DSFP-Q56-100GB-PDAC3M-C

MSA and TAA 100GBase-CU DSFP to QSFP56 Direct Attach Cable (Passive Twinax, 3m) 27AWG

Features:

- DSFP Module Compliant to DSFP MSA
- QSFP Module Compliant to SFF-8661
- Enables 100Gbps (up to 53.125Gbps Per Channel) Transmission
- Built-In EEPROM Functions
- Operating Case Temperature: 0C to 70C
- RoHS Compliant and Lead-Free

Applications:

- 100GBase Ethernet

Product Description

This is a MSA Compliant 100GBase-CU DSFP to QSFP56 direct attach cable that operates over passive copper with a maximum reach of 3m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. We stand behind the quality of our products and proudly offer a limited lifetime warranty. This cable is TAA (Trade Agreements Act) compliant and is built to comply with MSA (Multi-Source Agreement) standards.

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."

TAA COMPLIANT

Rev. 060425

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Humidity	RH	5		85	%
Data Rate			100		Gbps

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Resistance	Rcon			3	Ω	
Insulation Resistance	Rins			10	MΩ	
Raw Cable Impedance	Zca	95	100	110	Ω	
Mated Connector Impedance	Zmated	85	100	115	Ω	
Insertion Loss @13.28GHz	SDD21	8		17.16	dB	
Return Loss	SDD11/22	$\text{Return\_loss}(f) \geq \begin{cases} 16.5 - 2\sqrt{f} & 0.05 \leq f < 4.1 \\ 10.66 - 14\log_{10}(f/5.5) & 4.1 \leq f \leq 19 \end{cases}$			dB	1
Differential to Common-Mode Return Loss	SCD11/22	$\text{Return\_loss}(f) \geq \begin{cases} 22 - (20/25.78)f & 0.01 \leq f < 12.89 \\ 15 - (6/25.78)f & 12.89 \leq f \leq 19 \end{cases}$			dB	1
Differential to Common-Mode Conversion Loss	SCD21-SDD21	$\text{Conversion\_loss}(f) - IL(f) \geq \begin{cases} 10 & 0.01 \leq f < 12.89 \\ 27 - (29/22)f & 12.89 \leq f < 15.7 \\ 6.3 & 15.7 \leq f \leq 19 \end{cases}$			dB	1
Minimum COM	COM	3			dB	

Notes:
1. For $0.05 \leq f \leq 19$ GHz. Where f is the frequency in GHz.

Physical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Length	L		3		M
Wire Gauge			27		AWG
Jacket Material			PVC, Black		

DSFP Pin Descriptions

Pin	Logic	Symbol	Name/Description	Power Sequence Order	Notes
Case		Case	Module Case.		2
1	CML-I	TD2-	Transmitter Inverted Data Input. Lane 2.	3	
2	CML-I	TD2+	Transmitter Non-Inverted Data Input. Lane 2.	3	
3		GND	Module Ground.	1	5
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data.	3	3
5	LVTTL-I/O	SCL	2-Wire Serial Interface Clock.	3	3
6	Multi-Level-I/O	LPWn/PRSn	Low-Power Mode/Module Present. MOD_ABS.	3	
7		GND	Module Ground.	1	5
8	CML-O	RD2+	Receiver Non-Inverted Data Output. Lane 2.	3	
9	CML-O	RD2-	Receiver Inverted Data Output. Lane 2.	3	
10		GND	Module Ground.	1	5
11		GND	Module Ground.	1	5
12	CML-O	RD1-	Receiver Inverted Data Output. Lane 1.	3	4
13	CML-O	RD1+	Receiver Non-Inverted Data Output. Lane 1.	3	4
14		GND	Module Ground.	1	5
15		Vcc	Module 3.3V Supply.	2	
16		Vcc	Module 3.3V Supply.	2	
17		GND	Module Ground.	1	5
18	CML-I	TD1+	Transmitter Non-Inverted Data Input. Lane 1.	3	4
19	CML-I	TD1-	Transmitter Inverted Data Input. Lane 1.	3	4
20		GND	Module Ground.	1	5
21	Multi-Level-I/O	INT/RSTn	Dual-Function Module Interrupt and Reset.	3	
22		GND	Module Ground.	1	5

Notes:
1. Labeling as inputs (I) and outputs (O) are from the perspective of the module.
2. The case makes electrical contact to the cage before any of the board edge contacts are made.
3. See the 2-wire specifications.
4. Backwards compatible with SFF-8431 SFI interface.
5. The module ground contacts (GND) are recommended to be isolated from the module case by offering flexibility in the host EMI control strategy.

Electrical Pin-Out Details - DSFP
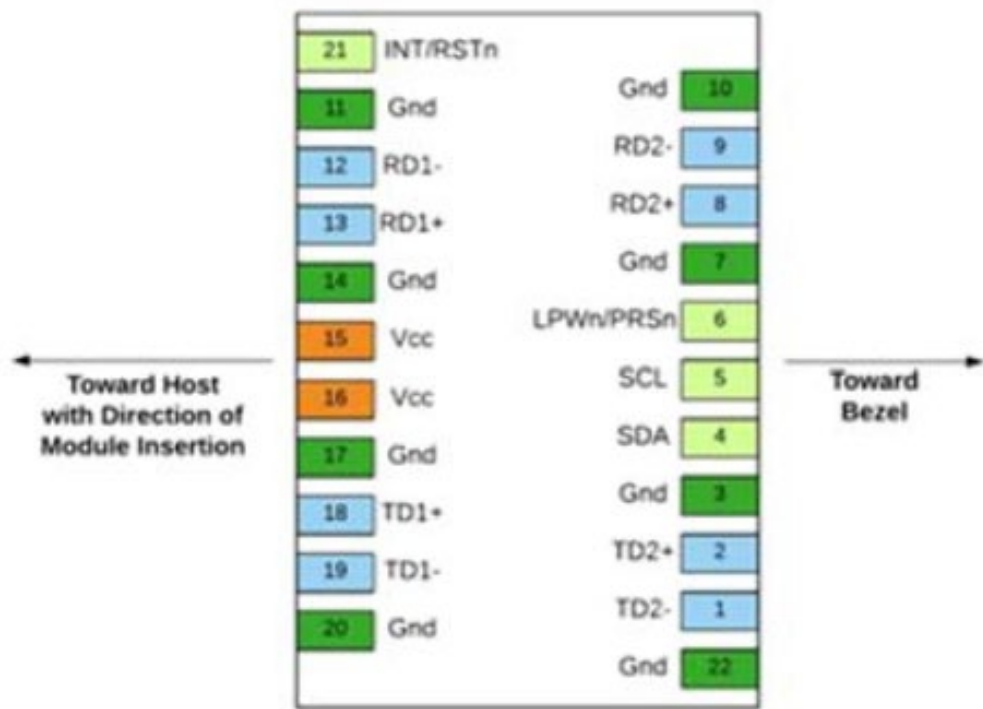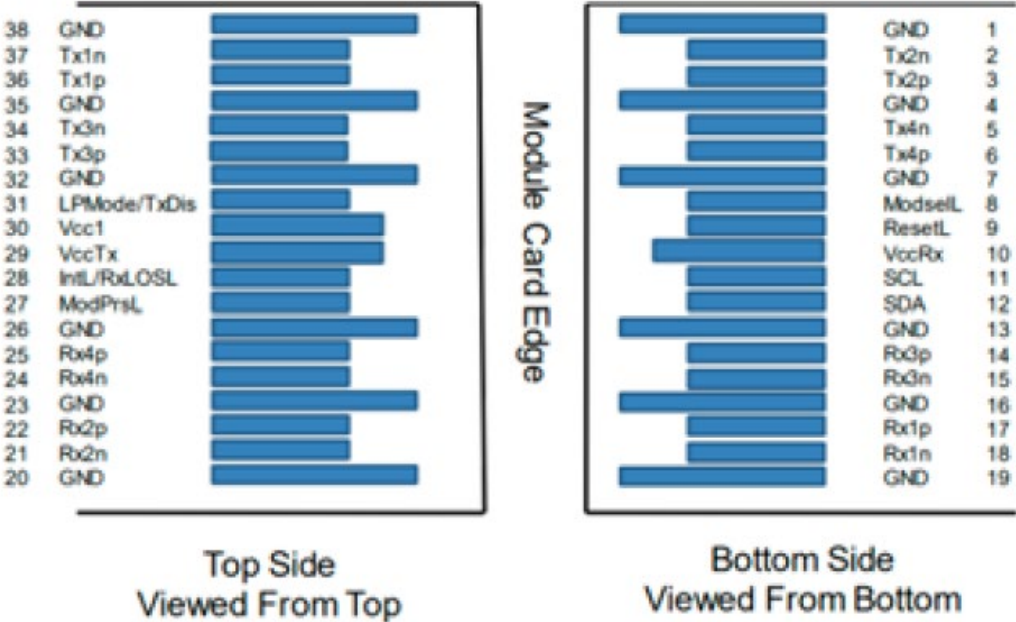

QSFP Pin Descriptions

Pin	Logic	Symbol	Name/Description	Plug Sequence	Notes
1		GND	Module Ground.	1	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	3	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	3	
4		GND	Module Ground.	1	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	3	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	3	
7		GND	Module Ground.	1	1
8	LVTTL-I	ModSelL	Module Select.	3	
9	LVTTL-I	ResetL	Module Reset.	3	
10		VccRx	+3.3V Receiver Power Supply.	2	2
11	LVCMOS–I/O	SCL	2-Wire Serial Interface Clock.	3	
12	LVCMOS–I/O	SDA	2-Wire Serial Interface Data.	3	
13		GND	Module Ground.	1	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	3	
15	CML-O	Rx3-	Receiver Inverted Data Output.	3	
16		GND	Module Ground.	1	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	3	

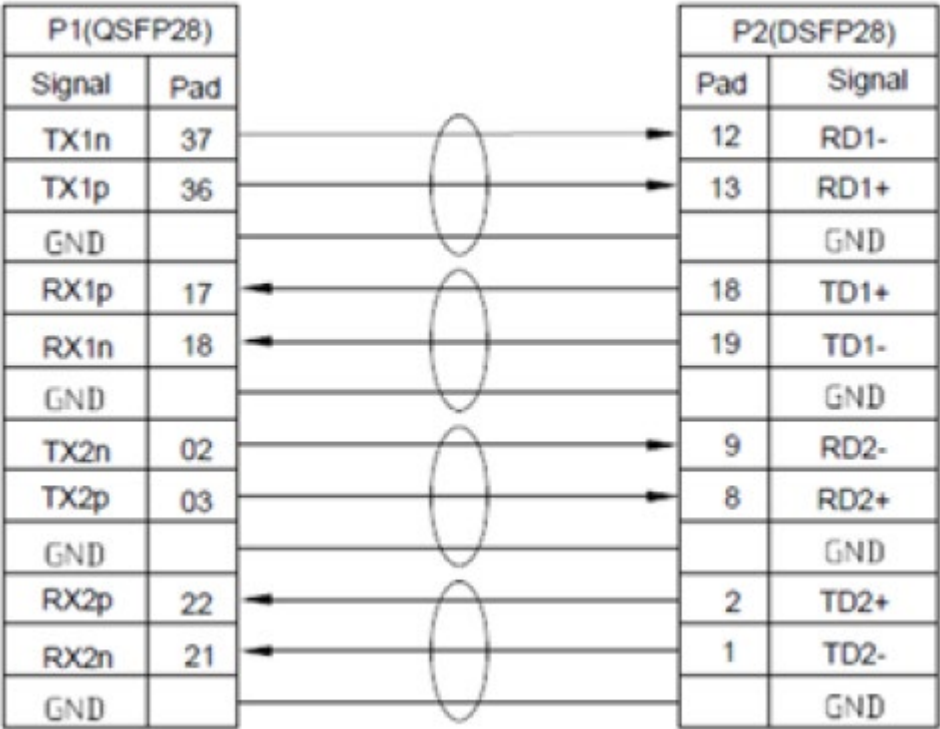| 18	CML-O	Rx1-	Receiver Inverted Data Output.	3	
19		GND	Module Ground.	1	1
20		GND	Module Ground.	1	1
21	CML-O	Rx2-	Receiver Inverted Data Output.	3	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	3	
23		GND	Module Ground.	1	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	3	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	3	
26		GND	Module Ground.	1	1
27	LVTTL- O	ModPrsL	Module Present.	3	
28	LVTTL- O	IntL	Interrupt.	3	
29		VccTx	+3.3V Transmitter Power Supply.	2	2
30		Vcc1	+3.3V Power Supply.	2	2
31	LVTTL-I	LPMode	Low-Power Mode.	3	
32		GND	Module Ground.	1	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	3	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	3	
35		GND	Module Ground.	1	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	3	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	3	
38		GND	Module Ground.	1	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ 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, Vcc1, and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Requirements defined for the host side of the Host Edge Connector are listed in this datasheet. Recommended host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the QSFP+ module in any combination. The connector pins are each rated for a maximum current of 500mA.
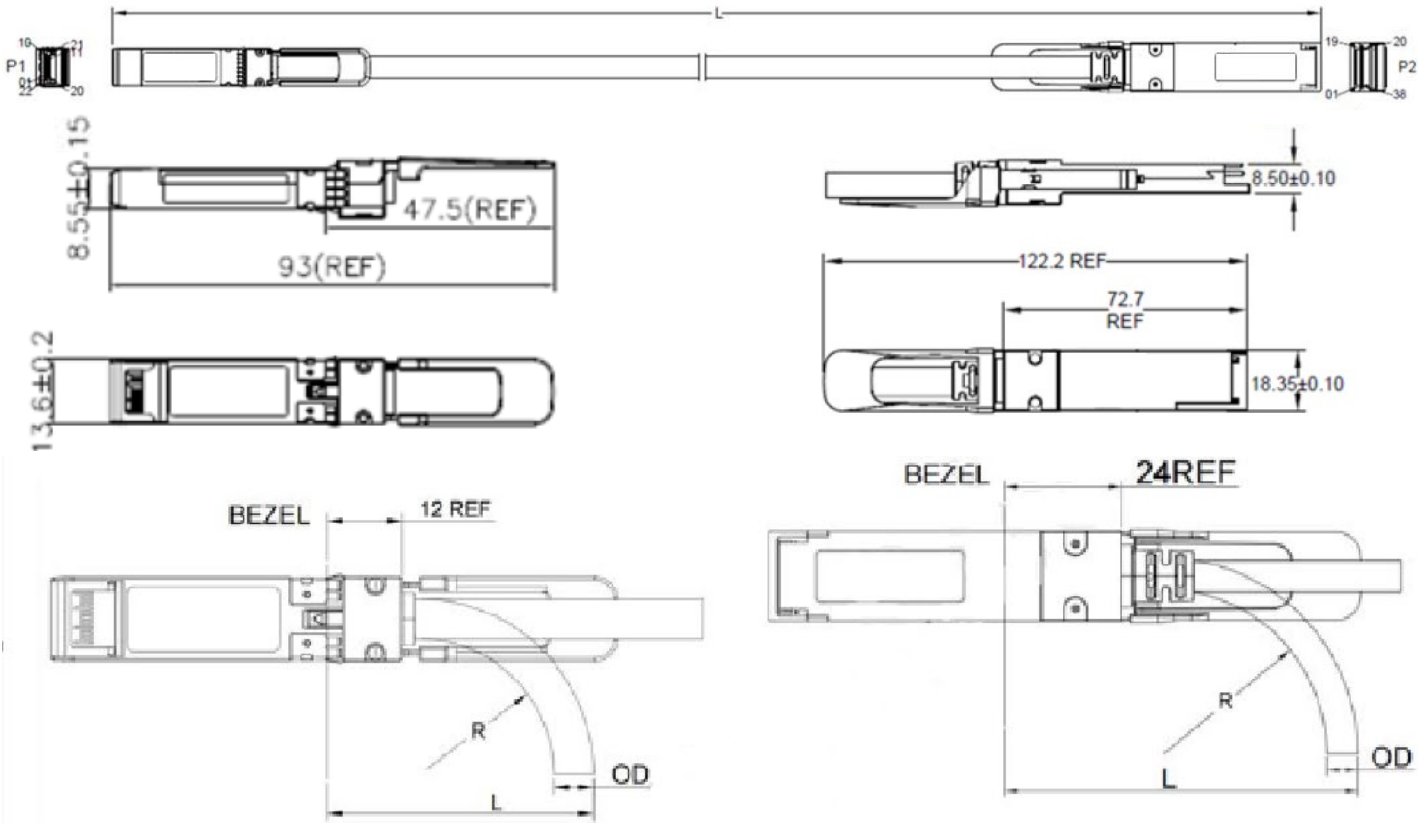
Electrical Pin-Out Details – QSFP56

38	GND		GND	1
37	Tx1n		Tx2n	2
36	Tx1p		Tx2p	3
35	GND		GND	4
34	Tx3n		Tx4n	5
33	Tx3p		Tx4p	6
32	GND		GND	7
31	LPMode/TxDis		ModselL	8
30	Vcc1		ResetL	9
29	VccTx		VccRx	10
28	IntL/RxLOSL		SCL	11
27	ModPrsL		SDA	12
26	GND		GND	13
25	Rx4p		Rx3p	14
24	Rx4n		Rx3n	15
23	GND		GND	16
22	Rx2p		Rx1p	17
21	Rx2n		Rx1n	18
20	GND		GND	19

Module Card Edge

Top Side
Viewed From Top

Bottom Side
Viewed From Bottom

Wiring Diagram

P1(QSFP28)			P2(DSFP28)	
Signal	Pad		Pad	Signal
TX1n	37	→	12	RD1-
TX1p	36	→	13	RD1+
GND				GND
RX1p	17	←	18	TD1+
RX1n	18	←	19	TD1-
GND				GND
TX2n	02	→	9	RD2-
TX2p	03	→	8	RD2+
GND				GND
RX2p	22	←	2	TD2+
RX2n	21	←	1	TD2-
GND				GND

Mechanical Specifications

Cable Specifications

100G DSFP				QDFP56			
Gauge	OD	Bend Radius "R"	Min. Bend Radius "L"	Gauge	OD	Bend Radius "R"	Min. Bend Radius "L"
27AWG	7.2MM	36MM	75MM	27AWG	7.2MM	36MM	87MM

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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