

40GBASE-SR QSFP+ Optical Transceiver

AMQ10-SR4-M1

Features

- 4 channels 850nm VCSEL and PIN
- Electrical interface compliant to SFF-8436
- Support 40GE data rate
- Hot Pluggable QSFP form factor
- Single MPO connector receptacle
- Built-in digital diagnostic functions
- Operating case temperature 0°C to +70°C
- 3.3V power supply voltage



Module Block Diagram

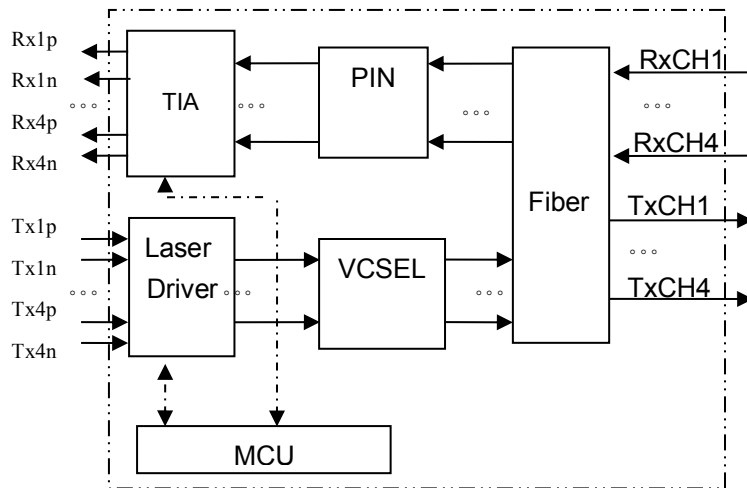


Figure1. Module Block Diagram

Absolute Maximum Ratings

Parameter	Symbol	Min	Type	Max	Unit
Storage Temperature	T_{STG}	-20		85	°C
Case Operating Temperature	T_{Case}	0		70	°C
Supply Voltage	V_{CC}	-0.5	3.3	3.6	V
Input Voltage	$V_{I\text{lvttl}}$	-0.5		$V_{CC}+0.5$	V
Damage Threshold	DT	3			dBm

Recommended Operating Conditions

Parameter	Symbol	Min	Type	Max	Unit
Case Operating Temperature	T_{Case}	0		70	°C
Supply Voltage	VCC	3.15	3.3	3.45	V
Differential data input voltage per lane	V_{din}	200		1200	mV
Signaling rate per lane	D_r	2.5	10.3125		Gbit/s
Differential Termination Resistance	Z_{in}	80	100	120	Ω
Module power	P			1.5	W

Transmitter Characteristics

Parameter	Symbol	Min	Type	Max	Unit
Center wavelength	λ_c	840	850	860	nm
RMS Spectral Width	P_m			0.6	nm
Average Launch Power per Lane	P_{AVG}	-8.2	-1	+2.4	dBm
Optical Extinction Ratio	ER	3	4		dB
Total Jitter	T_{JT_x}			120	ps
Transition time (20% to 80%)	$T_{R,TF}$			100	ps
Differential data input voltage per lane	V_{INpp}	120		1600	mV

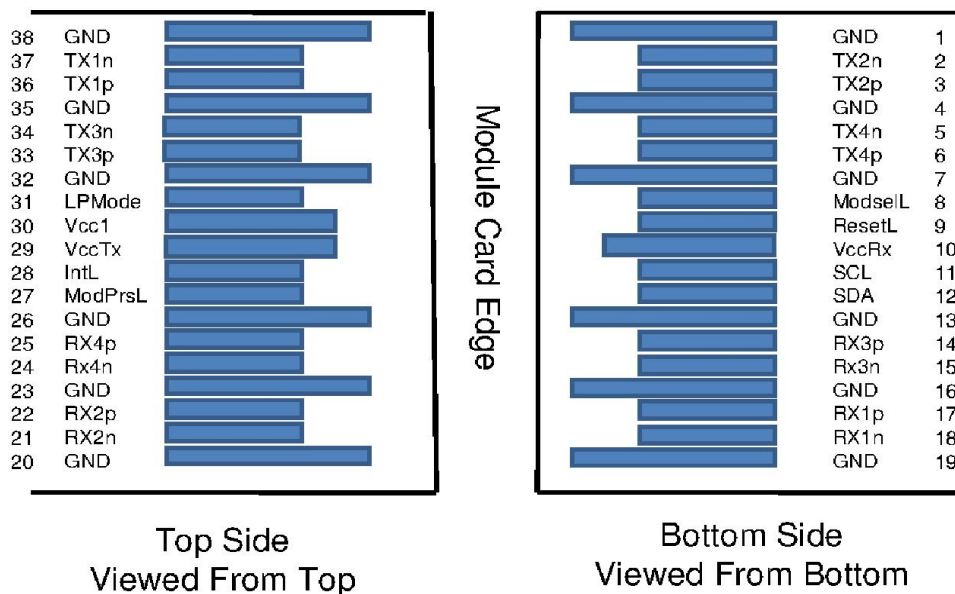
Note: Tested with a PRBS31 test pattern, $T_{OP} = 0$ to 70°C , $V_{CC} = 3.15$ to 3.45 V

Receiver Characteristics

Parameter	Symbol	Min	Type	Max	Unit
Center wavelength	λ_c	840	850	860	nm
Sensitivity	P_{sen}		-12	-10	dBm
Bit Error Ratio	BER			10^{-12}	
Optical Return Loss Tolerance	RL			12	dB
Differential data output voltage per lane	V_{OUTpp}	320	450		mV
Differential Termination Resistance	Z_{out}	80	100	120	Ω
Transition time (20% to 80%)	t_R, t_F			100	ps
LOS De-Assert	LOS_D			-15	dBm
LOS Assert	LOS_A	-30			dBm
LOS Hysteresis		0.5	2		dB

Note: Tested with a PRBS31 test pattern, $T_{OP} = 0$ to 70°C , $V_{CC} = 3.15$ to 3.45 V

Pin Descriptions

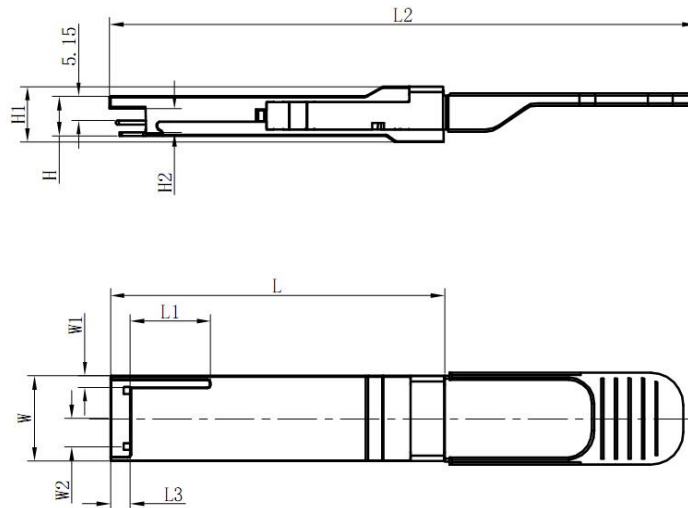


Pin Definition

Parameter	Symbol	Name/Description
1	GND	Ground
2	Tx2n	Transmitter Inverted Data Input
3	Tx2p	Transmitter Non-Inverted Data Input
4	GND	Ground
5	Tx4n	Transmitter Inverted Data Input
6	Tx4p	Transmitter Non-Inverted Data Input
7	GND	Ground
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
14	Rx3p	Receiver Non-Inverted Data Output
15	Rx3n	Receiver Inverted Data Output
16	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output
18	Rx1n	Receiver Inverted Data Output
19	GND	Ground
20	GND	Ground
21	Rx2n	Receiver Inverted Data Output
22	Rx2p	Receiver Non-Inverted Data Output
23	GND	Ground
24	Rx4n	Receiver Inverted Data Output
25	Rx4p	Receiver Non-Inverted Data Output
26	GND	Ground
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
33	Tx3p	Transmitter Non-Inverted Data Input
34	Tx3n	Transmitter Inverted Data Input
35	GND	Ground
36	Tx1p	Transmitter Non-Inverted Data Input
37	Tx1n	Transmitter Inverted Data Input

38	GND	Ground
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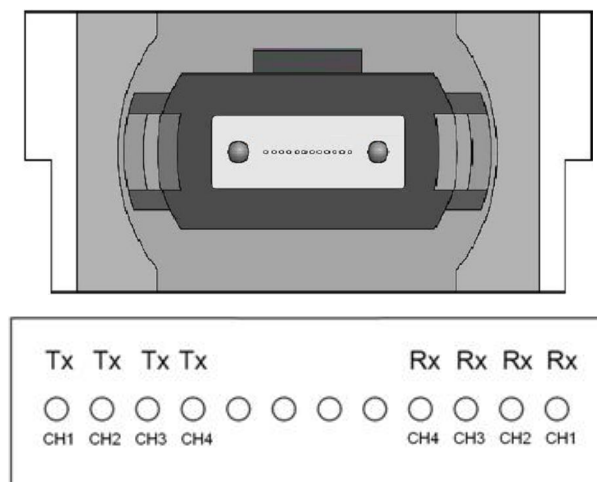
Mechanical Design Diagram



	L	L1	L2	L3	W	W1	W2	H	H1	H2
Max	72.2	—	122	4.35	18.5	—	6.2	8.6	12.1	5.35
Type	—	—	—	—	—	—	—	—	—	—
Min	68.8	16.5	118	4.05	18.1	2.2	5.8	8.4	11.7	5.05

Unit: mm

Optical Interface



Ordering information

Part Number	Product Description
AMQ10-SR4-M1	40GBASE-SR QSFP+ Optical Transceiver

Revision History

Revision	Initiated	Approved	content	Release Date
Ver1.0	HT.HUANG	Nicky	Released	Aug/2017