PROLABS – QFX-QSFP-DACBO-7M-C

QSFP+ to 4 SFP+ Passive Copper Cable Assembly

QFX-QSFP-DACBO-7M-C Overview

PROLABS's QSFP+ (Quad Small Form-factor Pluggable Plus) to 4 SFP+ Copper direct-attach cables are suitable for very short distances and offer a highly cost-effective way to connect QSFP+ and SFP+ equipment. The direct-attach assemblies support 4 lanes of 10Gbps (40Gbps composite). This interconnect system is fully compliant with QSFP+ MSA and SFP+ MSA.

Product Features

- QSFP+ End: Compliant with QSFP+ MSA specifications
- SFP+ End: Compliant with SFP+ MSA specifications
- 4 independent duplex channels operating at 10Gbps,also support for 2.5Gbps,5Gbps data rates
- AC coupled inputs and outputs
- 100 Ohm differential impedance
- All-metal housing for superior EMI performance
- Single power supply 3.3V, low power consumption
- RoHS Compliance
- Operating temperature range: 0℃ to 70℃.

Applications

- 10Gigabit Ethernet
- Serial Data Transmission
- Networking
- Storage
- Fiber Channel

Ordering Information

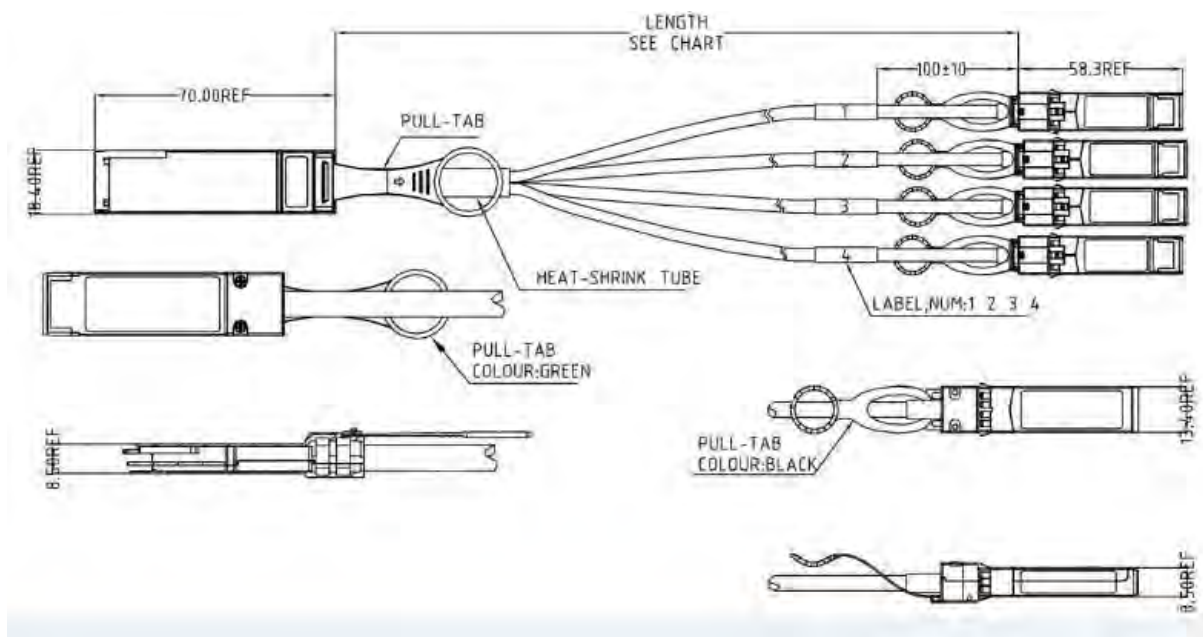| Part Number	Description
QFX-QSFP-DACBO-1M-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 1 Meter
QFX-QSFP-DACBO-2M-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 2 Meter
QFX-QSFP-DACBO-3M-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 3 Meter
QFX-QSFP-DACBO-5M-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 5 Meter
QFX-QSFP-DACBO-7M-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 7 Meter

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T_{OP}	0		70	°C	Case temperature
Storage Temperature	T_{STO}	-40		85	°C	Ambient temperature
Input Voltage	V_{CC}	3	3.3	3.6	V	
Maximum Voltage	VMAX	-0.5		4	V	For electrical power interface

Cable Mechanical Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Wire Gauge			30AWG			
Cable Impedance	Z	95	100	105	Ohm	

Outline Dimensions

ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

PCB Layout Recommendation (QSFP+ END)

NOTES
1. CENTERLINE OF PAD
2. SURFACE TRACES PERMITTED
WITHIN THIS LENGTH
3. INDICATED HOLES ARE OPTIONAL
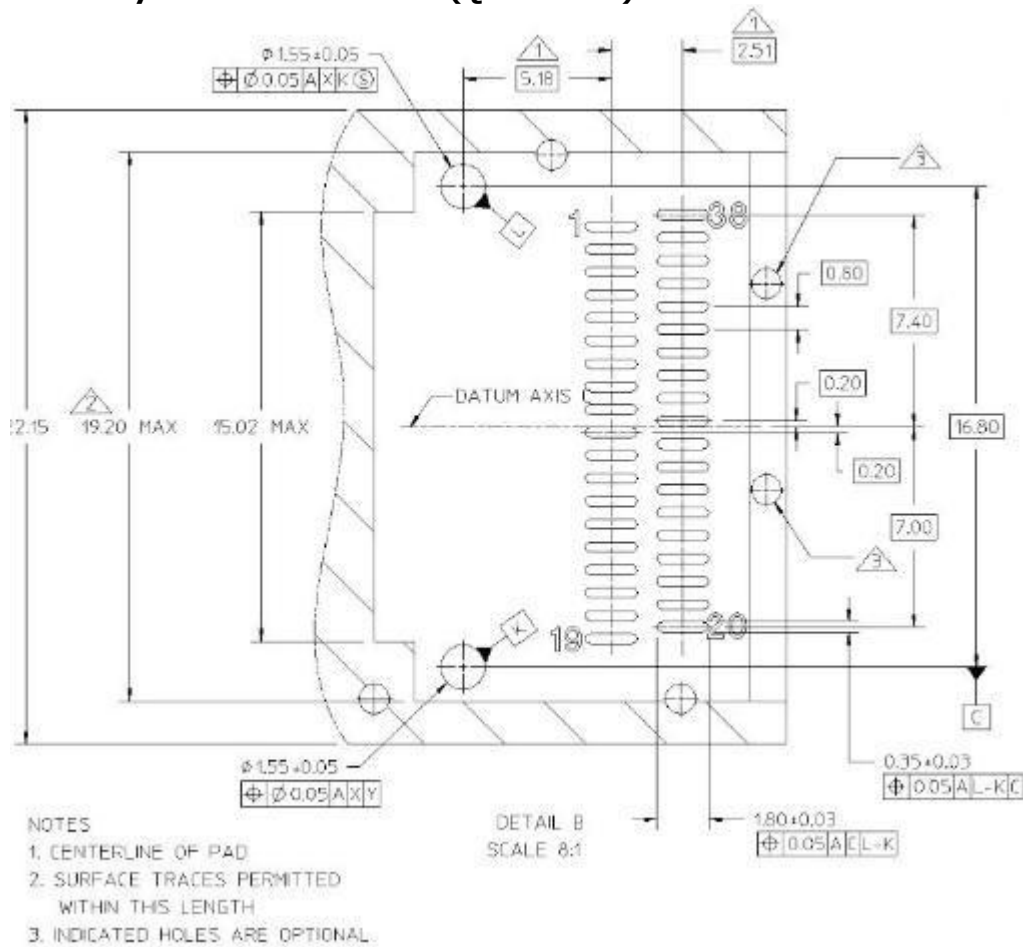
PCB Layout Recommendation (SFP+ END)
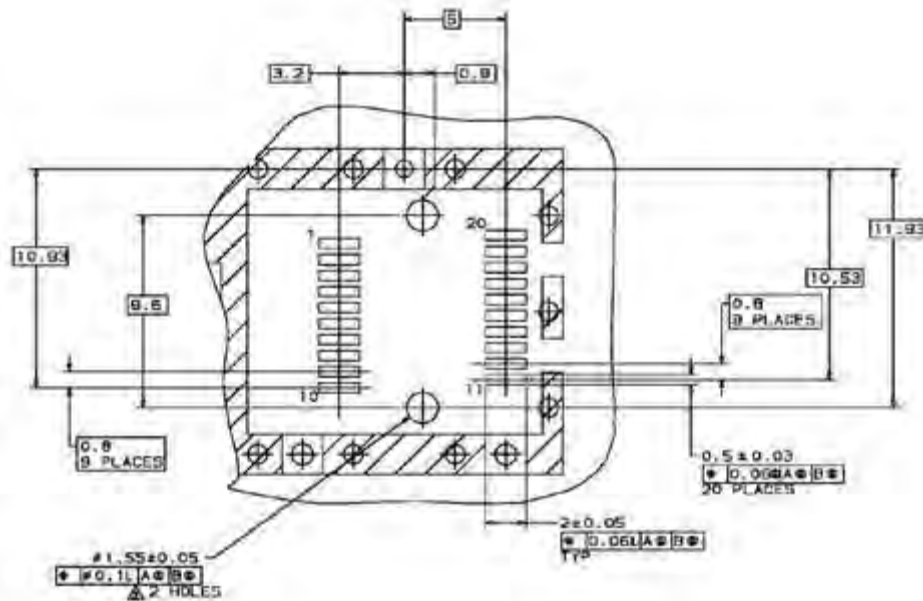
Electrical Pad Layout (QSFP+ END)

	Top Side Viewed from Top		Bottom Side Viewed from Bottom	
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		ModSelL	8
30	Vcc1		ResetL	9
29	VccTx		VccRx	10
28	IntL		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

Card Edge
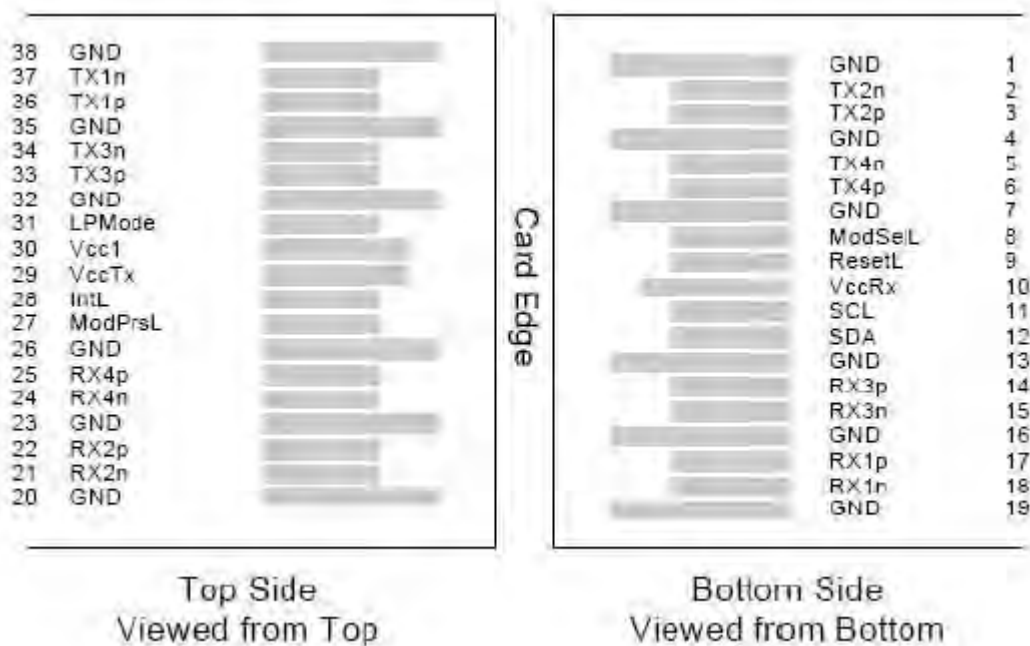
Electrical Pad Layout (SFP+ END)

11	VEER		VEER		10
12	RD-		RS1		9
13	RD+		RX_LOS		8
14	VEER		RS0		7
15	VCCR		MOD_ABS		6
16	VCCT		SCL		5
17	VEET		SDA		4
18	TD+		TX_DISABLE		3
19	TD-		TX_FAULT		2
20	VEET		VEET		1

TOWARD HOST WITH DIRECTION OF MODULE INSERTION →

TOWARD BEZEL →
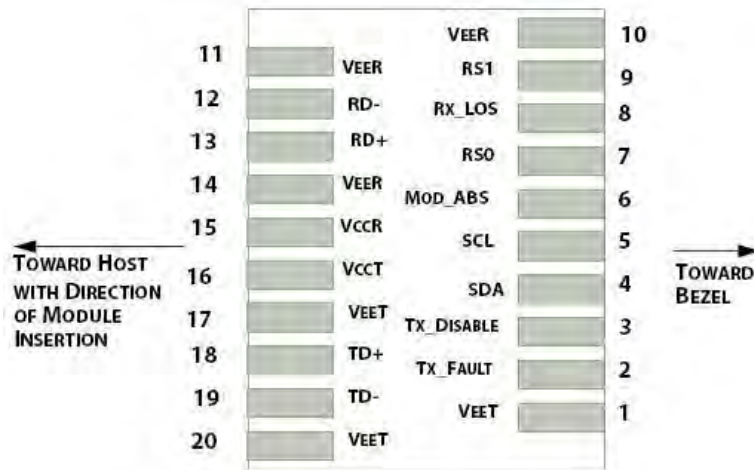
Pin Assignment (QSFP+ END)

PIN#	Symbol	Description	Remarks
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	V_{cc} RX	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	V_{cc} TX	+3.3V Power Supply transmitter	
30	V_{cc1}	+3.3V Power Supply	

31	LPMode	Low Power Mode
32	GND	Ground
33	Tx3p	Transmitter Non-Inverted Data Input
34	Tx3n	Transmiiter Inverted Data Input
35	GND	Ground
36	Tx1p	Transmitter Non-Inverted Data Input
37	Tx1n	Transmiiter Inverted Data Input
38	GND	Ground

Pin Assignment (SFP+ END)

PIN#	Symbol	Description	Remarks
1	V_{EET}	Transmitter ground (common with receiver ground)	
2	T_{FAULT}	Transmitter Fault.	
3	T_{DIS}	Transmitter Disable. Laser output disable on high or open	
4	SDA	Data line for serial ID	
5	SCL	Clock line for serial ID	
6	MOD_ABS	Module Absent. Grounded within the module	
7	RS0	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	
9	RS1	No connection required	
10	V_{EER}	Receiver ground (common with transmitter ground)	
11	V_{EER}	Receiver ground (common with transmitter ground)	
12	RD–	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V_{EER}	Receiver ground (common with transmitter ground)	
15	V_{CCR}	Receiver power supply	
16	V_{CCT}	Transmitter power supply	
17	V_{EET}	Transmitter ground (common with receiver ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD–	Transmitter Inverted DATA in. AC coupled	
20	V_{EET}	Transmitter ground (common with receiver ground)	

References
1. Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable Module "SFP+" – SFF-8431
2. IEEE standard 802.3ae. IEEE Standard Department, 2008.
3. QSFP+ 10 Gbs 4X PLUGGABLE TRANSCEIVER –SFF-8436