X00
251	FB	0X00
252	FC	0X00
253	FD	0X00
254	FE	0X00
255	FF	0X00

The force specification for QSFP-DD is in the list below:

Parameter	Min.	Max.	Unit.	Comments.
QSFP-DD Module Insertion		90	Newton	
QSFP-DD Module Extraction		50	Newton	
QSFP-DD Module Retention	90		Newton	
Insertion and removal cycles	50		Cycle	

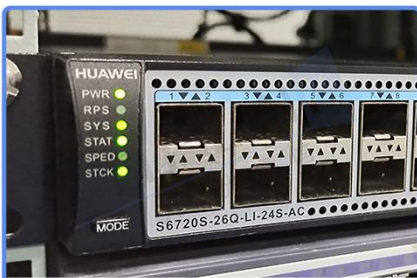
Mechanical Specifications



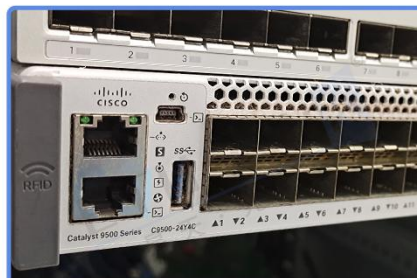
Compatibility Test

In order to ensure the product compatibility, our products will be tested on the switch before shipment. Our modules can compatible with many mainstream brand switches, such as Cisco, Juniper, Extreme, Brocade, IBM, H3C, HP, Huawei, D-Link, Mikrotik, ZTE, TP-Link...

Our test equipment: VOLKTEK MEN-4110, HP 2530-8G, CRS226-24G-25+RM, Catalyst 2960G Series, Catalyst 3850 XS 10G SFP+, Catalyst 3750-E Series, HUAWEI S5700Series, H3C S3100V2 Series, Juniper-EX4200, etc.



HUAWEI S6720S



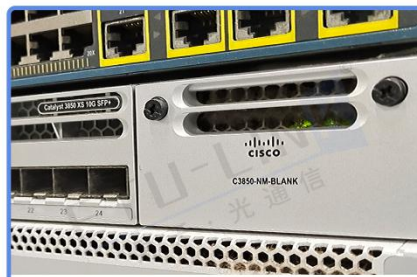
CISCO Catalyst 9500



DELL S5048F



H3C S3100V2



CISCO C3850



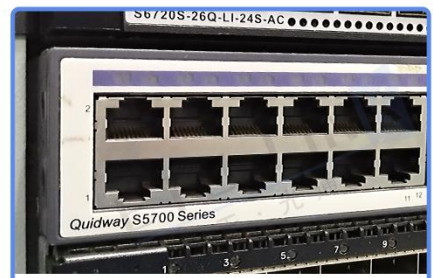
Aruba 2930F



Juniper EX 4200



HP J9264A

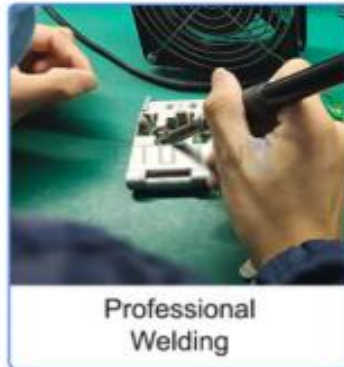


Quidway S5700

Product Production Process

Quality Assurance

Continuous introduction of new equipment,
produced by strict standards, strict quality inspection,
to guarantee the high quality, standard of each product.



Packaging

ETU-Link provides two kinds of packaging, 10pcs/Tray and individual package.



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