

400G SR4 QSFP112 Optical Transceiver

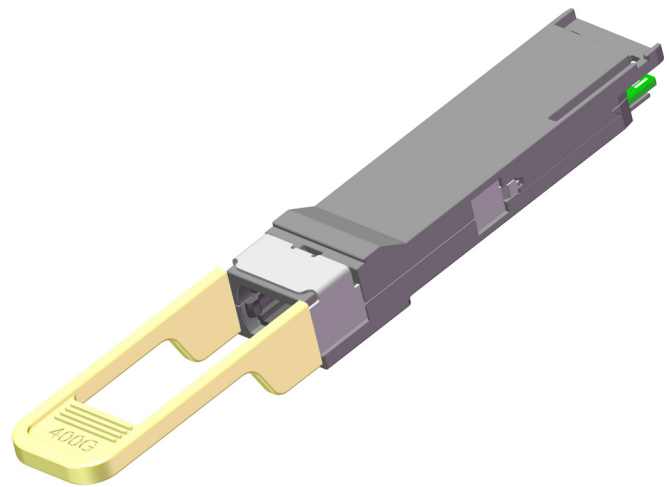
The QD4CS1MOC00HPAM is an QSFP112 optical transceiver for 4x53.125GBaud optical links. Transmission is based on VCSEL 850nm with electrical driver, while Receiver side is based on PIN photodetector and TIA. Module is equipped with DSP to provide channel equalization. The receptacle of the optical type is MPO-12 APC.

FEATURES

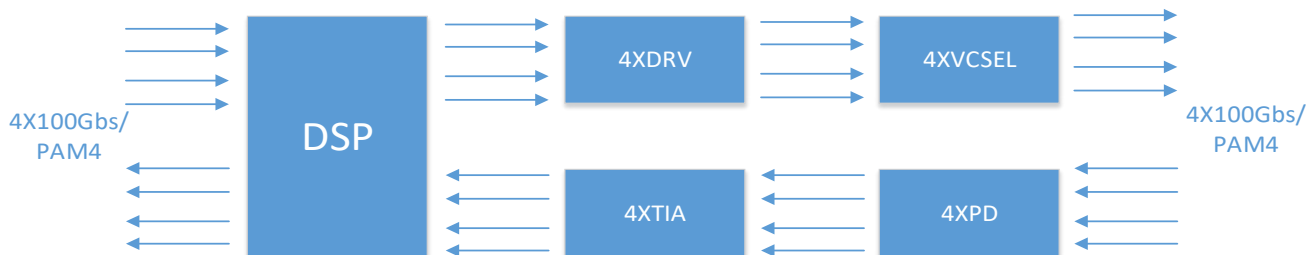
- QSFP112 MSA compliant
- 4X53.125GBaud electrical interface
- Up to 50m on OM4 with MMF
- MPO-12 APC optical receptacle type
- Commercial case temperature: 0~70°
- Single 3.3V power supply
- Maximum power consumption 9 Watts
- CMIS 5.0 standard interface
- Aligned to IEEE802.3db

APPLICATIONS

- 400GBASE-SR4 400G Ethernet
- Data Center Interconnect



PRODUCT ARCHITECTURE



QSFP112 PIN DIAGRAM



QSFP112 PIN DESCRIPTIONS

PAD	SYMBOL	DESCRIPTION	LOGIC	PLUG SEQUENCE ²	NOTES
1	GND	Ground		1	1
2	Tx2n	Transmitter Inverted Data Input	CML-I	3	
3	Tx2p	Transmitter Non-Inverted Data Input	CML-I	3	
4	GND	Ground		1	1
5	Tx4n	Transmitter Inverted Data Input	CML-I	3	
6	Tx4p	Transmitter Non-Inverted Data Input	CML-I	3	
7	GND	Ground		1	1
8	ModSelL	Select	LVTTL-I	3	
9	ResetL	Reset	LVTTL-I	3	
10	Vcc Rx	+3.3 V Power supply receiver		2	2
11	SCL	2-wire serial interface clock	LVC MOS-I/O	3	
12	SDA	2-wire serial interface data	LVC MOS-I/O	3	
13	GND	Ground		1	1
14	Rx3p	Receiver Non-Inverted Data Output	CML-O	3	
15	Rx3n	Receiver Inverted Data Output	CML-O	3	
16	GND	Ground		1	1
17	Rx1p	Receiver Non-Inverted Data Output	CML-O	3	
18	Rx1n	Receiver Inverted Data Output	CML-O	3	
19	GND	Ground		1	1
20	GND	Ground		1	1
21	Rx2n	Receiver Inverted Data Output	CML-O	3	
22	Rx2p	Receiver Non-Inverted Data Output	CML-O	3	
23	GND	Ground		1	1
24	Rx4n	Receiver Inverted Data Output	CML-O	3	
25	Rx4p	Receiver Non-Inverted Data Output	CML-O	3	
26	GND	Ground		1	1
27	ModPrsL	Present	LVTTL-O	3	

(1) GND is the symbol for signal and supply (power) common for the QSFP112 module. All are common within the QSFP112 module and all 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.

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PAD	SYMBOL	DESCRIPTION	LOGIC	PLUG SEQUENCE ²	NOTES
28	IntL/RxLOS	Interrupt/optional RxLOS	LVTTL-O	3	
29	Vcc Tx	+3.3 V Power supply transmitter		2	2
30	Vcc1	+3.3 V Power Supply		2	2
31	LPMoDe/Tx Dis	Low Power Mode/optional TX Disable	LVTTL-I	3	
32	GND	Ground		1	1
33	Tx3p	Transmitter Non-Inverted Data Input	CML-I	3	
34	Tx3n	Transmitter Inverted Data Input	CML-I	3	
35	GND	Ground		1	1
36	Tx1p	Transmitter Non-Inverted Data Input	CML-I	3	
37	Tx1n	Transmitter Inverted Data Input	CML-I	3	
38	GND	Ground		1	

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ABSOLUTE MAXIMUM RATINGS

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Storage Temperature	T_s	-40		85	°C	
Storage Ambient Humidity	H_A	0		85	%	
Maximum Supply Voltage	V_{CC}	-0.5		3.6	V	

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Operating Case Temperature	Tcase	0	25	70	°C	
Supply Voltage	VCC	3.135	3.3	3.465	V	
Relative Humidity	RH	5		85	%	
Data Rate (Optical)	DRO		4*106.25		Gbps	
Data Rate (Electrical)	DRE		4*106.25		Gbps	

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ELECTRICAL CHARACTERISTICS

(EOL, Tcase= 0~65°, VCC=3.135~3.465 V)

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Power Dissipation	P_d			9	W	
TRANSMITTER						
Data Rate, each lane	DRE		106.25		Gbps	
Differential Voltage pk-pk	VIN	40		900	mV	
Input differential impedance	ZIN		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
RECEIVER						
Data Rate, each lane	DRE		106.25		Gbps	
Output differential impedance	Z_{OUT}		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
Differential output voltage	V_{OUT}			1000	mV	

OPTICAL CHARACTERISTICS

(EOL, Tcase= 0~65°, VCC=3.135~3.465 V)

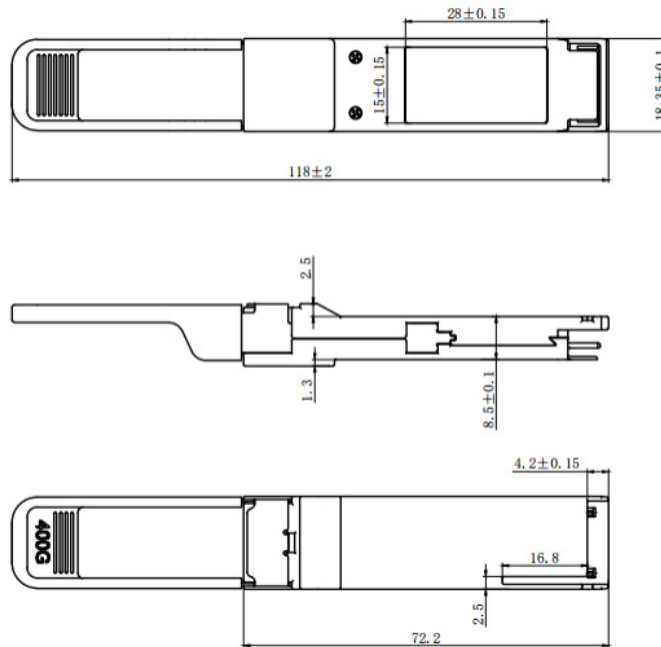
PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	NOTES
Signaling Speed per Lane	DRO		106.25		Gbps	
Center Wavelength	λ		850		nm	
RMS Spectral Width	$\Delta\lambda$			0.6	nm	
Average launch power		-1		4	dBm	
TX TDECQ				4.4	dB	
TX ER		2.5			dB	
Receiver sensitivity (max) For TDECQ \leq 1.8dB For 1.8 < TDECQ \leq 4.4dB			-4.4 -6.2+TDECQ		dBm	

ORDERING INFORMATION

50m	PACKAGE	RATE	REACH	OTHER INFO
QD4CS1MOC00HPAM	QSFP112	400G	50m	C-temp

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QSFP112 FORM MECHANICAL SPECIFICATIONS



Unit:mm
 Unspecified
 Tolerance:±0.1mm

REGULATORY COMPLIANCE

FEATURE	REFERENCE STANDARDS	PERFORMANCE
ESD-HBM	JESD22-A114-B	1KV high speed Pins, 2KV other Pins
ESD-Air Discharge	IEC 61000-4-2	+/-15KV
ESD-Contact Discharge	IEC 61000-4-2	+/-8KV
EMC-RE	FCC Part 15 Class B	
EMC-RS	IEC 61000 4-3	
ROHS 2.0	2011/65/EU	

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