

## QSFPDD4-400G-PDAC2M-C

MSA and TAA Compliant 400GBase-CU QSFP-DD to QSFP-DD Direct Attach Cable (Passive Twinax, 2m, CMIS 4.0)

### Features:

- Compliant to QSFP-DD MSA Standards
- Compliant to IEEE802.3bs
- Operating Temperature: 0 to 70 Celsius
- Hot-Pluggable
- Built-In EEPROM Functions
- RoHS Compliant and Lead-Free



### Applications:

- 400GBase Ethernet

### Product Description

This is an industry standard 400GBase-CU QSFP-DD to QSFP-DD direct attach cable with CMIS 4.0 that operates over passive copper with a maximum reach of 2.0m (6.6ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	Vcc	-0.3	3.3	3.6	V	
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Humidity	RH	5		85	%	
Data Rate			400		Gbps	
Wire Gauge			30		AWG	

## Pin Descriptions

Pin	Logic	Symbol	Name/Description	Plug Sequence
1		GND	Module Ground.	1B
2	CML-I	Tx2-	Transmitter Inverted Data Input.	3B
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	3B
4		GND	Module Ground.	1B
5	CML-I	Tx4-	Transmitter Inverted Data Input.	3B
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	3B
7		GND	Module Ground.	1B
8	LVTTI-I	ModSelL	Module Select.	3B
9	LVTTI-I	ResetL	Module Reset.	3B
10		VccRx	+3.3V Receiver Power Supply.	2B
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock.	3B
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	3B
13		GND	Module Ground.	1B
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	3B
15	CML-O	Rx3-	Receiver Inverted Data Output.	3B
16		GND	Module Ground.	1B
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	3B
18	CML-O	Rx1-	Receiver Inverted Data Output.	3B
19		GND	Module Ground.	1B
20		GND	Module Ground.	1B
21	CML-O	Rx2-	Receiver Inverted Data Output.	3B
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	3B
23		GND	Module Ground.	1B
24	CML-O	Rx4-	Receiver Inverted Data Output.	3B
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	3B
26		GND	Module Ground.	1B
27	LVTTI-O	ModPrsL	Module Present.	3B
28	LVTTI-O	IntL	Interrupt.	3B
29		VccTx	+3.3V Transmitter Power Supply.	2B

<b>30</b>		Vcc1	+3.3V Power Supply.	2B
<b>31</b>	LVTTL-I	InitMode	Initialization Mode. In legacy QSFP applications, the InitMode pad is called LPMode.	3B
<b>32</b>		GND	Module Ground.	1B
<b>33</b>	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	3B
<b>34</b>	CML-I	Tx3-	Transmitter Inverted Data Input.	3B
<b>35</b>		GND	Module Ground.	1B
<b>36</b>	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	3B
<b>37</b>	CML-I	Tx1-	Transmitter Inverted Data Input.	3B
<b>38</b>		GND	Module Ground.	1B
<b>39</b>		GND	Module Ground.	1A
<b>40</b>	CML-I	Tx6-	Transmitter Inverted Data Input.	3A
<b>41</b>	CML-I	Tx6+	Transmitter Non-Inverted Data Input.	3A
<b>42</b>		GND	Module Ground.	1A
<b>43</b>	CML-I	Tx8-	Transmitter Inverted Data Input.	3A
<b>44</b>	CML-I	Tx8+	Transmitter Non-Inverted Data Input.	3A
<b>45</b>		GND	Module Ground.	1A
<b>46</b>		OPEN		3A
<b>47</b>		OPEN		3A
<b>48</b>		OPEN		2A
<b>49</b>		OPEN		3A
<b>50</b>		OPEN		3A
<b>51</b>		GND		1A
<b>52</b>	CML-O	Rx7+	Receiver Non-Inverted Data Output.	3A
<b>53</b>	CML-O	Rx7-	Receiver Inverted Data Output.	3A
<b>54</b>		GND	Module Ground.	1A
<b>55</b>	CML-O	Rx5+	Receiver Non-Inverted Data Output.	3A
<b>56</b>	CML-O	Rx5-	Receiver Inverted Data Output.	3A
<b>57</b>		GND	Module Ground.	1A
<b>58</b>		GND	Module Ground.	1A
<b>59</b>	CML-O	Rx6-	Receiver Inverted Data Output.	3A
<b>60</b>	CML-O	Rx6+	Receiver Non-Inverted Data Output.	3A
<b>61</b>		GND	Module Ground.	1A
<b>62</b>	CML-O	Rx8-	Receiver Inverted Data Output.	3A
<b>63</b>	CML-O	Rx8+	Receiver Non-Inverted Data Output.	3A
<b>64</b>		GND	Module Ground.	1A
<b>65</b>		OPEN	Not Connected.	3A
<b>66</b>		OPEN	For Future Use.	3A
<b>67</b>		OPEN	+3.3V Transmitter Power Supply.	2A
<b>68</b>		OPEN	+3.3V Power Supply.	2A
<b>69</b>		OPEN	For Future Use.	3A
<b>70</b>		GND	Module Ground.	1A
<b>71</b>	CML-I	Tx7+	Transmitter Non-Inverted Data Input.	3A
<b>72</b>	CML-I	Tx7-	Transmitter Inverted Data Input.	3A

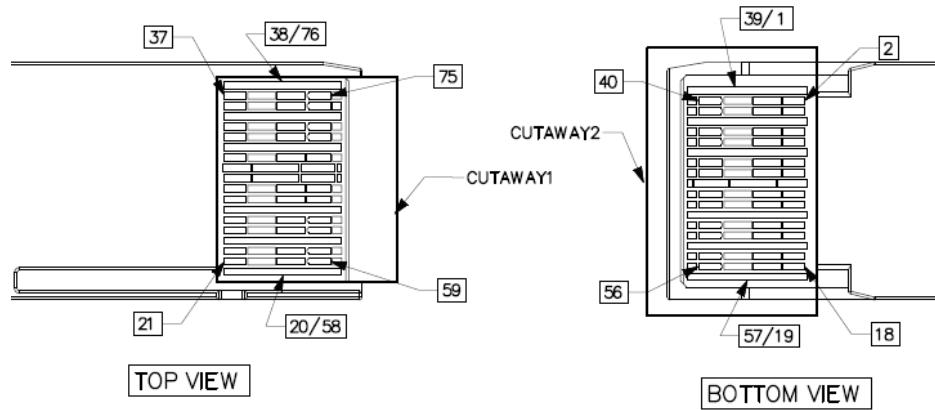
<b>73</b>		GND	Module Ground.	1A
<b>74</b>	CML-I	Tx5+	Transmitter Non-Inverted Data Input.	3A
<b>75</b>	CML-I	Tx5-	Transmitter Inverted Data Input.	3A
<b>76</b>		GND	Module Ground.	1A

## Wiring Diagram

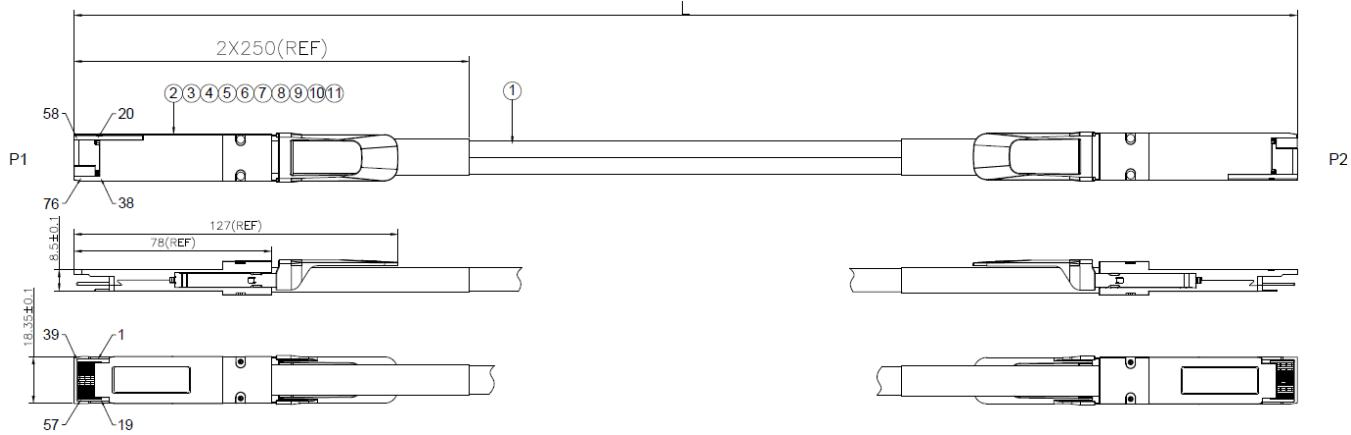
LOW SPEED SIGNALS P1 & P2	
PAD	SIGNAL
8	MODSELL
9	RESETL
10	VCCRX
11	SCL
12	SDA
27	MODPRSL
28	INTL
29	VCCTX
30	VCC1
31	INIT_MODE
46	OPEN
47	OPEN
48	OPEN
49	OPEN
50	OPEN
65	OPEN
66	OPEN
67	OPEN
68	OPEN
69	OPEN

WIRING DIAGRAM			
P1 END		P2 END	
Pad	Signal	Pad	Signal
1	GND	20	GND
2	TX2n	21	RX2n
3	TX2p	22	RX2p
4	GND	23	GND
5	TX4n	24	RX4n
6	TX4p	25	RX4p
7	GND	26	GND
13	GND	32	GND
14	RX3p	33	TX3p
15	RX3n	34	TX3n
16	GND	35	GND
17	RX1p	36	TX1p
18	RX1n	37	TX1n
19	GND	38	GND
20	GND	1	GND
21	RX2n	2	TX2n
22	RX2p	3	TX2p
23	GND	4	GND
24	TX4n	5	RX4n
25	TX4p	6	RX4p
26	GND	7	GND
32	GND	13	GND
33	TX3p	14	RX3p
34	TX3n	15	RX3n
35	GND	16	GND
36	TX1p	17	RX1p
37	TX1n	18	RX1n
38	GND	19	GND

WIRING DIAGRAM			
P1 END		P2 END	
Pad	Signal	Pad	Signal
39	GND	58	GND
40	TX6n	59	RX6n
41	TX6p	60	RX6p
42	GND	61	GND
43	TX8n	62	RX8n
44	TX8p	63	RX8p
45	GND	64	GND
51	GND	70	GND
52	RX7p	71	TX7p
53	RX7n	72	TX7n
54	GND	73	GND
55	RX5p	74	TX5p
56	RX5n	75	TX5n
57	GND	76	GND
58	GND	39	GND
59	RX6n	40	TX6n
60	RX6p	41	TX6p
61	GND	42	GND
62	RX8n	43	TX8n
63	RX8p	44	TX8p
64	GND	45	GND
70	GND	51	GND
71	TX7p	52	RX7p
72	TX7n	53	RX7n
73	GND	54	GND
74	TX5p	55	RX5p
75	TX5n	56	RX5n
76	GND	57	GND



## Mechanical Specifications



Item	Name	Description	Quantity
1	Raw Cable	8 Pairs, PVC Jacket, Black	A/R
2	PCBA	PCB, 76P, Au 30u" Minimum	2
3	Top Shell	Zinc Alloy, Plated Nickel Over Copper	2
4	Bottom Shell	Zinc Alloy, Plated Nickel Over Copper	2
5	Pull Tab	Pull Tab, TPV, Black	2
6	Rivet	Aluminum Alloy	4
7	Spring	Stainless Steel	4
8	Blackshell Label	Blackshell Label	2
9	Inner Mold	Hot-Melt Glue	A/R
10	Copper Tape	T=0.15MM	A/R
11	Heat Shrinkable Tube	Black Tube	A/R

### Notes:

1. Raw cable impedance:  $100^{+10}_{-5}\Omega$ . Mated connector impedance:  $100^{+10}_{-15}\Omega$ . Rise time: 25ps (20-80%).
2. 100% conductor test. Test condition: voltage 5V. Insulation resistance: 10mΩ. Conduction resistance maximum: 3Ω.
3. High-frequency test according to IEEE802.3cd standard.
4. All materials are RoHS compliant.

## About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

## Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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