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Technical Datasheet

CBL-QSFP-8LC-AOC30M-C

Dell® Compatible 40Gb/s QSFP+ to 4 Duplex LC Active Optical Breakout Cable, 30m

FEATURES

- Available lengths 3m to 100m
- Four-channel full duplex active optical cable with breakout from QSFP+ to four duplex LC
- Hot-pluggable QSFP+ footprint
- 4 x Duplex LC Connector
- Support 41.2Gbps aggregate bit rate
- Data rate up to 10.3Gbps per channel
- Power Dissipation <1.8W
- Single +3.3V power supply
- Commercial Operating Temperature range 0°C to 70°C
- RoHS-6 Compliant
- Compliant with QSFP+ MSA

APPLICATIONS

10G/40G Ethernet
Proprietary high speed, high density data
High performance computing, server and data storage

DESCRIPTION

ATGBICS CBL-QSFP-8LC-AOC30M-C is a 40Gb/s QSFP+ to 4x 10G SFP+ hot pluggable Active Optical Cable for use in 40G-Ethernet links.

They are compliant with SFF-8679, and the mechanical QSFP+ plug is compatible with SFF-8661.Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8636.

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Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	VCC	0		3.6	V
Storage Temperature	Ts	-40		+85	°C
Relative Humidity	RH	5		85	%
Case Operating Temperature	Tc	0		+70	°C

Transceiver Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Power Dissipation	PD			1.8	W	
Power Supply Current	Icc			600	mA	
Aggregate Data Rate			41.2		Gbps	
Signaling rate per lane			10.3		Gbps	
Clock Rate-I2C				400	kHz	
Transmitter						
Input Differential impedance	ZIN		100		ohm	
Differential data input swing	VIN	180		900	mV	
Single-ended voltage tolerance		-0.3		3.3	V	
Receiver						
Output Differential impedance	Zout		100		ohm	
Differential data Output Swing	Vout	300		850	mV	

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Transmitter Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Reference Differential Input Impedance	Zd	-	100	-	Ω
Optical Return Loss Tolerance	-	-	12	-	dB
Differential Data Input Swing	Vin_pp	180	-	700	mV
Differential Data Input Threshold	-	-	50	-	mV

Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Aggregate Data Rate	---	---	41.2	---	Gbps	---
Signaling rate per lane	---	---	10.3	---	Gbps	---
Transmitter						
Center Wavelength	λ	840	850	860	nm	---
RMS spectral width	ΔλRMS	---	---	0.65	nm	---
Average Optical Power	PAVG	-8.4	---	2.4	dBm	---
Laser Off Power	POFF	---	---	-30	dBm	---
Extinction Ratio	ER	3	4	---	dB	---
Transmitter and dispersion eye closure	TDEC	---	---	3.5	dB	---
Optical Return Loss Tolerance	ORL	---	---	12	dB	---
Receiver						
Center Wavelength	λ	840	850	860	nm	---
Receiver Sensitivity (OMA)	RSENSE 1	---	---	-10.5	dBm	1
Stressed Receiver Sensitivity (OMA)	SRS	---	---	-7.5	dBm	---
Maximum Input Power	Pmax	3.4	---	---	dBm	---
Los Assert	LOSA	-30	---	---	dBm	---
Los Dessert	LOSD	---	---	-12	dBm	---

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Los Hysteresis	LOSH	0.5	---	---	dB	---
Receiver Reflectance	RREFL	---	---	-12	dB	---

Note1: Sensitivity for 10.3Gbps PRBS31 and BER better than or equal to E-12.

General Specifications

Parameter		Symbol	Min.	Typical	Max.	Unit	Note
Aggregate Data Rate				41.2		Gbps	
Signaling rate per lane				10.3		Gbps	
Bit Error Ratio (pre-FEC)		BER			1E-12		PRBS31
Maximum Supported Distances							
Fiber Type	Bandwidth (850nm)						
50um	2000MHz*km				82	m	OM2
50um	4700MHz*km				300	m	OM3
50um	4700MHz*km				400	m	OM4

Digital Diagnostic Functions

CBL-QSFP-8LC-AOC30M-C transceivers can be used in host systems that require either internally or externally calibrated digital diagnostics.

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Temperature monitor absolute error	---	-3	---	3	°C	---
Laser power monitor absolute error	---	-3	---	3	dB	---
RX power monitor absolute error	---	-3	---	3	dB	---
Supply voltage monitor absolute error	---	-100	---	100	mV	---
Bias current monitor	---	-10%	---	10%	mA	---

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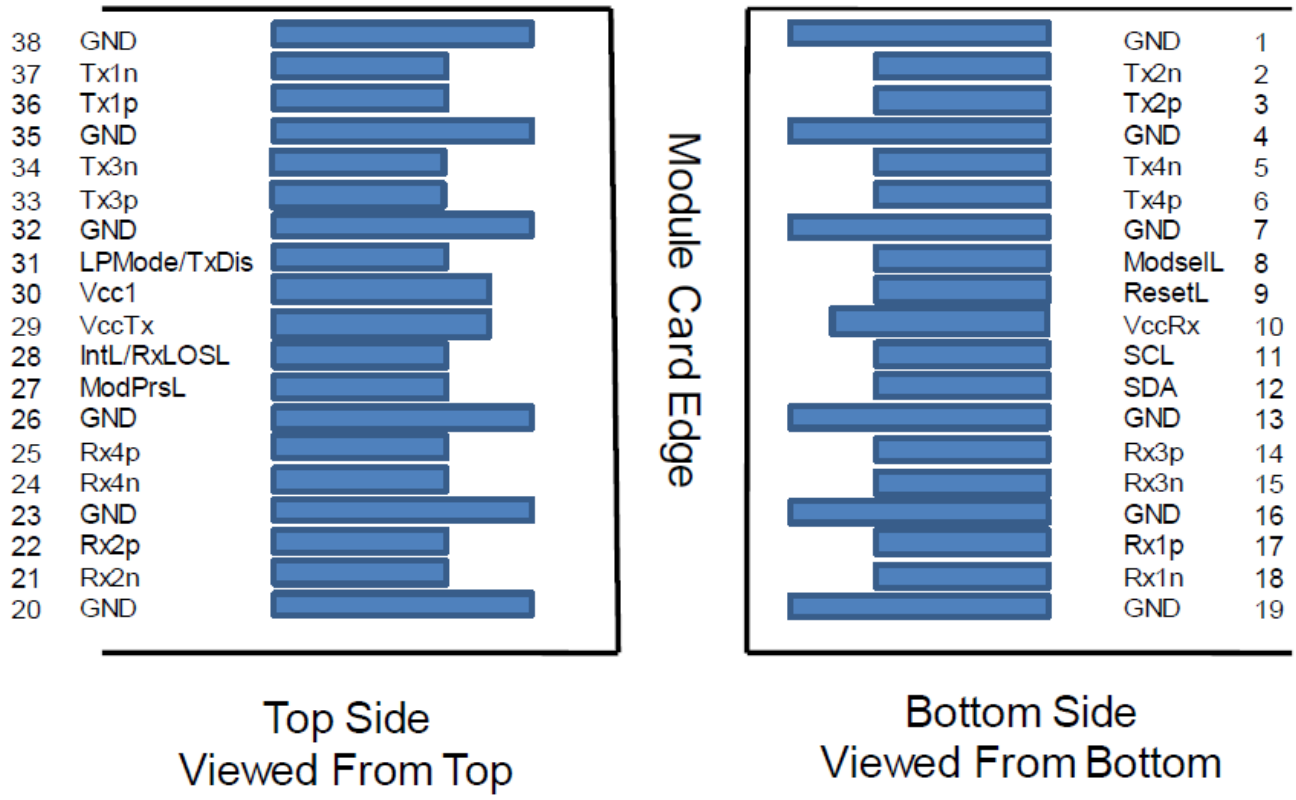
Pin Assignment

QSFP+ end



Top Side
Viewed From Top

Bottom Side
Viewed From Bottom

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Pin Description for QSFP+

PIN	Symbol	Name / Description	Note
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1

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27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	3.3V power supply transmitter	
30	Vcc1	3.3V power supply	
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

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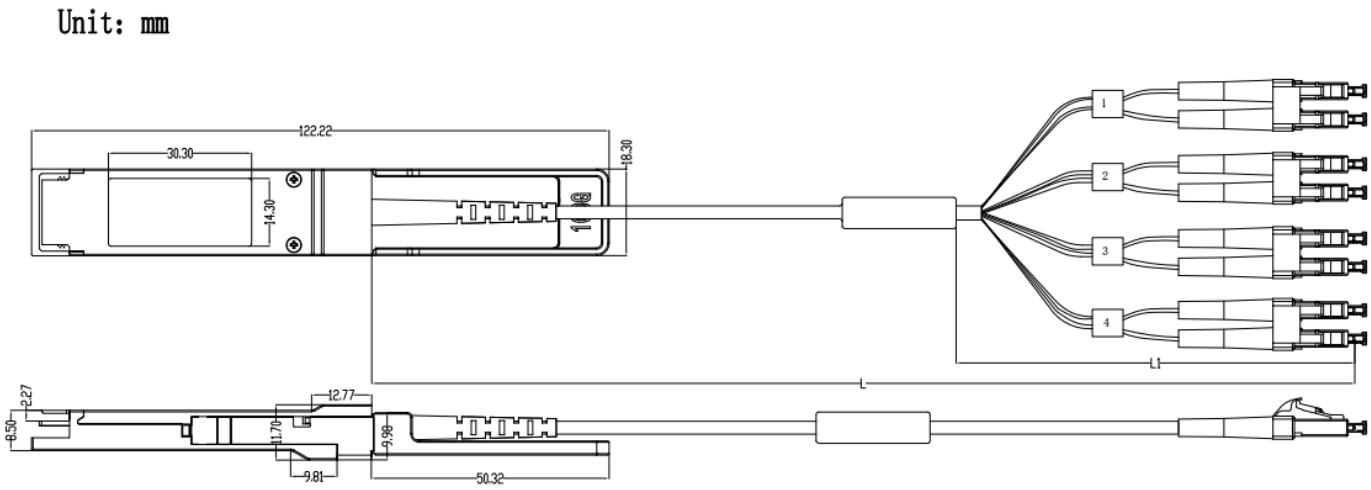
Note1: Module ground pins GND are isolated from the module case.

Mechanical Dimensions



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