

AOC-QSFPDD-800G-xM

800GBase QSFP-DD Active Optical Cable

0.5m to 50m Lengths, Commercial Temperature

FEATURES

- Hot-pluggable QSFP-DD form factor
- VCSEL transmitter and PIN PD receiver
- Support 850Gb/s aggregate bit rate
- Compliant with IEEE 802.3df-2024: 8x100GAUI-1 C2M electrical interface
- Compliant with QSFP-DD MSA Hardware Rev 7.0
- Type 2A housing
- Support 0.5m~50m transmission with OM4 MMF
- Compliant with CMIS Rev 5.0
- Commercial Operating Temperature Range: 0°C to 70°C
- Two wire serial Interface with digital diagnostic monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	TS	-40	-	85	°C
Supply Voltage	VCC	-0.5	-	3.6	V
Relative Humidity (non-condensing)	RH	5	-	85	%
Data Input Voltage Differential	IVDIP-VDINI	-	-	1	V
Control Input Voltage	VI	-0.3	-	VCC+0.5	V
Control Output Current	IO	-20	-	20	mA

RECOMMENDED OPERATING ENVIRONMENT

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Operating Case Temperature	TOPR	0	-	70	°C	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP	-	-	6400	mA	
Sustained peak current at hot plug	ICC_SP	-	-	5328	mA	
Maximum Power Dissipation	PD	-	-	16	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	2	W	
Signalling Speed per Lane	DRL	-	53.125	-	GBd	
Control Input Voltage High	VIH	VCC*0.7	-	VCC+0.3	V	
Control Input Voltage Low	VIL	-0.3	-	VCC*0.3	V	
Two Wire Serial Interface Clock Rate		-	-	400	kHz	
Power Supply Noise 1 kHz - 1 MHz (p-p)		-	-	66	mVpp	
Operating Distance		0.5	-	50	m	

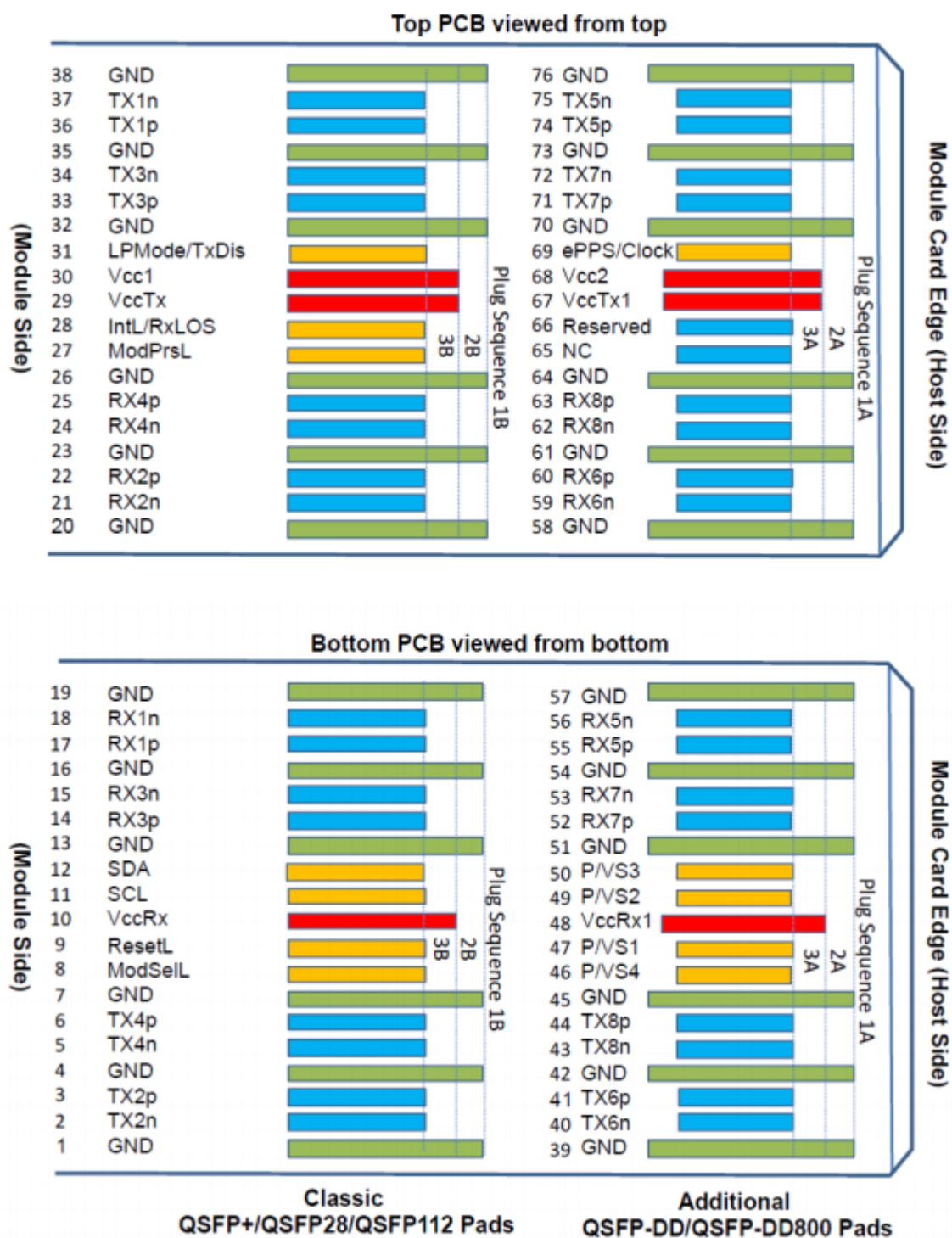
ELECTRICAL CHARACTERISTICS – HIGH SPEED SIGNAL

Parameter	Symbol	Min.	Typical	Max.	Unit
TRANSMITTER (Module Input, TP1)					
Differential pk-pk input Voltage tolerance (TP1a)		750	-	-	mV
Peak-to-peak AC common-mode voltage tolerance Low-frequency, VCMLF Full-band, VCMFB		32 80	-	-	mV
Differential-mode to common-mode return loss	RLcd	802.3ck 120G-2			dB
Effective return loss	ERL	8.5	-	-	dB
Differential termination mismatch		-	-	10	%
Single-ended voltage tolerance range		-0.4	-	3.3	V
DC common-mode voltage tolerance		-0.35	-	2.85	V
RECEIVER (Module Output, TP4)					
Peak-to-peak AC common-mode voltage Low-frequency, VCMLF Full-band, VCMFB		-	-	32 80	mV
Differential peak-to-peak output voltage Short mode Long mode Disabled		-	-	600 845 35	mV
Eye height	EH	15	-	-	mV
Vertical eye closure	VEC	-	-	12	dB
Common-mode to differential-mode return loss	RLDc	802.3ck 120G-1			dB
Effective return loss	ERL	8.5	-	-	dB
Differential termination mismatch		-	-	10	%
Transition time		8.5	-	-	ps
DC common-mode voltage tolerance		-0.35	-	2.85	V

ELECTRICAL CHARACTERISTICS – LOW SPEED CONTROL & SENSE SIGNALS

Parameter	Symbol	Min.	Max.	Unit
Module output SCL and SDA	VOL	0	0.4	V
Module Input SCL and SDA	VIL	-0.3	VCC*0.3	V
	VIH	VCC*0.7	VCC+0.5	V
InitMode, ResetL and ModSell	VIL	-0.3	0.8	V
	VIH	2	VCC+0.3	V
IntL	VOL	0	0.4	V
	VOH	VCC-0.5	VCC+0.3	V

PIN ASSIGNMENT



Pin definitions of the module high speed inputs/outputs

Pin	Logic	Symbol	Definition	Pin	Logic	Symbol	Definition
1		GND	Ground	39		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input	40	CML-I	Tx6n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-inverted Data Input	41	CML-I	Tx6p	Transmitter Non-inverted Data Input
4		GND	Ground	42		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input	43	CML-I	Tx8n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-inverted Data Input	44	CML-I	Tx8p	Transmitter Non-inverted Data Input
7		GND	Ground	45		GND	Ground
8	LVTTL-I	ModSelL	Module Select	46	LVCMO S/CML- I	P/VS4	Programmable/Module Vendor Specific 4
9	LVTTL-I	ResetL	Module Reset	47	LVCMO S /CML-I	P/VS1	Programmable/Module Vendor Specific 1
10		VccRx	+3.3V Power Supply Receiver	48		VccRx1	3.3V Power Supply
11	LVC MOS -I/O	SCL	TWI serial interface clock	49	LVC MO S /CML-O	P/VS2	Programmable/Module Vendor Specific 2
12	LVC MOS -I/O	SDA	TWI serial interface data	50	LVC MO S /CML-O	P/VS3	Programmable/Module Vendor Specific 3
13		GND	Ground	51		GND	Ground
14	CML-O	Rx3p	Receiver Non-inverted Data Output	52	CML-O	Rx7p	Receiver Non-inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output	53	CML-O	Rx7n	Receiver Inverted Data Output
16		GND	Ground	54		GND	Ground
17	CML-O	Rx1p	Receiver Non-inverted Data Output	55	CML-O	Rx5p	Receiver Non-inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output	56	CML-O	Rx5n	Receiver Inverted Data Output
19		GND	Ground	57		GND	Ground
20		GND	Ground	58		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Output	59	CML-O	Rx6n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-inverted Data Output	60	CML-O	Rx6p	Receiver Non-inverted Data Output
23		GND	Ground	61		GND	Ground
24	CML-O	Rx4n	Receiver Inverted Data Output	62	CML-O	Rx8n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-inverted Data Output	63	CML-O	Rx8p	Receiver Non-inverted Data Output
26		GND	Ground	64		GND	Ground
27	LVTTL-O	ModPrsL	Module Present	65		NC	Not connected
28	LVTTL-O	IntL/ RxLOS	Interrupt/optional RxLOS	66		Reserved	

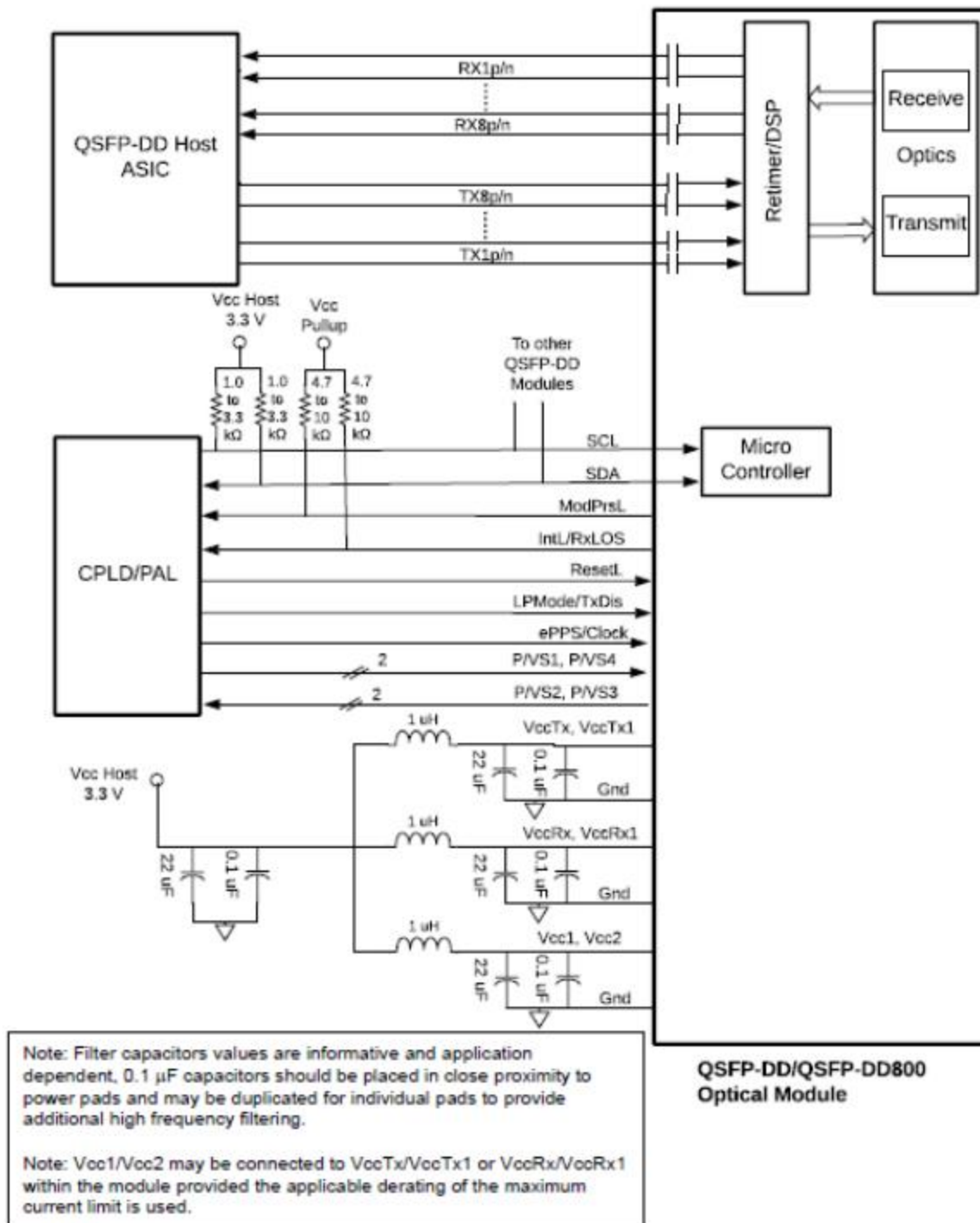
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29		VccTx	+3.3V Power Supply Transmitter	67		VccTx1	+3.3V Power Supply
30		Vcc1	+3.3V Power Supply	68		Vcc2	+3.3V Power Supply
31	LVTTL-I	LPMode/ TxDis	Low Power mode/optional TX Disable	69	LVCMO S-I	ePPS/Clock	1PPS PTP clock or reference clock input
32		GND	Ground	70		GND	Ground
33	CML-I	Tx3p	Transmitter Non-inverted Data Input	71	CML-I	Tx7p	Transmitter Non-inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input	72	CML-I	Tx7n	Transmitter Inverted Data Input
35		GND	Ground	73		GND	Ground
36	CML-I	Tx1p	Transmitter Non-inverted Data Input	74	CML-I	Tx5p	Transmitter Non-inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input	75	CML-I	Tx5n	Transmitter Inverted Data Input
38		GND	Ground	76		GND	Ground

DIGITAL DIAGNOSTIC MONITOR

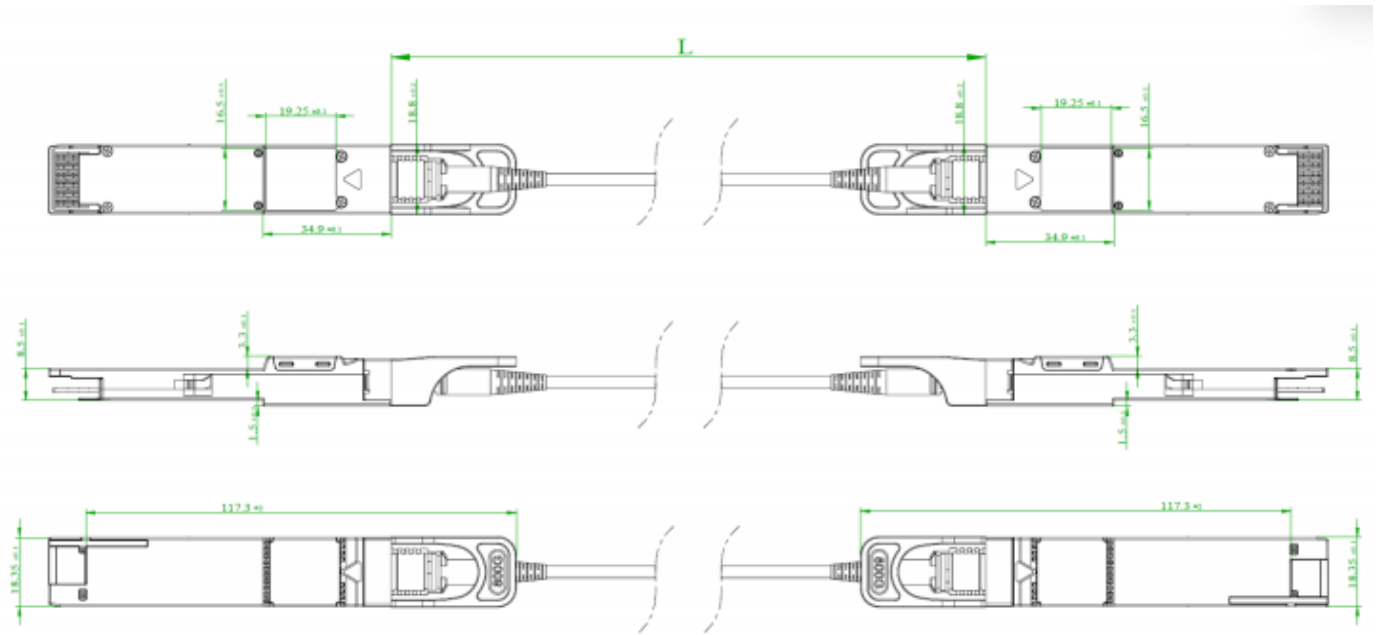
Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	±3	°C	Internal
Voltage	3.135 to 3.465	±3%	V	Internal

RECOMMENDED HOST BOARD



Recommended QSFP-DD/QSFP-DD800 host board schematic

MECHANICAL DIMENSIONS (UNITS: mm)



WARNINGS

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Class 1 Laser Product. Complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.