

PAN-QSFP-40GBASE-LR4-20-C

Palo Alto Networks® PAN-QSFP-40GBASE-LR4-20 Compatible TAA 40GBase-LR4 QSFP+ Transceiver (SMF, 1270nm to 1330nm, 20km, LC, DOM)

Features:

- Compliant with IEEE Std 802.3ba, 40G Ethernet LR4
- Compliant with QSFP+ MSA
- Management Interface Specifications Per SFF-8436
- 4 CWDM-Lane Mux/Demux Design
- 4 Channels CWDM DFB
- 4 Channels PIN Photo Detector
- Up to 11.1Gbps Per Channel Data Links
- Class 1 Laser Safety Certified
- Operating Temperature: 0 to 70 Celsius
- Up to 20KM on SMF
- RoHS Compliant and Lead-Free



Applications:

- 40GBase Ethernet
- Access and Enterprise

Product Description

This Palo Alto Networks® PAN-QSFP-40GBASE-LR4-20 compatible QSFP+ transceiver provides 40GBase-LR4 throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1270nm to 1330nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Palo Alto Networks® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. 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
Maximum Supply Voltage	V _{CC}	-0.5		4.0	V
Storage Temperature	T _{stg}	-40		+85	°C
Operating Case Temperature	T _c	0	25	70	°C
Relative Humidity	RH	5		95	%
Data Rate Per Channel			10.3125		Gbps

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Current	I _{CC}			1100	mA	
Power Dissipation	P _{DISS}			3500	mW	
Transmitter						
Input Differential Impedance	Z _{IN}		100		Ω	
Differential Data Input Swing	V _{IN,pp}	180		900	mVp-p	
Receiver						
Output Differential Impedance				900	Ω	
Differential Data Output Swing	Z _{OUT,pp}	300		850	mVp-p	1
Data Output Rise/Fall Time	T _r /T _f	28			ps	2

Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.
2. 20-80%.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power Per lane	Po	-3		+2.3	dBm	1
Total Launch Optical Power	Po			+8	dBm	1
Center Wavelength	λ0	1264.5	1271	1277.5	nm	
	λ1	1284.5	1291	1297.5	nm	
	λ2	1304.5	1311	1317.5	nm	
	λ3	1324.5	1331	1337.5	nm	
Extinction Ratio	ER	3.5			dB	2
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter and Dispersion Penalty	TDP			2.3	dB	
Optical Return Loss Tolerance	ORLT			12	dB	
Eye Diagram	IEEE Std 802.3ba Compatible					
Receiver						
Center Wavelength	λC	1260		1340	nm	
Receiver Sensitivity (OMA)	S			-11.5	dBm	3
Damage Threshold	POL	3.3			dBm	3
Optical Return Loss	ORL	26			dB	
LOS De-Assert	LOSD			-12	dBm	
LOS Assert	LOSA	-30			dB	
LOS Hysteresis		0.5			dB	

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS $2^{31}-1$ test pattern @10.3125Gbps.
3. Measured with a PRBS $2^{31}-1$ test pattern, @10.3125 Gbps, and BER $<10^{-12}$.

Pin Descriptions

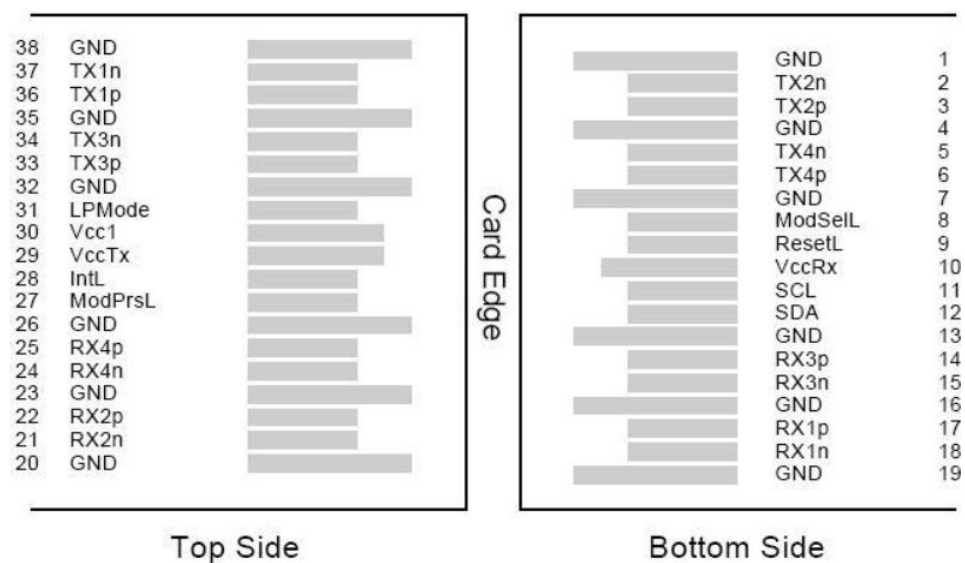
Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground).	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Output.	
4	GND	Transmitter Ground (Common with Receiver Ground).	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Output.	
7	GND	Transmitter Ground (Common with Receiver Ground).	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	+3.3V Receiver Power Supply.	
11	SCL	2-Wire Serial Interface Clock.	2
12	SDA	2-Wire Serial Interface Data.	2
13	GND	Transmitter Ground (Common with Receiver Ground).	1
14	Rx3+	Receiver Non-Inverted Data Output.	
15	Rx3-	Receiver Inverted Data Output.	
16	GND	Transmitter Ground (Common with Receiver Ground).	1
17	Rx1+	Receiver Non-Inverted Data Output.	
18	Rx1-	Receiver Inverted Data Output.	
19	GND	Transmitter Ground (Common with Receiver Ground).	1
20	GND	Transmitter Ground (Common with Receiver Ground).	1
21	Rx2-	Receiver Inverted Data Output.	
22	Rx2+	Receiver Non-Inverted Data Output.	
23	GND	Transmitter Ground (Common with Receiver Ground).	1
24	Rx4-	Receiver Inverted Data Output.	1
25	Rx4+	Receiver Non-Inverted Data Output.	
26	GND	Transmitter Ground (Common with Receiver Ground).	1
27	ModPrsl	Module Present.	
28	IntL	Interrupt.	2
29	VccTx	+3.3V Transmitter Power Supply.	
30	Vcc1	+3.3V Power Supply.	
31	LPMODE	Low-Power Mode.	2
32	GND	Transmitter Ground (Common with Receiver Ground).	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Output.	

35	GND	Transmitter Ground (Common with Receiver Ground).	1
36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Output.	
38	GND	Transmitter Ground (Common with Receiver Ground).	1

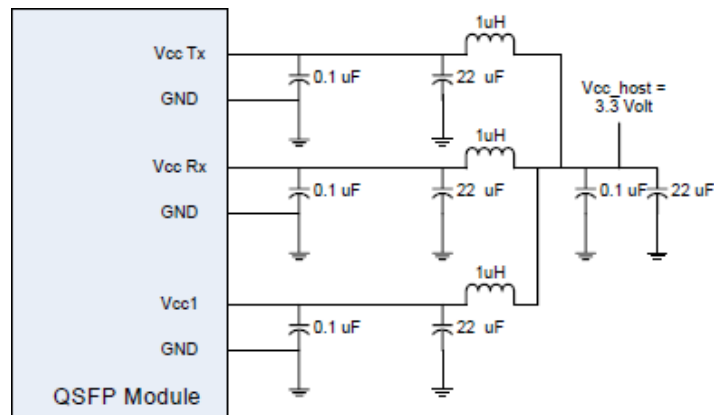
Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that, on the host board, requires a 4.7k Ω to 10k Ω pull-up resistor to the Host_Vcc.

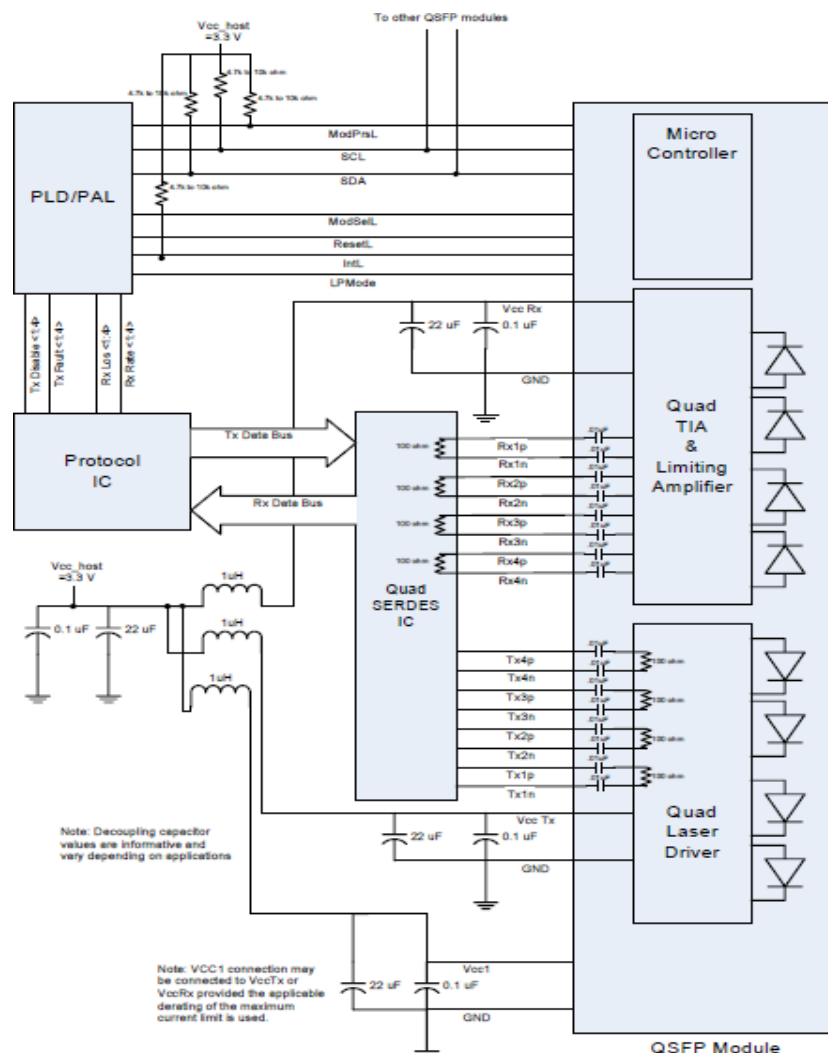
Electrical Pin-Out Details



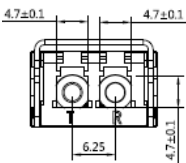
Recommended Host Board Power Supply Filter Network



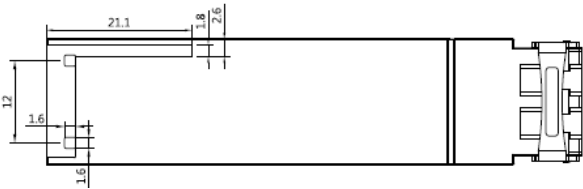
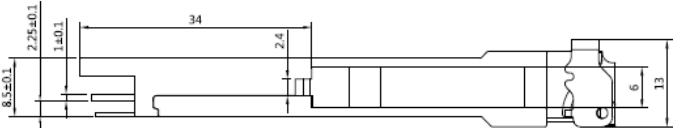
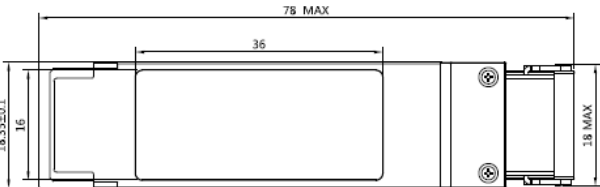
Recommended Application Interface Block Diagram



Mechanical Specifications



Unit : mm



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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