

## PROLABS – CU3M-QSFP-4SFP10G-C

### *QSFP+ to 4 SFP+ Passive Copper Cable Assembly*

#### CU3M-QSFP-4SFP10G-C Overview

PROLABS's 1032X-C 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°C to 70°C.

#### Applications

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

#### Ordering Information

<i>Part Number</i>	<i>Description</i>
CU1M-QSFP-4SFP10G-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 1 Meter
CU2M-QSFP-4SFP10G-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 2 Meter
CU3M-QSFP-4SFP10G-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 3 Meter
CU5M-QSFP-4SFP10G-C	QSFP+ to 4 SFP+ Direct Attach Copper Cable Assembly, 5 Meter

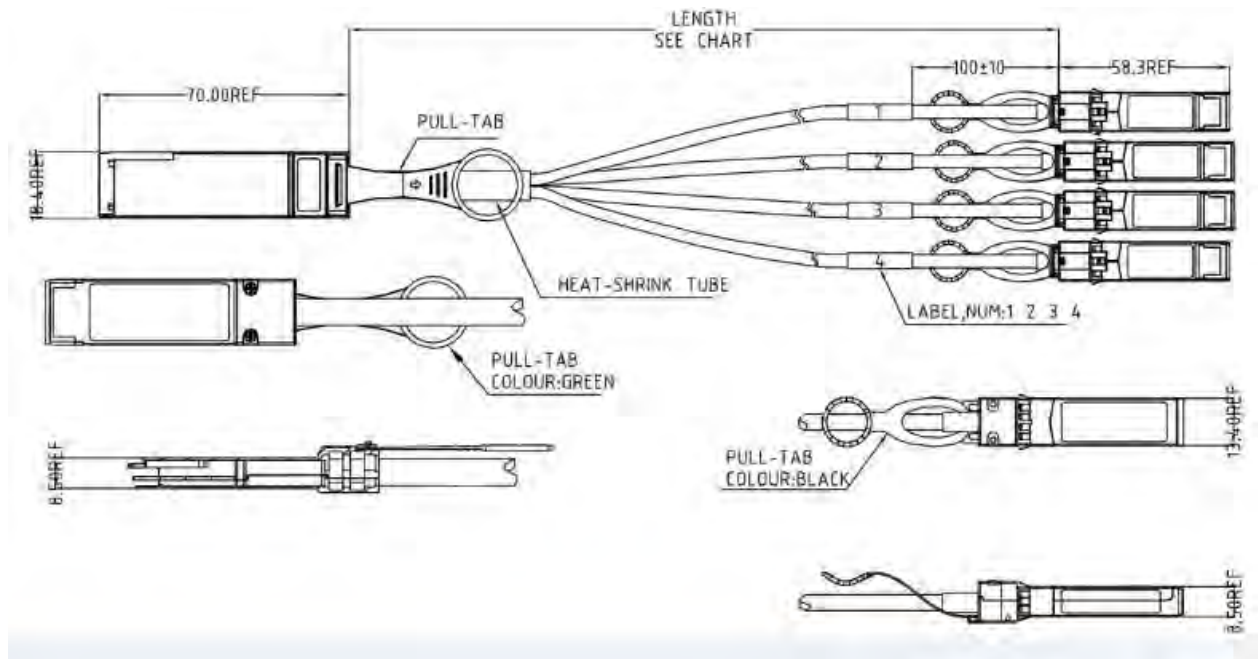
#### General Specifications

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

#### Cable Mechanical Specifications

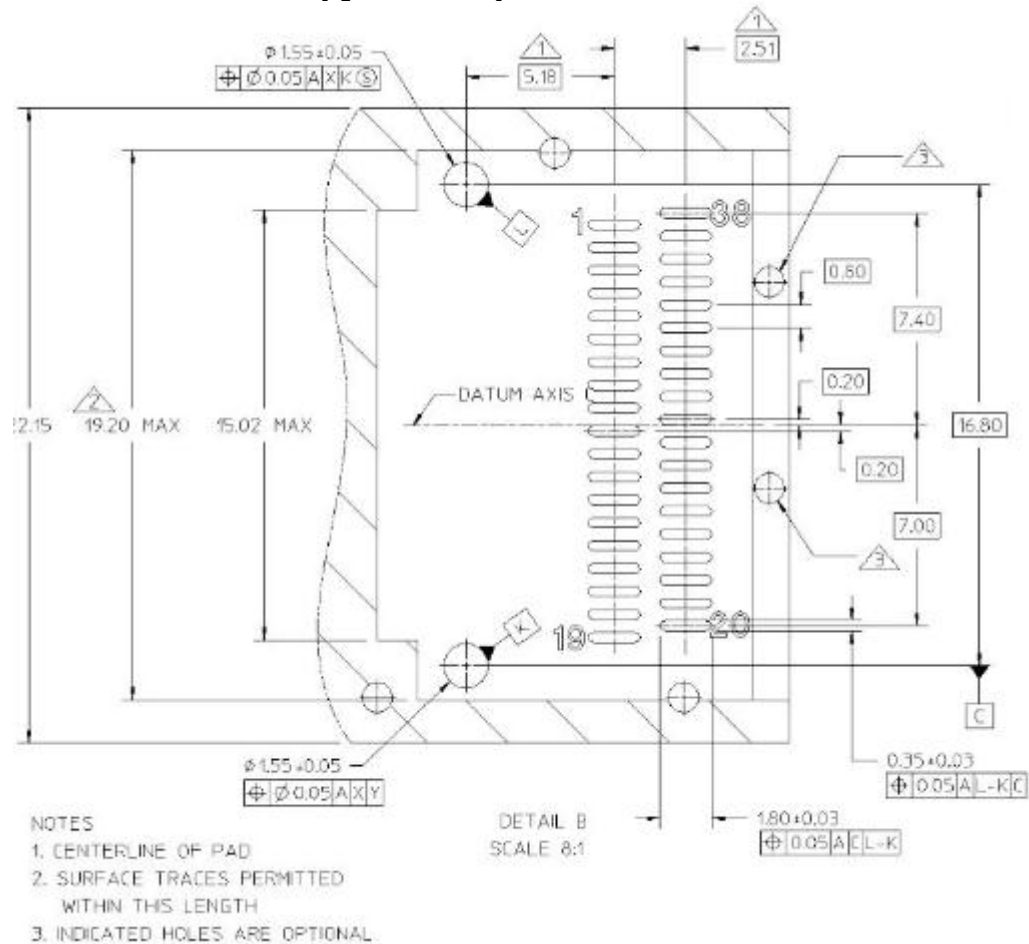
<i>Parameter</i>	<i>Symbol</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	<i>Remarks</i>
Wire Gauge			30AWG			
Cable Impedance	<i>Z</i>	95	100	105	Ohm	

## Outline Dimensions

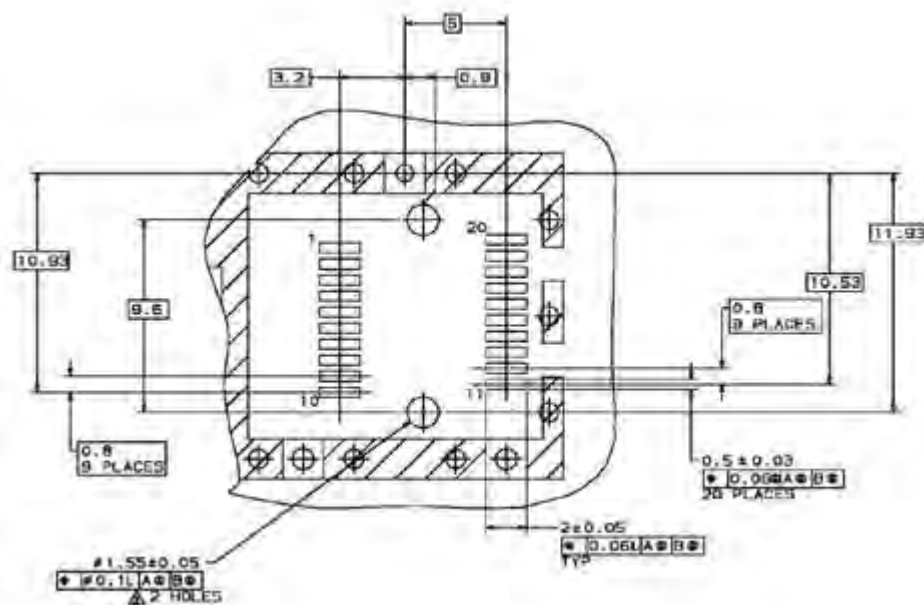


**ALL DIMENSIONS ARE  $\pm 0.2\text{mm}$  UNLESS OTHERWISE SPECIFIED**  
**UNIT: mm**

## PCB Layout Recommendation (QSFP+ END)



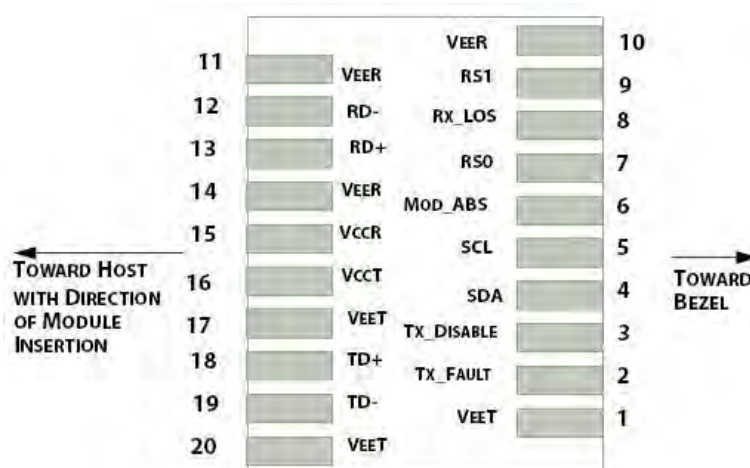
## PCB Layout Recommendation (SFP+ END)



## Electrical Pad Layout (QSFP+ END)



## Electrical Pad Layout (SFP+ END)



## 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 <sub>cc</sub> 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 <sub>cc</sub> TX	+3.3V Power Supply transmitter
30	V <sub>cc1</sub>	+3.3V Power Supply
31	LPMODE	Low Power Mode
32	GND	Ground
33	Tx3p	Transmitter Non-Inverted Data Input
34	Tx3n	Transmitter Inverted Data Input
35	GND	Ground
36	Tx1p	Transmitter Non-Inverted Data Input
37	Tx1n	Transmitter Inverted Data Input
38	GND	Ground

## Pin Assignment (SFP+ END)

PIN #	Symbol	Description	Remarks
1	V <sub>EET</sub>	Transmitter ground (common with receiver ground)	
2	T <sub>FAULT</sub>	Transmitter Fault.	
3	T <sub>DIS</sub>	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 <sub>EER</sub>	Receiver ground (common with transmitter ground)	
11	V <sub>EER</sub>	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 <sub>EER</sub>	Receiver ground (common with transmitter ground)	
15	V <sub>CCR</sub>	Receiver power supply	

16	V <sub>CCT</sub>	Transmitter power supply
17	V <sub>EET</sub>	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 <sub>EET</sub>	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