

Technical Datasheet

CBL-QSFP-8LC-AOC20M-C

Dell® Compatible 40Gb/s QSFP+ to 4 Duplex LC Active Optical Breakout Cable, 20m

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-AOC20M-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.

Technical Datasheet

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	

Technical Datasheet

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	$\Delta\lambda_{RMS}$	---	---	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	---

Technical Datasheet

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

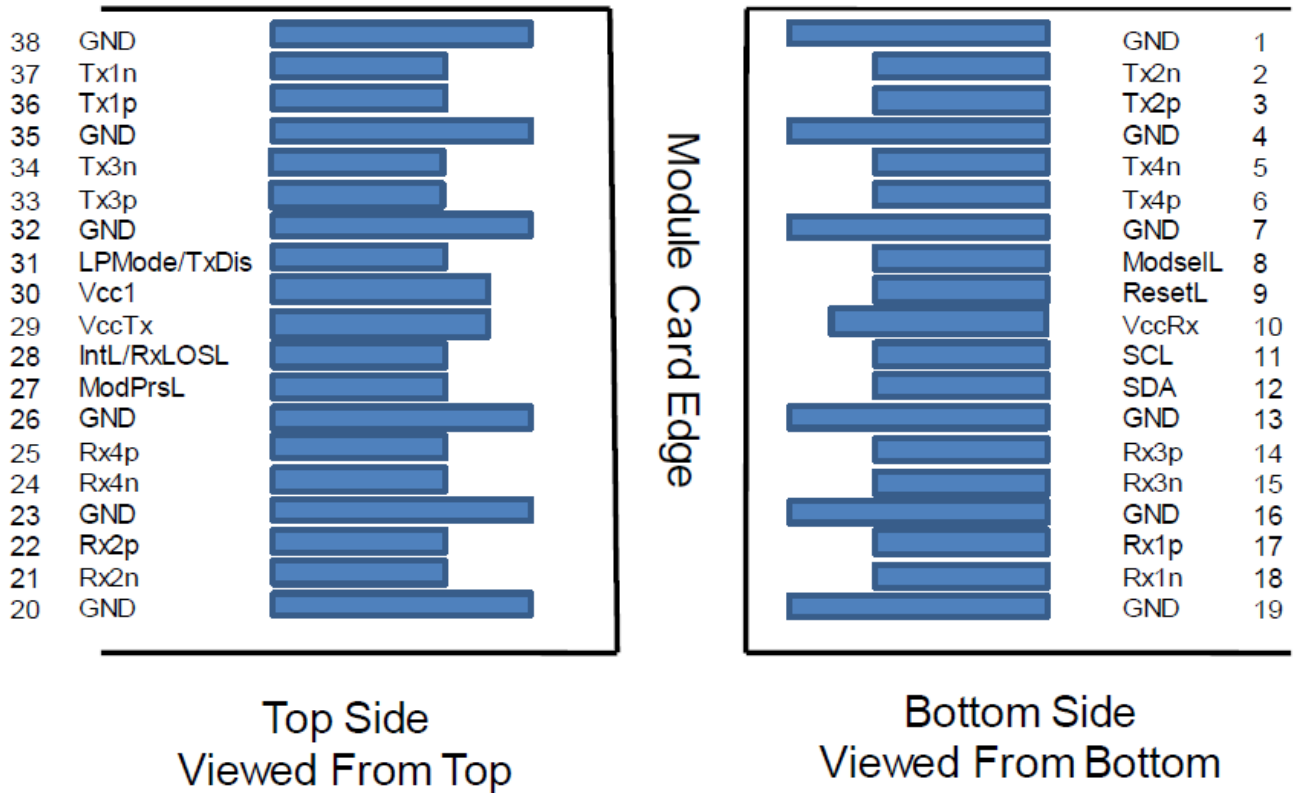
CBL-QSFP-8LC-AOC20M-C transceivers can be used in host systems that require either internally or externally calibrated digital diagnostics.

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	---

Technical Datasheet

Pin Assignment

QSFP+ end



Technical Datasheet

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

Technical Datasheet

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

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

Mechanical Dimensions

Unit: mm

