

## 40 Gb/s QSFP+ CSR4 Transceiver with DDM

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### QSFP+ Series

- **Compliant with QSFP+ MSA**
- **4x10Gbps 850nm VCSEL-based Transmitter**
- **Maximum Link Length of 300m via OM3 Multimode Fiber(MMF)**

Ascent's QSFP-AQ-MP-85-03 QSFP transceivers are designed for use in 40 Gigabit per second links over multimode fiber. They are compliant with the QSFP+ MSA and IEEE 802.3ba 40GBASE-SR4.

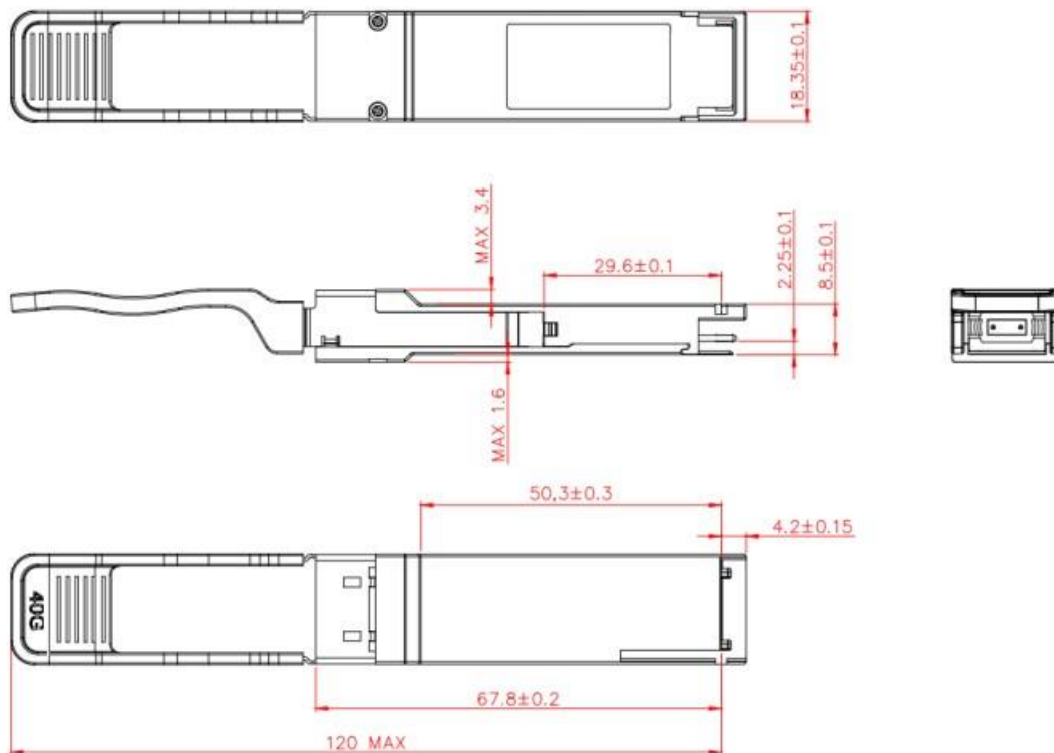
The optical transmitter portion of the transceiver incorporates a 4-channel VCSEL array, a 4-channel input buffer and laser driver, diagnostic monitors, control and bias blocks. For module control, the control interface incorporates a two-wire serial interface of clock and data signals. Diagnostic monitors for VCSEL bias, module temperature, transmitted optical power, received optical power and supply voltage are implemented and results are available through the TWS interface. Alarm and warning thresholds are established for the monitored attributes. Fault detection or channel deactivation through the TWS interface will disable the channel. Status, alarm/warning and fault information are available via the TWS interface.

The optical receiver portion of the transceiver incorporates a 4-channel PIN photodiode array, a 4-channel TIA array, a 4-channel output buffer, diagnostic monitors, and control and bias blocks. Diagnostic monitors for optical input power are implemented and results are available through the TWS interface. Alarm and warning thresholds are established for the monitored attributes.

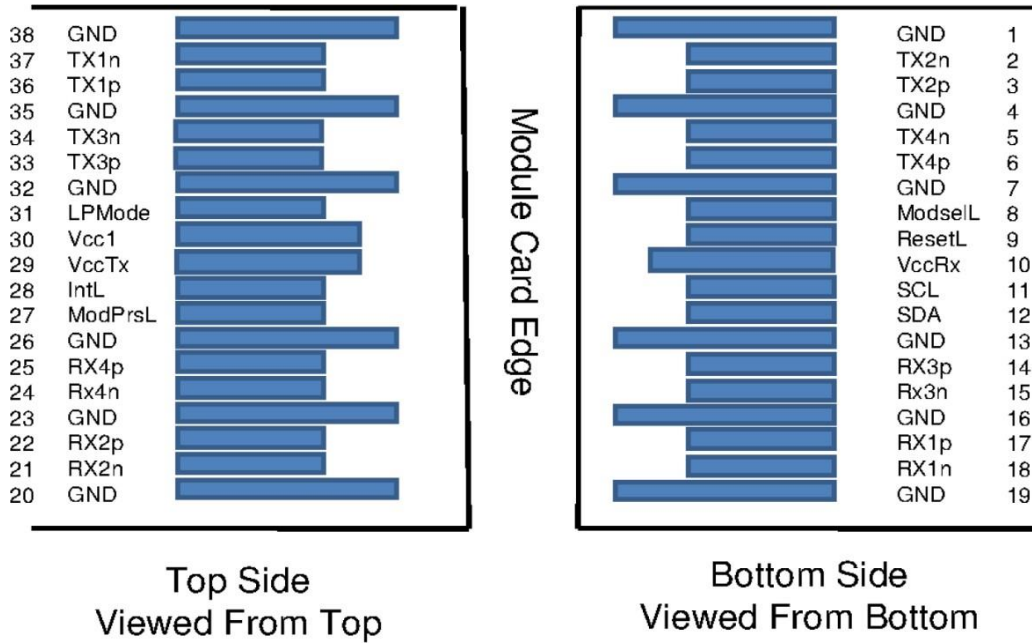
## Key Features

- Compliant with QSFP+ MSA Specification
- Operating Temperature(0°C to 70°C)
- 4x10Gbps 850nm VCSEL-based Transmitter
- Maximum Link Length of 300m via OM3 Multimode Fiber(MMF)
- Be compliant to the 40GbE XLPII electrical specification per IEEE 802.3ba-2010
- Be compliant to the IEEE 802.3ae 10GBASE-SR optical specification

## Outline Dimension



## Pin Assignment



Pin	Logic	Symbol	Name/Description	Note
1		GND	Ground	
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		VccRx	+ 3.3V Power Supply Receiver	
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	
20		GND	Ground	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	

Pin	Logic	Symbol	Name/Description	Note
26		GND	Ground	
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	
30		Vcc1	+3.3 V Power Supply	
31	LVTTL-I	LPMODE	Low Power Mode	
32		GND	Ground	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	

## Specifications

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T <sub>s</sub>	-40		85	°C	
Relative Humidity	RH	0		85	%	

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Case Temperature	T <sub>c</sub>	0		70	°C	
Power Supply Voltage	V <sub>cc</sub>	3.135	3.3	3.465	V	
Signaling Rate each Channel			10.3125		Gbps	
Supply Noise Rejection		---	---	100	mV	
Receiver Differential Data Output		---	100		Ohm	
Operating Distance	D			300	m	OM3 MMF

### Optical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
<b>Transmitter</b>						
Signaling Rate, each lane (range)	GBb		10.3125		GBb	
Center Wavelength	λ	840	850	860	nm	
RMS Spectral Width	SW			0.6	nm	
Average Launch Power, each Lane	P <sub>f</sub>	-4		2.4	dBm	
Optical Modulation Amplitude (OMA), each Lane	TxOMA	-4		3	dBm	
Average Launch Power of OFF Transmitter, each Lane				-30	dBm	
Extinction Ratio	ER	3			dB	
Optical Return Loss Tolerance				12	dB	
<b>Receiver</b>						
Signaling rate, each lane (range)	GBb		10.3125		GBb	
Center Wavelength	λ	840		860	nm	
Damage threshold		3.4			dBm	
Average power at receiver input, each lane		-11.5		2.4	dBm	
Receive power, each lane (OMA)				3	dBm	
Receiver sensitivity (OMA)	SOMA			-11.1	dBm	BER@1e-12
Receiver reflectance				-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-11	dBm	
LOS Hysteresis		0.5			dB	

### Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Power Consumption				1.5	W	
Supply Current	I <sub>cc</sub>			450	mA	

## Ordering Information

**Product Name**

QSFP-AQ-MP-85-03

**Product Description**

QSFP+ Plug-in, 40 Gbps, 300 m OM3 fiber, 400 m OM4 fiber, TX/RX 850 nm SR4, with DDM on two multi-mode fibers, MPO connector

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