BizLink

Transceiver **100G QSFP28 SR4**

Description

The OptiWorks 100G Active Optical Cable product is a 4 pairs parallel active optical cable for storage,data, and high performance computing connectivity. This product offers 4 independent data transmission channels and 4 data receiving channels via the multimode fibers, each capable of 25Gb/s operation so that an aggregate data rate of 100Gb/s over 70 meters/OM3 transmission can be achieved by this product. This product compliant with the QSFP28 specifications of SFF8665 and IEEE802.3bm.

Key Features

- 4 independent full-duplex channels active optical cable
- Programmable Rx output amplitude and pre-emphasis
- Programmable Tx input equalizer
- Selectable retiming
- 2.5W max power dissipation (each end)
- Up to 100m length (OM4 fiber)
- SFF-8665 compliant QSFP28 port
- SFF-8636 compliant I2C management interface
- RoHS compliant

Applications

- IEEE 802.3bm 100GBASE SR4 and 40GBASE SR4

Absolute Maximum Ratings

Parameter	Min.	Max.	Units
Storage Temperature	-40	+85	°C
Relative Humidity (Non-condensing)	0	85	%
Supply Voltage	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operating Temperature	0		+70	°C
Supply Voltage	3.135	3.3	3.465	V
Power Dissipation per cable end			2.5	W
Data Rate per Channel		25.78125		Gbps
Pre-FEC Bit Error Ratio			1E-6 [a]	
Post-FEC Bit Error Ratio			1E -12[a,b]	

[a] Bit Error Rate is test with PRBS 2^{31}-1 pattern.
[b] Assumes FEC provided by host system.

Output Electrical Specifications (per Lane)

Parameter	Min.	Typical	Max.	Units
Differential Voltage pk-pk			900	mV
Common Mode Noise RMS			17.5	mV
Transition Time, 20 to 80 % Tr,Tf	12			ps
Eye Width at 1E-15 probability	0.57			UI
Eye Height at 1E-15 probability	228			mV

Optical Specifications

Parameter	Min.	Typical	Max.	Unit	Notes
Receiver					
Signaling Speed per lane		25.78125±100ppm		Gb/s	
Lane Wavelength (Range)	840		860	λ	
Average power at receiver input, each lane	-10.3		+2.4	dBm	2
Damage threshold	+3.4			dBm	
Receive Power (OMA)			3	dBm	
Receiver Reflectance			-12	dB	
LOS De-Assert			-13	dBm	
LOS Assert	-30			dBm	
LOS Hysteresis	0.5	2		dBm	

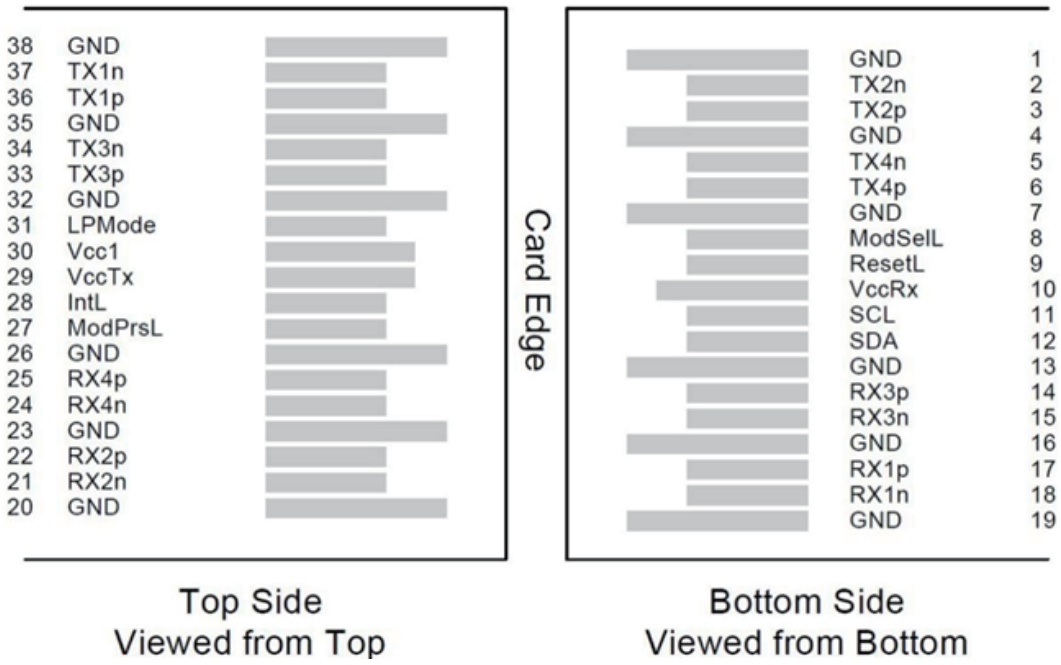
- Average receiver power, each lane (min) is informative and not the principle indicator of signal strength.

Optical Specifications

Parameter	Min.	Typical	Max.	Unit	Notes
Transmitter					
Signaling Speed per lane		25.78125±100ppm		Gb/s	
Lane Wavelength (Range)	840		860	λ	
RMS Spectral Width			0.6	Δλ	2
Average launch power, each lane	-8.4		+2.4	dBm	
Transmit OMA per lane	-6.4		+3.0	dBm	
Transmitter and dispersion eye closure (TDEC), each lane			4.3	dBm	
Launch power in OMA minus TDEC	-7.3			dBm	
Extinction ratio	2			ER	
Average launch power of OFF transmitter, each lane			-30	dBm	
Encircled flux		≥ 86% at 19 µm / ≤ 30% at 4.5 µm			
Transmitter eye mask definition		{0.3, 0.38, 0.45, 0.35, 0.41, 0.50}			1

- Hit ratio = 5E-5 per sample.

QSFP28 Transceiver Pad Layout



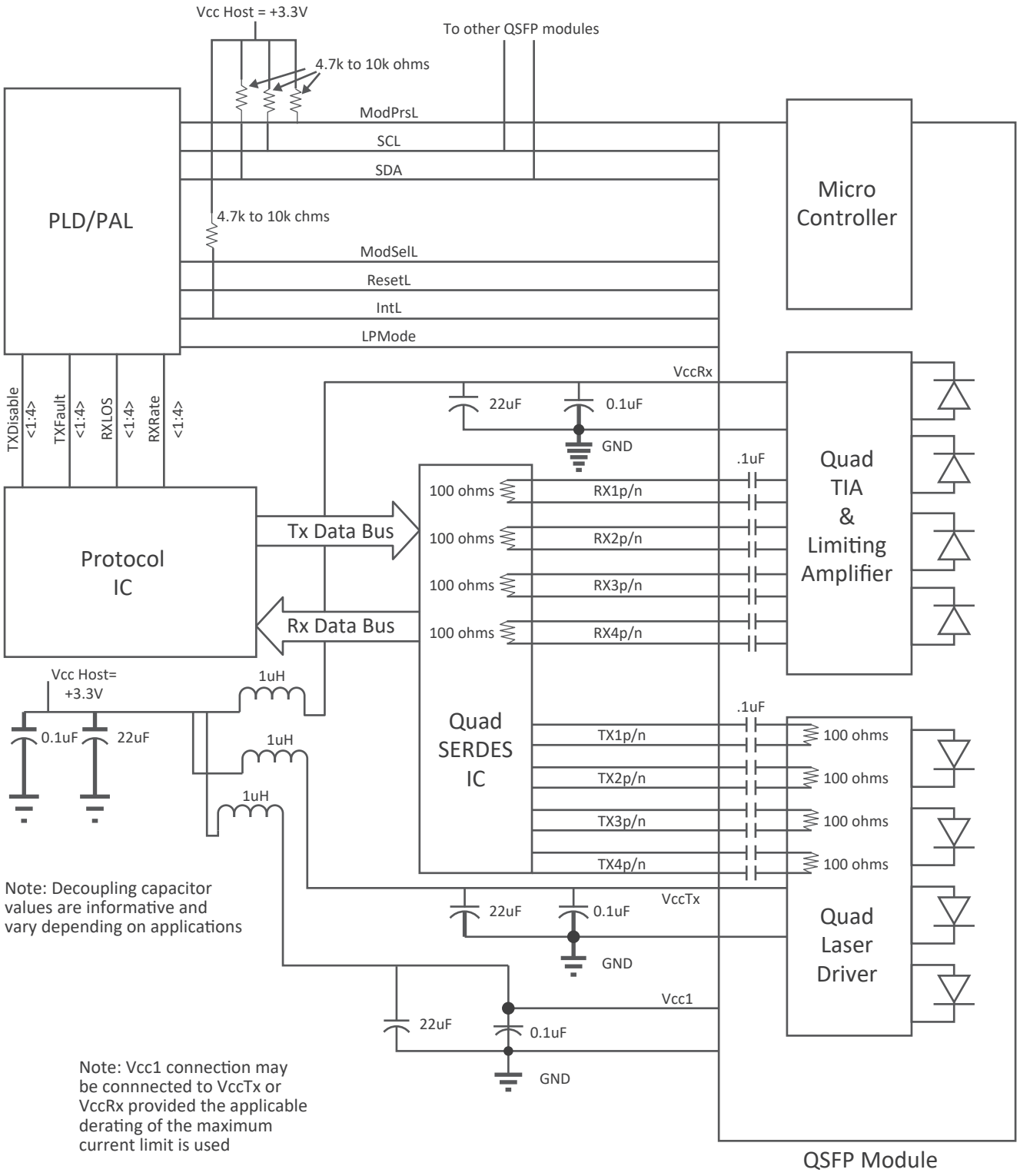
QSFP28 Transceiver Pad Layout

Pin Definition	Logic	Symbol	Name/Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3 V Power supply receiver	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	
12	LVCMOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3 V Power supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

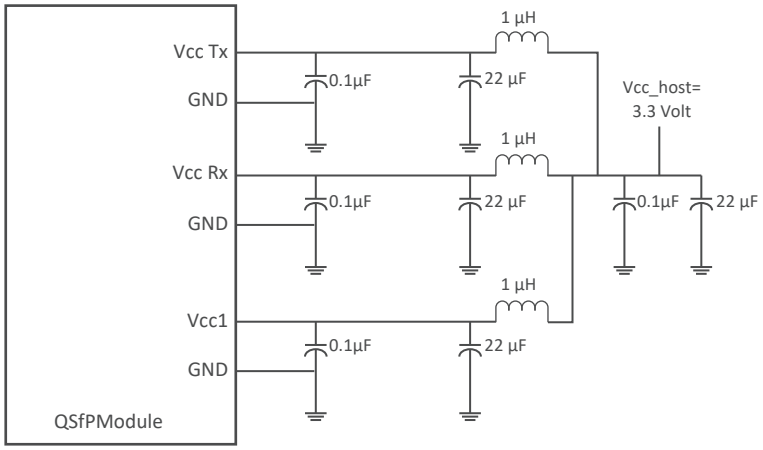
Note 1: GND is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note 2: VccRx, Vcc1 and VccTx are the receiver and transmitter power supplies and shall be applied concurrently.

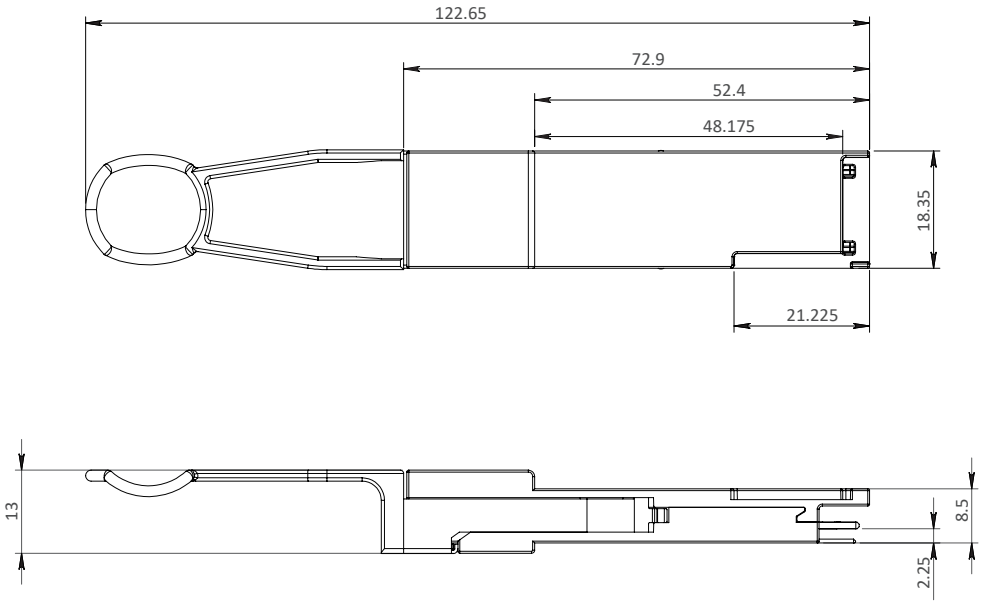
Recommended Interface Circuit



Recommended Host Board Power Supply Circuit



Mechanical Dimensions



Unit: mm

Order Information

Part Number	Description
TRCQ2810085SR70C	100G QSFP28 SR4 Transceiver

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