



QFP85P1040PDAC3

Cisco® QSFP-40G-SR4 Compatible 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 150m, MPO, DOM)

Product Description

This Cisco® QSFP-40G-SR4 Compatible QSFP+ transceiver provides 40GBase-SR4 throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Cisco® 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- 4-Channel Full-Duplex Transceiver Module
- Maximum Link Length of 150m on OM4 MMF
- Hot-Pluggable
- Maximum Power Dissipation: 1W
- Reliable VCSEL Array Technology
- Multi-Rate Capability: 1.06Gbps to 10.5Gbps Per Channel
- Operating Temperature: 0 to 70 Celsius
- Single 1x12 MPO Receptacle
- RoHS Compliant and Lead-Free



Applications:

- 40GBase Ethernet
- Access and Enterprise
- 4x10G Breakout Option

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		3.6	V	
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	0		70	°C	
Relative Humidity (Non-Condensing)	RH	0		85	%	
Damage Threshold (Per Lane)	DT	3.4			dBm	
Maximum Aggregate Data Rate			42.0		Gbps	
Bit Rate Per Lane	BR	1062		10500	Mbps	1
Bit Error Ratio	BER			10^{-12}		2
Link Distance on OM3 MMF	D			100	m	3
Link Distance on OM4 MMF	D			150	m	3

Notes:

1. Compliant with 40G Ethernet. Compatible with 1/10 Gigabit Ethernet and 1/2/4/8/10G Fibre Channel.
2. Tested with a PRBS $2^{31}-1$ test pattern.
3. Per 40GBASE-SR4, IEEE 802.3ba.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.15	3.3	3.45	V	
Supply Current	Icc			300	mA	
Transmit Turn-On Time				2000	ms	1
Power Consumption			1		W	
Transmitter						
Single-Ended Input Voltage Tolerance	VINT	-0.3		4.0	V	
Differential Data Input Swing	VIN,pp	180		1200	mVp-p	2
Differential Input Threshold			50		mV	
AC Common-Mode Input Voltage Tolerance (RMS)		15			mV	
J2 Jitter Tolerance	Jt2	0.17			UI	
J9 Jitter Tolerance	Jt9	0.29			UI	
Data-Dependent Pulse Width Shrinkage	DDPWS	0.07			UI	
Differential Input Return Loss		Per IEEE P802.3ba, Section 86A.4.1.1			dB	3
Eye Mask Coordinates: (X1, X2, Y1, Y2)		(0.11, 0.31, 95, 350)			UI, mV	4
Receiver						
Single-Ended Output Voltage		-0.3		4.0	V	
Differential Data Output Swing	VOUT,pp	0		800	mVp-p	3, 4
AC Common-Mode Output Voltage (RMS)				7.5	mV	
Termination Mismatch at 1MHZ				5	%	
Output Transition Time (20-80%)		28			ps	
J2 Jitter Output	Jo2			0.42	UI	
J9 Jitter Output	Jo9			0.65	UI	
Power Supply Ripple Tolerance	PSR	50			mVp-p	
Differential Output Return Loss		Per IEEE P802.3ba, Section 86A.4.2.1			dB	5
Common-Mode Output Return Loss		Per IEEE P802.3ba, Section 86A.4.2.2			dB	5
Eye Mask Coordinates #1: (X1, X2, Y1, Y2)		(0.29, 0.5, 150, 425)			UI, mV	6

Notes:

1. From power-on and end of any fault conditions.
2. After internal AC coupling. Self-biasing 100Ω differential input.
3. AC coupled with 100Ω differential output impedance.
4. Settable in 4 discrete steps via the I2C interface.
5. 10MHz to 11.1GHz range.
6. Hit ratio = 5×10^{-5} .

Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Signaling Speed Per Lane					10.5	GBd	1
Center Wavelength			840		860	nm	
RMS Spectral Width		SW			0.65	nm	
Average Launch Power Per Lane		TXP _x	-7.6		-1.0	dBm	
Transmit OMA Per Lane		TxOMA	-5.6		3.0	dBm	2
Difference in Power Between Any Two Lanes (OMA)		DP _x			4.0	dB	
Peak Power Per Lane		PP _x			4.0	dBm	
Launch Power (OMA) Minus TDP Per Lane		P-TDP	-6.5			dBm	
TDP Per Lane		TDP			3.5	dBm	
Optical Extinction Ratio		ER	3.0			dB	
Optical Return Loss Tolerance		ORL			12	dB	
Average Launch Power of Off Transmitter Per Lane					-30	dBm	
Relative Intensity Noise		RIN			-128	dB/Hz	
Encircled Flux		FLX	>86% at 19μm <30% at 4.5μm			dBm	
Transmitter Eye Mask Definition: (X1, X2, X3, Y1, Y2, Y3)			(0.23, 0.34, 0.43, 0.27, 0.35, 0.4)				
Receiver Module Output (TP4)							
Signaling Speed Per Lane					10.5	GBd	3
Center Wavelength			840		860	nm	
Damage Threshold		DT	3.4			dBm	
Average Receive Power Per Lane		RXP _x	-9.9		2.4	dBm	
Receive Power (OMA) Per Lane		RxOMA			3.0	dBm	
Stressed Receiver Sensitivity (OMA) Per Lane		SRS			-5.4	dBm	
Peak Power Per Lane		PP _x			4	dBm	
Receiver Reflectance		Rfl			-12	dB	
Vertical Eye Closure Penalty Per Lane					1.9	dB	
Stressed Eye J2 Jitter Per Lane					0.3	UI	
Stressed Eye J9 Jitter Per Lane					0.47	UI	
OMA of Each Aggressor Lane					-0.4	dBm	
Rx Jitter Tolerance	Jitter Frequency		(75, 5)			kHz, UI	
	P-P Amplitude		(375, 1)				
LOS De-Assert		LOSD			-12	dBm	
LOS Assert		LOSA	-30			dBm	
LOS Hysteresis			0.5			dBm	

Notes:

1. The transmitter consists of 4 lasers operating at a maximum rate of 10.5Gbps each.
2. Even if the TDP is < 0.9dB, the OMA minimum must exceed this value.
3. Receiver consists of 4 photodetectors operating at a maximum rate of 10.5Gbps each.

Pin Descriptions

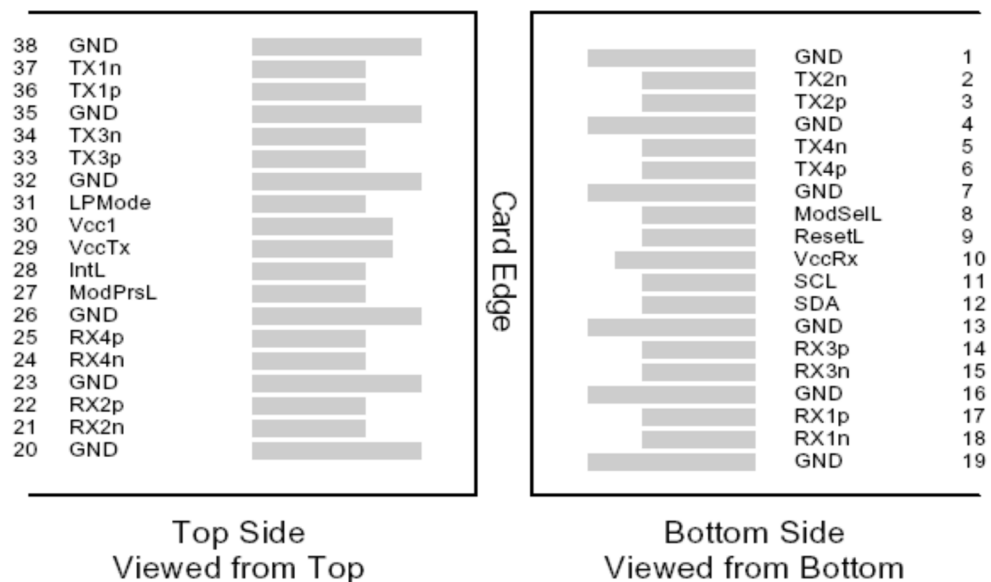
Pin	Symbol	Name/Descriptions	Notes
1	GND	Module Ground.	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Input.	
4	GND	Module Ground.	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Input.	
7	GND	Module Ground.	1
8	ModSelL	Module Select.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

30	Vcc1	+3.3V Power Supply.	
31	LPMode	Low-Power Mode.	
32	GND	Module Ground.	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Input.	
35	GND	Module Ground.	1
36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Input.	
38	GND	Module Ground.	1

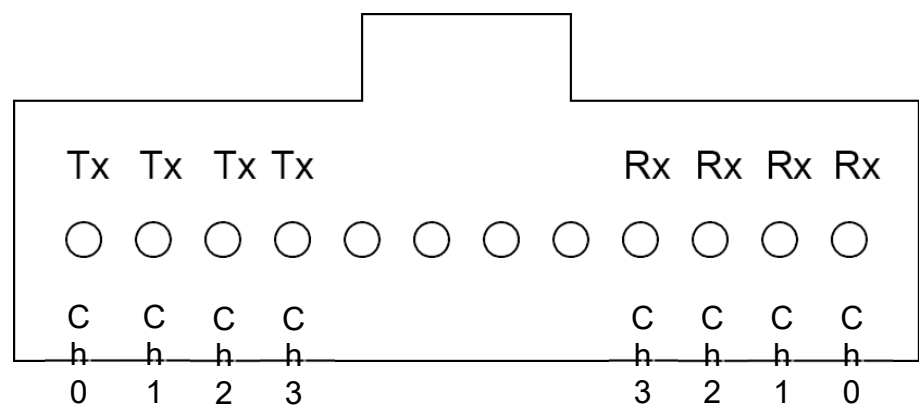
Notes:

1. The circuit ground is internally isolated from the chassis ground.

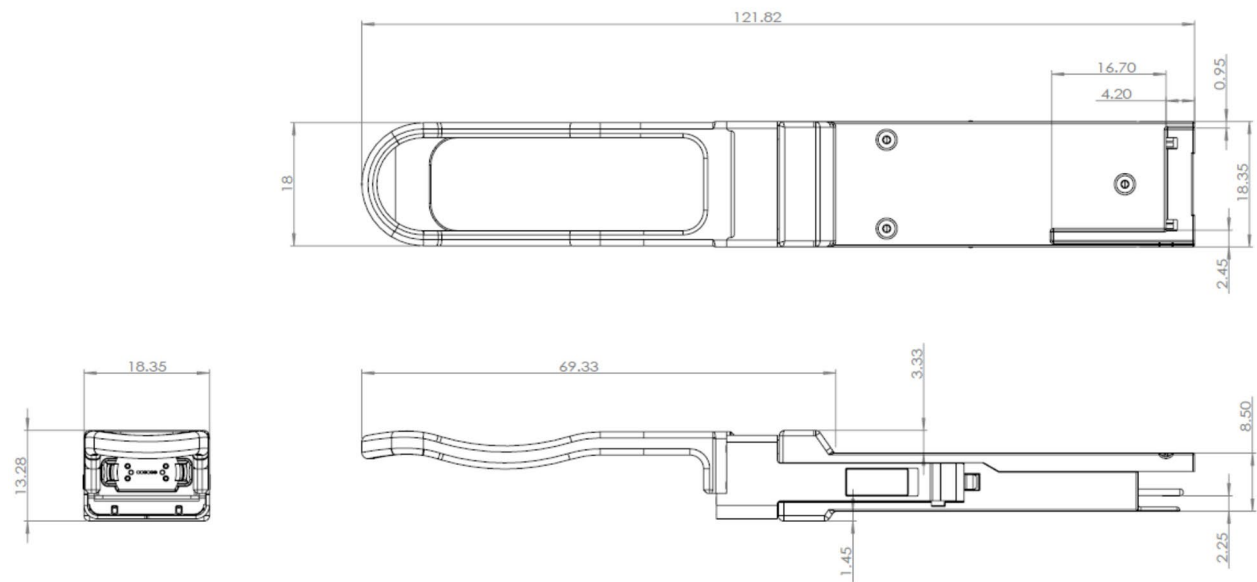
Electrical Pin-Out Details



Optical Lane Assignment (Front View of MPO Receptacle)



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

