

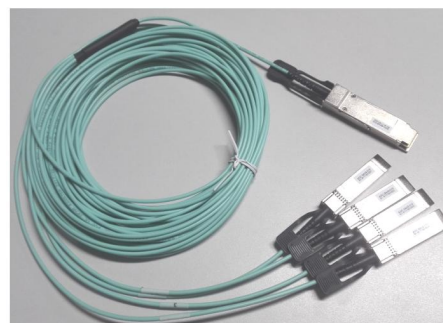
40G QSFP+ to 4X 10G SFP+ breakout

Active Optical Cables

AOC-Q14S-xxx

Features

- Electrical interface compliant to QSFP+ connector (SFF-8436) and SFP+ connectors (SFF-8431)
- Hot Pluggable
- 850nm VCSEL transmitter, PIN photo-detector receiver
- Operating case temperature: 0 to 70°C
- 3.3V power supply voltage
- All-metal housing for superior EMI performance



Applications

- 40 Gigabit Ethernet
- Fibre Channel Applications
- InfiniBand QDR, SDR, DDR
- Servers, switches, storage and host card adapters
- High-performance computing clusters

Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit
Storage Temperature	T _{STG}	-20		85	°C
Relative Humidity	RH	0		85	%
Case Operating Temperature	T _{Case}	0		70	°C
Supply Voltage	V _{CC}	-0.3	3.3	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	TA	0		+70	°C
Supply Voltage	VCC	3.15	3.3	3.47	V
Supply current (QSFP+)	Icc			450	mA
Supply current (SFP+)	Icc			150	mA
Channel Data Rate	Dr		10.3125		Gbps

QSFP+ Transmitter

Measured condition: Channel Data Rate 10.3125Gbps, VR_{CC}R=3.3V, PRBS31, Case
Operating Temperature 0~70°C

Parameter	Symbol	Min	Typical	Max	Unit
Centre Wavelength	λ_c	840	850	860	nm
RMS spectral width	Pm			0.6	nm
Average launch power, each lane	PAVG	-8.2	-1	+2.4	dBm
Extinction Ratio	ER	3.0			dB
Input differential swing	Vin PP	120		1600	mV
Input differential impedance	Zin	90	100	110	Ω

SFP+ Transmitter

Measured condition: Channel Data Rate 10.3125Gbps, VR_{CCR}=3.3V, PRBS31, Case
Operating Temperature 0~70°C

Parameter	Symbol	Min	Typical	Max	Unit
Centre Wavelength	λ_c	840	850	860	nm
Average Optical Power	PAVG	-6.5			dBm
Extinction Ratio	ER	3.0			dB
Differential Data Input Swing	Vin PP	200		1600	mV
Input differential impedance	Zin	90	100	110	Ω

QSFP+ Receiver

Measured condition: Channel Data Rate 10.3125Gbps, VRCCR=3.3V, PRBS31, Case

Operating Temperature 0~70°C

Parameter	Symbol	Min	Typical	Max	Unit
Centre Wavelength	λ_c	840	850	860	nm
Bit Error Rate	BER			E-12	
Differential Data Output Swing	Vout PP	320	450		mV
Output Differential Impedance	Zout	90	100	110	Ω

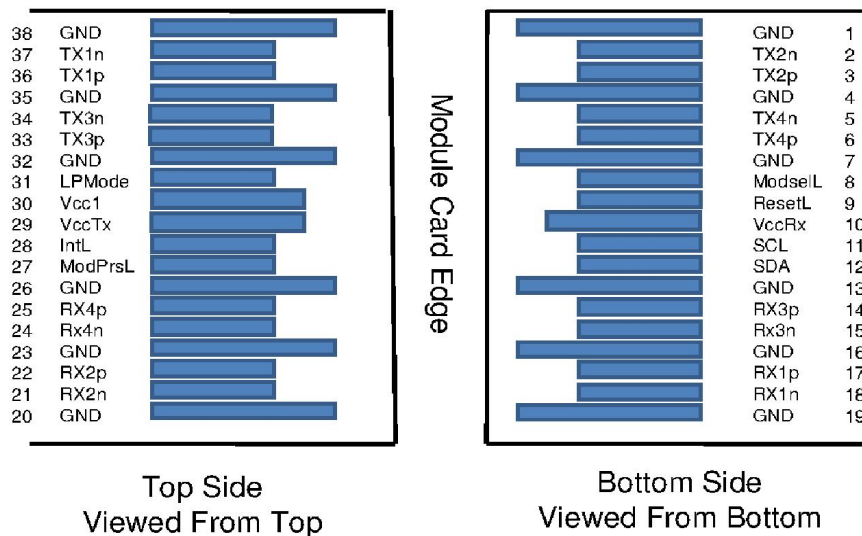
SFP+ Receiver

Measured condition: Channel Data Rate 10.3125Gbps, VRCCR=3.3V, PRBS31, Case

Operating Temperature 0~70°C

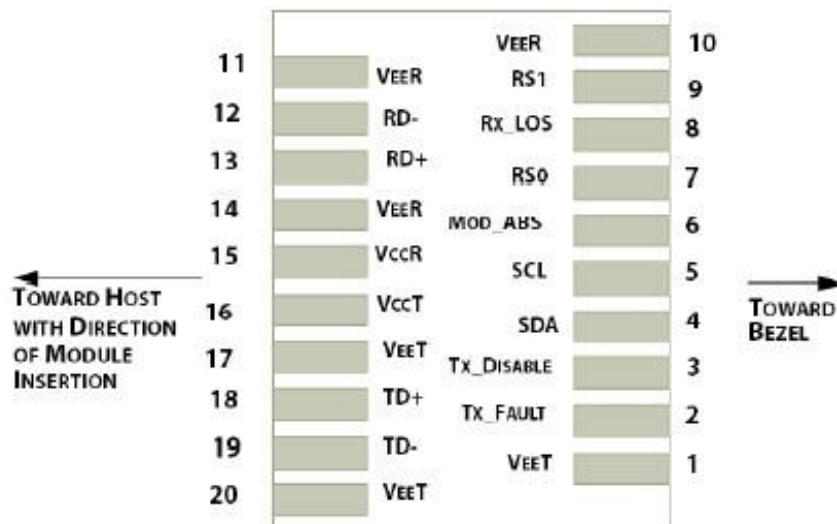
Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ_c	840	850	860	nm
Bit Error Rate	BER			E-12	
Differential Data Output Swing	Vout PP	370		1600	mV
Output Differential Impedance	Zout	90	100	110	ohm

QSFP + Pin Descriptions



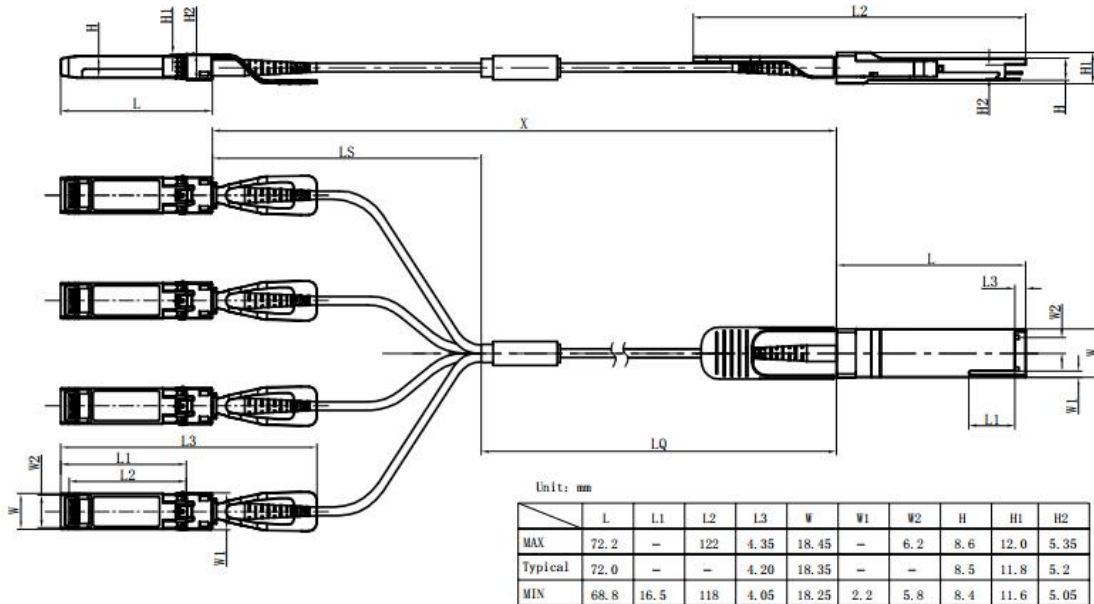
PIN	Name	Function/Description
1	GND	Module Ground
2	Tx2n	Transmitter inverted data input
3	Tx2p	Transmitter non-inverted data input
4	GND	Module Ground
5	Tx4n	Transmitter inverted data input
6	Tx4p	Transmitter non-inverted data input
7	GND	Module Ground
8	MODSEIL	Module Select
9	ResetL	Module Reset
10	VCCRx	+3.3v Receiver Power Supply
11	SCL	2-wire Serial interface clock
12	SDA	2-wire Serial interface data
13	GND	Module Ground
14	RX3p	Receiver non-inverted data output
15	RX3n	Receiver inverted data output
16	GND	Transmitter Power Supply
17	RX1p	Receiver non-inverted data output
18	RX1n	Receiver inverted data output
19	GND	Module Ground
20	GND	Module Ground
21	RX2n	Receiver inverted data output
22	RX2p	Receiver non-inverted data output
23	GND	Module Ground
24	RX4n	Receiver inverted data output
25	RX4p	Receiver non-inverted data output
26	GND	Module Ground
27	ModPrsL	Module Present, internal pulled down to GND
28	IntL	Interrupt output, should be pulled up on host board
29	VCCTx	+3.3v Transmitter Power Supply
30	VCC1	+3.3v Power Supply
31	LPMoDe	Low Power Mode
32	GND	Module Ground
33	Tx3p	Transmitter non-inverted data input
34	Tx3n	Transmitter inverted data input
35	GND	Module Ground
36	Tx1p	Transmitter non-inverted data input
37	Tx1n	Transmitter inverted data input
38	GND	Module Ground

SFP+ Pin Descriptions



PIN	Name	Function/Description
1	VeeT	Transmitter Ground
2	Tx_Fault	Transmitter Fault - High indicates a fault condition
3	Tx_Disable	Transmitter Disable - High or open disables the transmitter
4	SDA	Two wire serial interface Data Line
5	SCL	Two wire serial interface Clock Line
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module
7	RS0	Rx Rate Select,not used
8	RX_LOS	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1	Tx Rate Select,not used
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Receiver Inverted DATA out
13	RD+	Receiver Non-inverted DATA out
14	VeeR	Receiver Ground
15	VccR	Receiver Power Supply
16	VccT	Transmitter Power Supply
17	VeeT	Transmitter Ground
18	TD+	Transmitter Non-Inverted DATA in
19	TD-	Transmitter Inverted DATA in
20	VeeT	Transmitter Ground

Mechanical Design Diagram



Unit: mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
MAX	57.75	48.0	44.65	102.5	13.75	14.0	12.25	8.65	0.55	10.4
Typical	57.55	47.8	44.45	101.5	13.65	13.9	12.15	8.55	0.5	10.2
MIN	57.35	47.6	44.25	100.5	13.55	13.8	12.05	8.45	0.45	10.0

Total length (X)	Breakout point (measured from QSFP) (LQ)	Breakout point (measured from SFP+) (LX)
1m	30cm	70cm
2m	60cm	1.4m
3m	1m	2m
5m	2m	3m
7m	4m	3m
10m	7m	3m
15m	12m	3m
20m	17m	3m
25m	22m	3m
30m	27m	3m
40m	37m	3m
50m	47m	3m

Cable Length (Unit: m)	Tolerant (Unit: cm)
<1.0	+5/-0
1.0~4.5	+15/-0
5.0~14.5	+30/-0
≥15.0	+2%/-0

Ordering information:

Part Number	Product Description
AOC-Q14S-xxx	OM3 MMF with UL Certification

XXX	Cable (MMF) Length
001	001=1 米
050	050=50 米
100	100=100 米

Revision History

Revision	Initiated	Approved	content	Release Date
Ver1.0	QR.HUANG	Nicky	Released	June/2017

Further Information

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