



QSFP-40GBASE-PSM4-SKY

MSA Compliant 40GBase-PLR4 QSFP+ Transceiver (SMF, 1310nm, 2km, MPO, DOM)

Product Description

This MSA compliant QSFP+ transceiver provides 40GBase-PSM4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. 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:

- SFF-8436 Compliance
- MPO Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 40GBase Ethernet
- Access and Enterprise

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
Supply Voltage	V _{CC}	0		+3.6	V
Storage Temperature	T _{st}	-40		+85	°C
Humidity (non-condensing)	Rh	5		85	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V _{CC}	3.13	3.3	3.47	V
Operating Case Temperature	T _{ca}	0	25	+70	°C
Data Rate Per Channel				10.3125	Gbps
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	%
Power Supply Current				2.5	W

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter Differential Input Voltage	V _{IN}	180		800	mV _{pp}	
Receiver Differential Output Voltage	V _O	400	450	850	mV _{pp}	1
Loss of Signal (LOS)	V _{CH}	2		V _{CC}	V	2
	V _{OL}	V _{EE}		V _{EE} + 0.8		
Transmitter Disable (TX-Disable)	V _{IH}	2		V _{CC}	V	
	V _{IL}	V _{EE}		V _{EE} + 0.8		
Rx Output Rise and Fall Time	T _r /T _f	28			P _s	20% to 80%

Notes:

1. SFF-8431, SFP+ Module receiver output specifications at C'.
2. LOS is an open collector output. Should be pulled up with 4.7kΩ – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1.

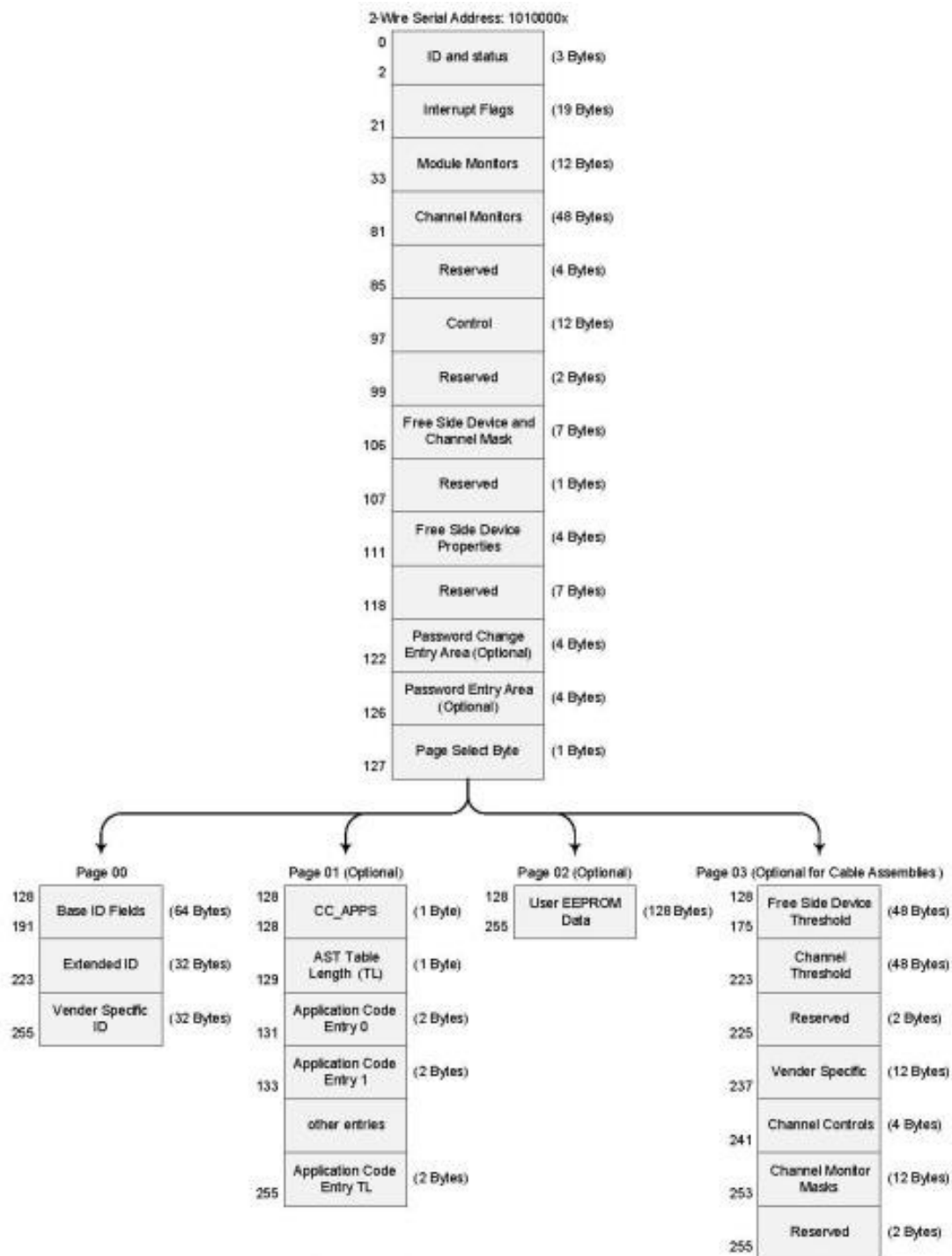
Optical Characteristics

Parameter		Symbol	Unit	Min.	Typ.	Max.	Notes
Transmitter							
Average Launch Power, each lane		Po	dBm	-8.2		+0.5	
Center wavelength		λc	nm	1260		1355	
Optical Spectral Width (RMS)		Δλ	nm			2.5	
Extinction ratio		ER	Db	3.0			
Optical power OMA, each lane		POMA	dBm	-5.2		+1.5	1
Average launch power of OFF transmitted, each lane		Poff	dBm			-30	
RIN ₁₂ OMA		RIN	dB/Hz			-128	
Optical return loss tolerance		ORL _T	dB	12			2
Output eye			Compliant with IEEE802.3ba eye mask				
Receiver							
Center Wavelength		λc	nm	1260		1355	
Receiver Overload in OMA, each lane		RxOMA	dBm	+1.5			
Receiver Overload in average power, each lane		Pmax	dBm	+0.5			3
Average receive power, each lane		RxPx	dBm	-11.5			4
Receiver Sensitivity in OMA, each lane		Sen _{OMA}	dBm			-9.5	5, for 1.0km type
Receiver Sensitivity in OMA, each lane		Sen _{OMA}	dBm			-10.5	5, for 1.5km type
Receiver Crossing		RCP	%	45		55	
Receiver Eye Mask		SFF-8431, SFP+MODULE RECEIVER OUTPUT SPECIFICATIONS AT C'.					
Receiver Eye Mask Margin		REMM	%	0			
Receiver Reflectance		Rrx	dB			-12	
LOS	Assert	LOSA	dBm	-30			
	De-assert	LOSD	dBm			-12	
LOS Hysteresis		LOSH	dB	0.5		6	

Notes:

1. Even if the TDP < 1 dB, the OMA (min) must exceed this value.
2. Transmitter reflectance is defined looking into the transmitter
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having a power level equal to the average receive power (max) plus at least 1 dB.
4. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. PRBS 231 -1 at BER 10⁻¹² , ER=3.0dB

Digital Diagnostic Memory Map



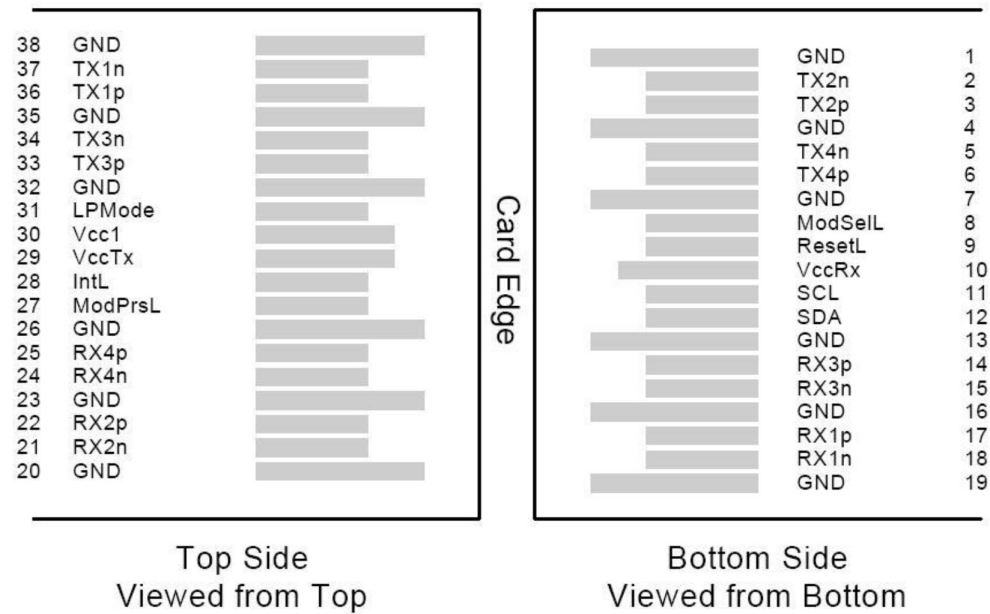
Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
1		GND	Module Ground	1
2	CML-I	Tx2-	Transmitter inverted data input	
3	CML-I	Tx2+	Transmitter non-inverted data input	
4		GND	Module Ground	1
5	CML-I	Tx4-	Transmitter inverted data input	
6	CML-I	Tx4+	Transmitter non-inverted data input	
7		GND	Module Ground	1
8	LVTTL-I	MODSEIL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VCCRx	+3.3v Receiver Power Supply	
11	LVC MOS-I	SCL	2-wire Serial interface clock	2
12	LVC MOS-I/O	SDA	2-wire Serial interface data	2
13		GND	Module Ground	1
14	CML-O	RX3+	Receiver non-inverted data output	
15	CML-O	RX3-	Receiver inverted data output	
16		GND	Module Ground	1
17	CML-O	RX1+	Receiver non-inverted data output	
18	CML-O	RX1-	Receiver inverted data output	
19		GND	Module Ground	1
20		GND	Module Ground	1
21	CML-O	RX2-	Receiver inverted data output	
22	CML-O	RX2+	Receiver non-inverted data output	
23		GND	Module Ground	1
24	CML-O	RX4-	Receiver inverted data output	
25	CML-O	RX4+	Receiver non-inverted data output	
26		GND	Module Ground	1
27	LVTTL-O	ModPrsL	Module Present, internal pulled down to GND	
28	LVTTL-O	IntL	Interrupt output should be pulled up on host board	2
29		VCCTx	+3.3v Transmitter Power Supply	
30		VCC1	+3.3v Power Supply	
31	LVTTL-I	LPMODE	Low Power Mode	2
32		GND	Module Ground	1
33	CML-I	Tx3+	Transmitter non-inverted data input	
34	CML-I	Tx3-	Transmitter inverted data input	
35		GND	Module Ground	1
36	CML-I	Tx1+	Transmitter non-inverted data input	
37	CML-I	Tx1-	Transmitter inverted data input	
38		GND	Module Ground	1

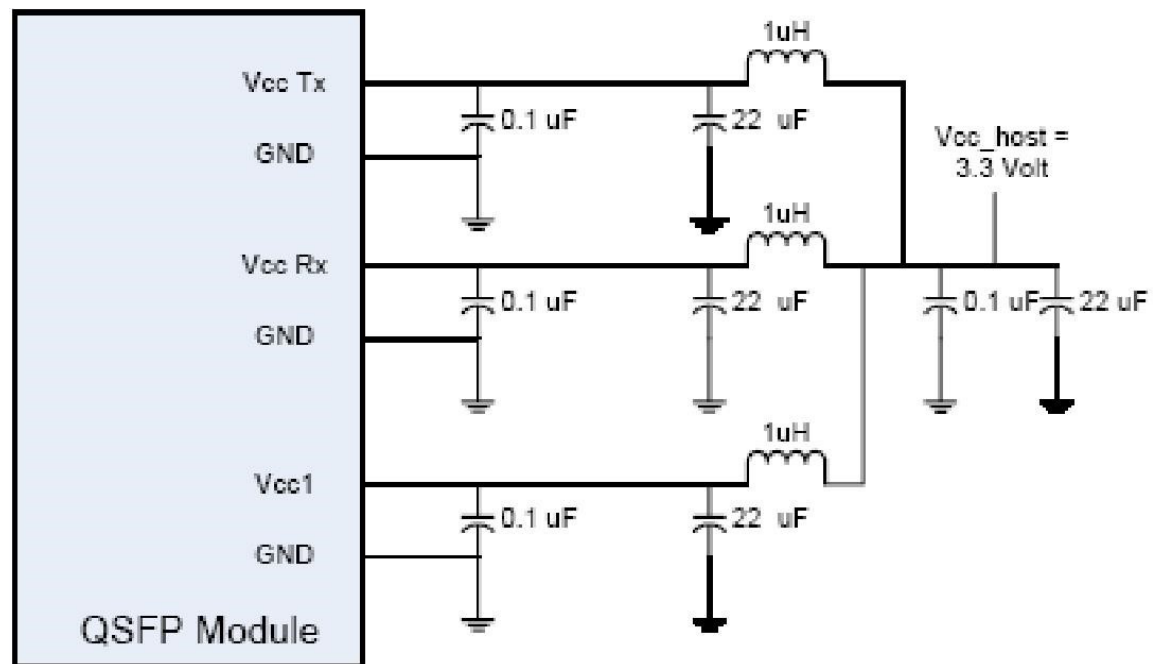
Notes:

- 1. GND is the symbol for signal and supply (power) common for QSFP+ modules. 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.
- 2. VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown in the figure below. Vcc Rx, Vcc1 and VccTx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

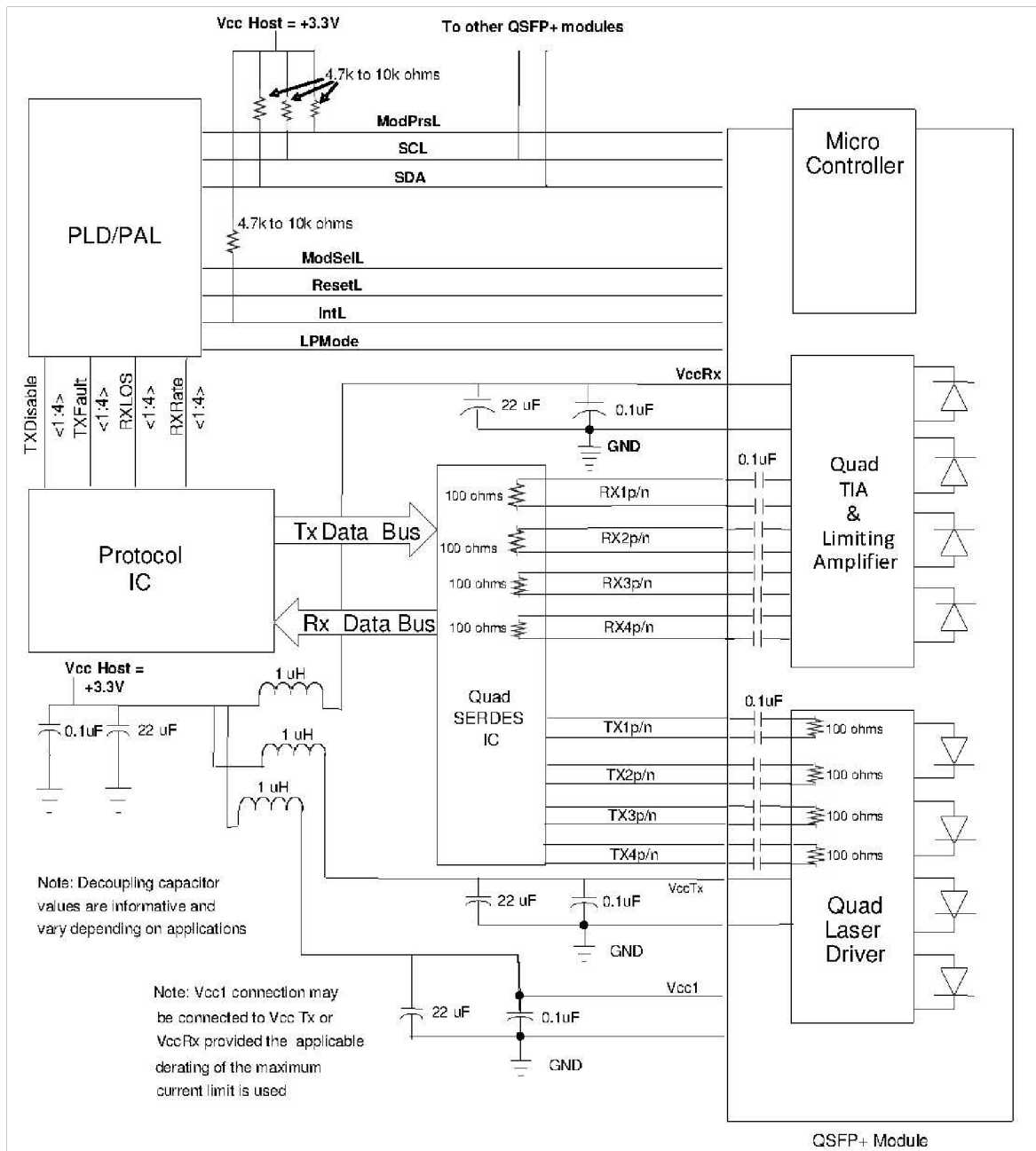
Electrical Pin-out Details



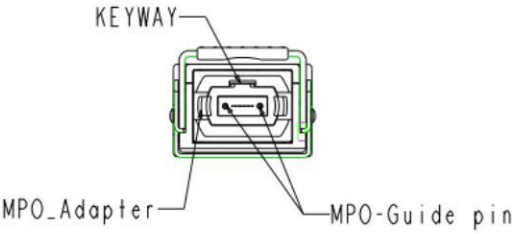
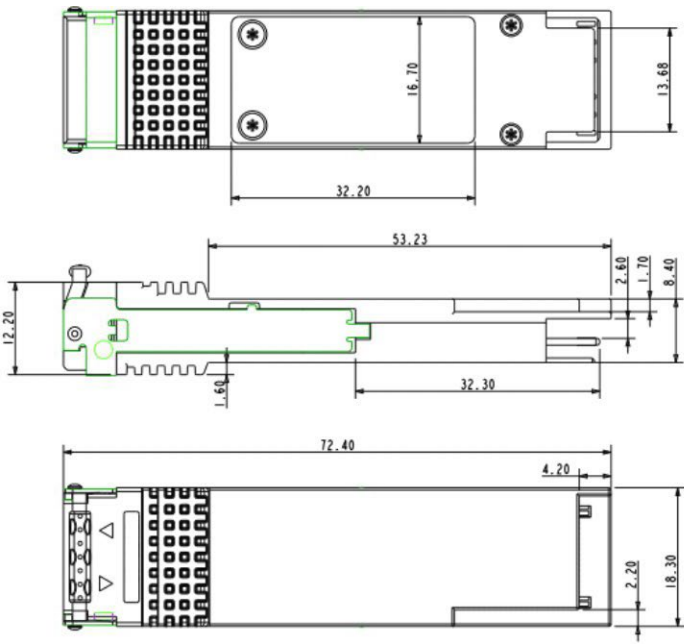
Recommended Power Supply Filter



Typical Application Circuit



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.

