400G QSFP112 SR4 LPO Transceiver

FEATURES:

- Hot-pluggable QSFP112 SR4 multimode transceiver
- Compliant with QSFP112 MSA
- Compliant with CMIS Rev 4.0 and above revision
- Integrated 850nm VCSEL array and PD array w/o DSP or CDR
- 4-channels of 100G-PAM4 electrical and optical modulation
- Single MPO-12 APC receptacles
- Maximum power consumption 2.8W
- Single 3.3V power supply
- Case operating temperature 0°C to 70°C
- Class 1 laser
- RoHS complaint

I. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Storage Temperature	T_S	-40	85	ºC	
Power Supply Voltage	V_{CC}	-0.4	3.6	V	
Relative Humidity (non-condensing)	RH	5	85	%	

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T_{OPR}	0	-	70	ºC	
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Maximum Power Dissipation(400G)	PD	-	-	2.8	W	
Signaling Rate per Lane	SRL	-	53.125	-	GBd	PAM4

III. Transmitter Optical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Wavelength	λ_C	844	850	863	nm	
RMS spectral width	$\Delta\lambda_{rms}$			0.6	nm	
Average Launch Power, each lane	AOP_L	-1.0	-	3.0	dBm	
Average Launch Power of OFF Transmitter, each lane	T_{OFF}	-	-	-30	dBm	
Extinction Ratio, each lane	ER		3	-	dB	
Optical Return Loss Tolerance	ORL		-	14	dB	
Transmitter Reflectance	T_R	-	-	-26	dB	

IV. Receiver Optical Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Wavelength	λ_C	842	850	863	nm	
Damage Threshold, average optical power, each lane	AOP_D	5	-	-	dBm	
Average Receive Power, each lane	AOP_R	-6.3	-	4.0	dBm	
Receive Power (OMA_{outer}), each lane	OMA_R	-	-	3.5	dBm	
Receiver Reflectance	RR	-	-	-20	dB	

V. Pin Definitions

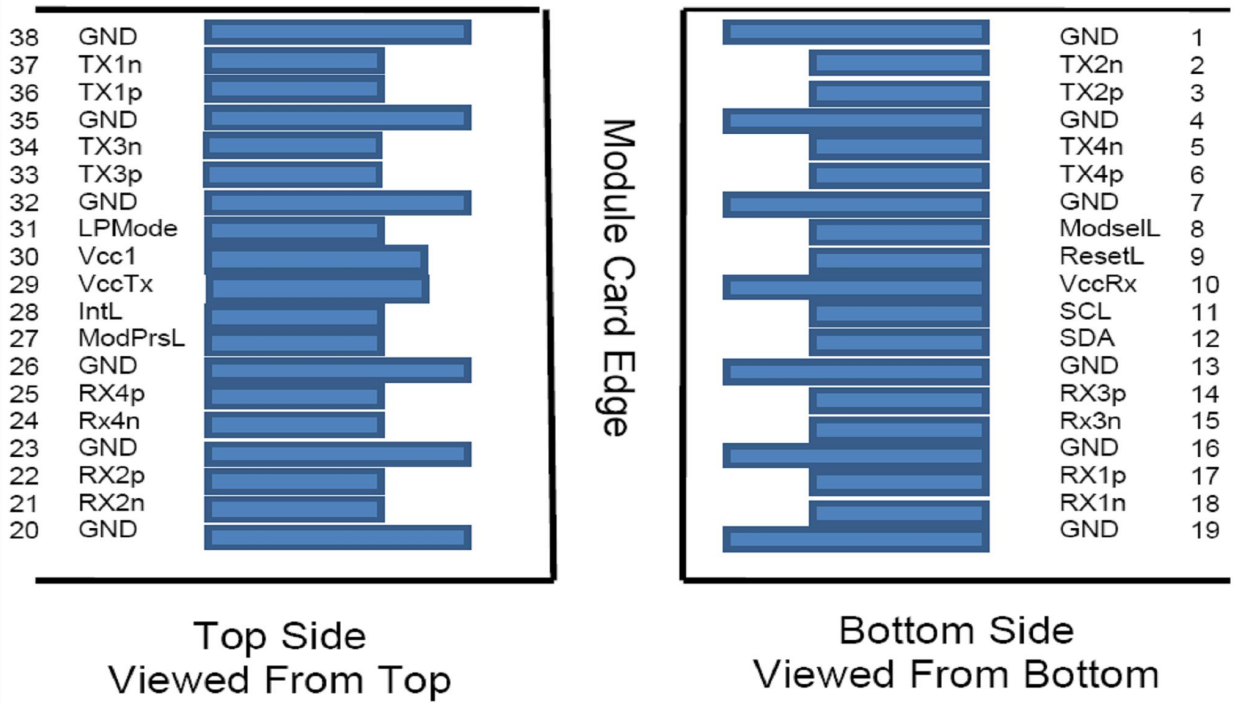

Figure 1 –Module Pad Layout

Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	1

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

Notes:

1.GND is the symbol for signal and supply (power) common for the QSFP56 module. All are common within the QSFP56 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.Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering is shown in below Figures. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP56 Module in any combination. The connector pins are each rated for a maximum current of 500 mA.

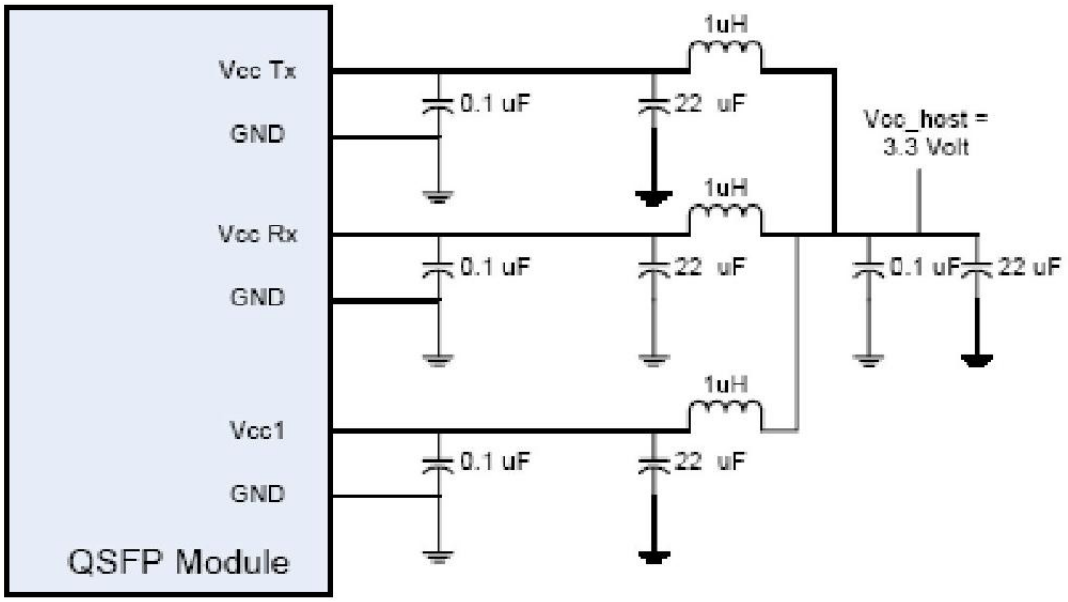

Figure 2. Recommended Power Supply Filter

VI. Optical Interface and Mechanical Dimensions

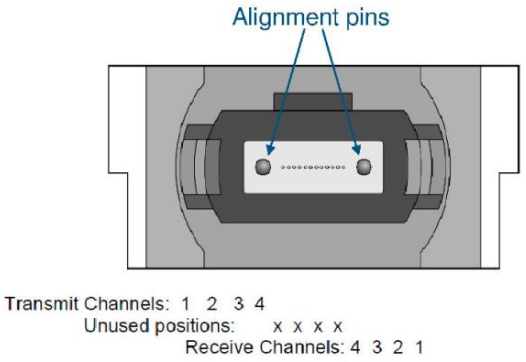

Figure 3 – Optical Receptacle and Channel Orientation for MPO connector

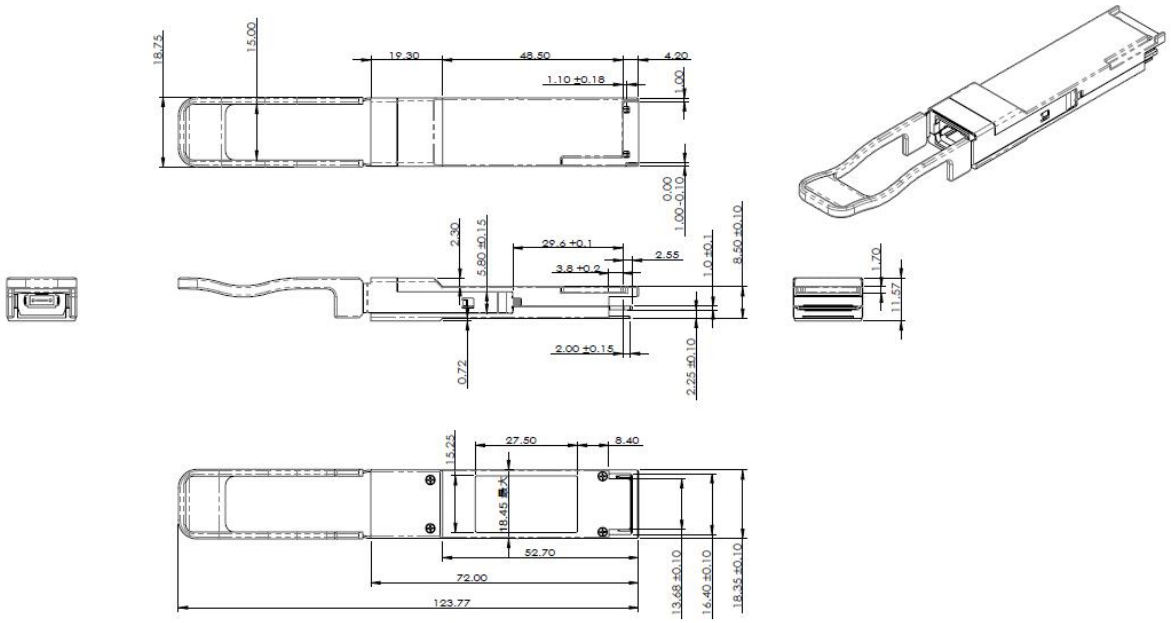

Figure 4 – Mechanical Dimensions.

VII. Ordering Information

Part Number	Description
QS112-400G-LPO-SR4	400Gb/s, QSFP112, MPO-12APC, 850nm MMF, SR4, LPO