RQ-40GD-80-CXX

QSFP+ 40G DWDM, C21~C60, Duplex LC, Transceiver
RoHS Compliant

Features

- Single wavelength 40Gbps transmission
- Fixed wavelengths on DWDM 100GHz Grid
- Up to 80km over SMF (with DCM and EDFA)
- Duplex LC connector
- Power dissipation 3.5W (Max)
- 4 x 10G Electrical interface at host side
- Compliant with QSFP+ MSA SFF-8679
- Compliant with QSFP+ MSA SFF-8636
- QSFP+ MSA digital monitoring functions
- Safety Certification: TUV/UL/FDA*Note1

Applications

- 40GbE signal DWDM transmission

Ordering Information

Part No.	Data Rate	Fiber	CDR	Interface	Temp.	DDMI
RQ-40GD-CXX*(note2)	40Gbps	SMF	Yes	LC	0℃~+70℃	Yes

Note1: For the latest certification information, please check with Fiberwdm.

Note2: Standard version, XX refers to ITU-T defined DWDM wavelength channel as showing in the following table 1.

*The product image is only for reference purpose.

Table 1：ITU-T 100GHz Spacing Channel Numbers（xx）

Ch(nm)	Freq(THz)	Central Wavelength(nm)	Ch(nm)	Freq(THz)	Central Wavelength(nm)
21	192.1	1560.61	41	194.1	1544.53
22	192.2	1559.79	42	194.2	1543.73
23	192.3	1558.98	43	194.3	1542.94
24	192.4	1558.17	44	194.4	1542.14
25	192.5	1557.36	45	194.5	1541.35
26	192.6	1556.55	46	194.6	1540.56
27	192.7	1555.75	47	194.7	1539.77
28	192.8	1554.94	48	194.8	1538.98
29	192.9	1554.13	49	194.9	1538.19
30	193.0	1553.33	50	195.0	1537.40
31	193.1	1552.52	51	195.1	1536.61
32	193.2	1551.72	52	195.2	1535.82
33	193.3	1550.92	53	195.3	1535.04
34	193.4	1550.12	54	195.4	1534.25
35	193.5	1549.32	55	195.5	1533.47
36	193.6	1548.51	56	195.6	1532.68
37	193.7	1547.72	57	195.7	1531.90
38	193.8	1546.92	58	195.8	1531.12
39	193.9	1546.12	59	195.9	1530.33
40	194.0	1545.32	60	196.0	1529.55

Product Description

Fiberwdm's 40GE DWDM QSFP+ pluggable optical transceiver modules are designed for multiple 40GE links up to 80km distance over standard G.652 single mode optical fibers (SMF). For short distances, e.g. several kilometers, no EDFA and dispersion compensation modules (DCM) are required. But for relative longer distances, EDFA and DCM are required to compensate the fiber link loss and fiber dispersion.

The module's DWDM transmitter is on the ITU-T defined 100GHz spacing DWDM grid, and is Laser Class 1 compliant according to International Safety Standard IEC-60825. The receiver section uses a wideband PIN-PD detector and is DWDM channel independent. Digital diagnostics functions are available via the I^2C interface as specified by QSFP+ MSA specification SFF-8636.

Absolute Maximum Ratings*(note3)

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	0	3.5	V
Operating Relative Humidity	RH	5	85 (Non-condening)	%
Receiver Damage Threshold		5		dBm

Note3: Exceeding any of these maximum ratings may cause permanent damage to the device.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature*(note4)	T_c	0	25	70	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Dissipation	P_D		3.2	3.5	W

Note4: Case temperature measured at the hottest point on the module case.

Performance Specifications – Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
HS Data rate per lane			10.3125		Gbit/s	Total 4 lanes
Data rate variation		-100		+100	ppm	
Transmitter						
Input swing (differential)	Vin	250		800	mVpp	AC coupled
Input impedance (differential)	Zin	90	100	110	Ohm	
Receiver						
Output swing (differential)	Vout	450			mVpp	AC coupled
Output impedance (differential)	Zout	90	100	110	Ohm	
Low Speed Signals						
LPMode, Reset, ModSel	VIL	-0.3		0.8	V	
	VIH	2		Vcc		
ModPrs, Int	VOL	0		0.4	V	IOL=2.0mA
	VOH	Vcc-0.5		Vcc+0.3		

SCL, SDA	VIL	-0.3		0.3*Vcc	V	
	VIH	0.7*Vcc		Vcc		
SCL, SDA	VOL	0		0.4	V	IOL(max)=3.0mA
	VOH	Vcc-0.5		Vcc+0.3		

Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate*(note5)			42.5		Gbps
Transmitter					
Optical Central Wavelength	λc		See Table 1		nm
Central Wavelength Stability		λc -0.1		λc +0.1	nm
Average Output Power	Pout	-1		3	dBm
Optical Output Power (Tx: OFF)	Poff			-30	dBm
Receiver					
Operating Wavelength		1300		1570	nm
Receiver Sensitivity (ave. power)*(note6)	Psen		-11		dBm
Receiver damage threshold		5			dBm
Receiver Overload (ave. power) *(note6)	Psat	+4			dBm
Optical Return Loss	ORL	-27			dB
Receiver Dispersion Tolerance*(note7)		-50		150	ps/nm
Rx power (avg) range at OSNR 37dB*(note8)		-8		4	dBm
LOS Asserted	LOSA	-15			dBm
LOS De-asserted	LOSD			-11	dBm
LOS Hysteresis		1			dB

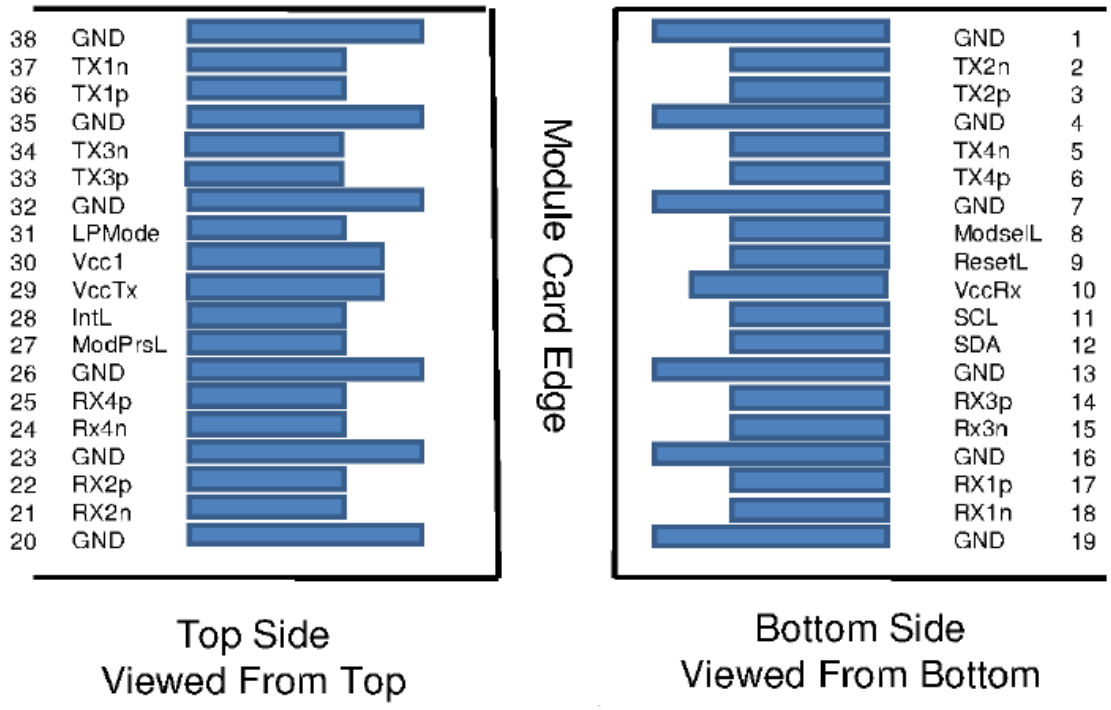
Note5: Data rate includes the KP4 FEC code.

Note6: Rx sensitivity and overload are the average Rx power for pre-FEC BER < 5E-5 without dispersion and noise load.

Note7: Dispersion tolerance is for dispersion values that cause Rx sensitivity penalty < 2 dB when compared with no dispersion.

Note8: Rx power range at OSNR 37dB is the average Rx power for pre-FEC BER < 5E-5 without dispersion.

QSFP+ Transceiver Electrical Pad Layout

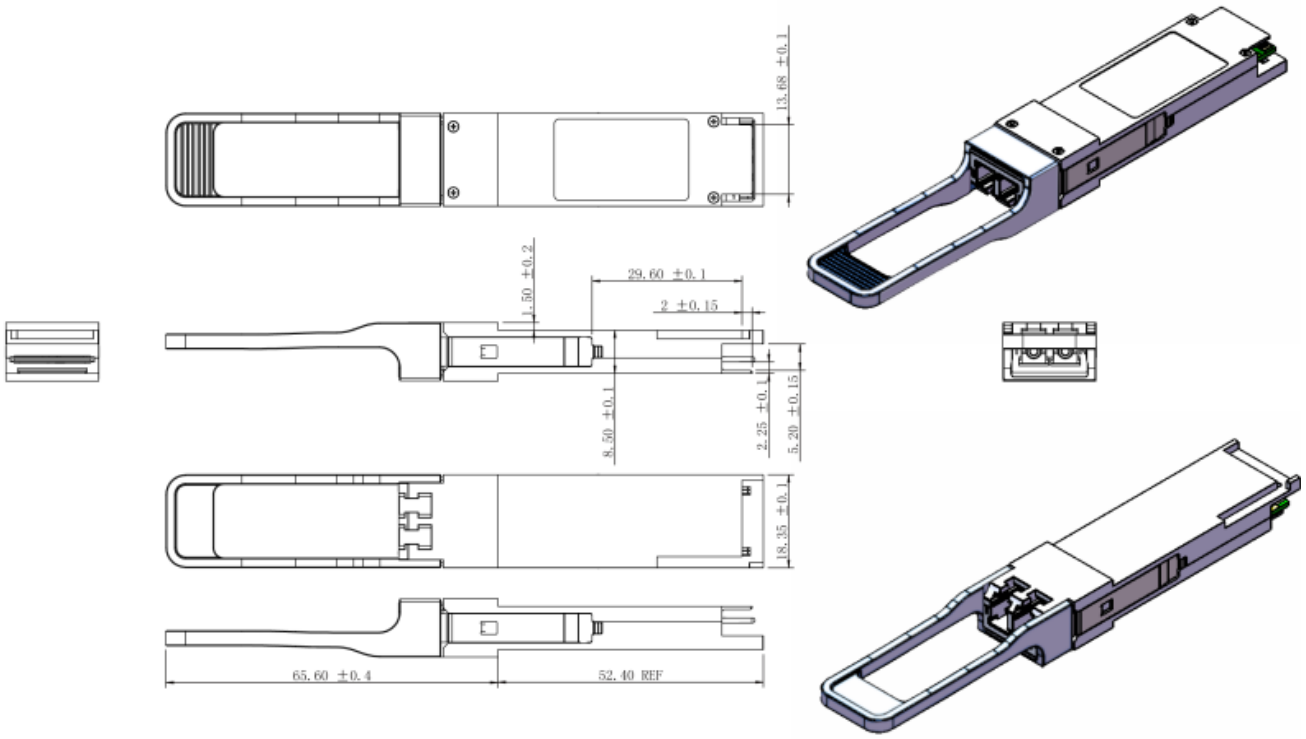


Pin Arrangement and Definition

Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		VccRx	+3.3V Power Supply Receiver	2	2
11	LVCMOS- I/O	SCL	2-wire serial interface clock	3	
12	LVCMOS- I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1

21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	+3.3V Power supply transmitter	2	2
30		Vcc1	+3.3V Power supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	1
1: GND is the symbol for signal and supply (power) common for the QSFP+ module. All module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.					
2: Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently.					

Mechanical Specifications



*This 2D drawing is only for reference, please check with FIBERWDM before ordering.

Obtaining Document

You can visit our website: http://www.fiberwdm.com

Revision History

Revision	Initiated	Reviewed	Approved	Revision History	Release Date
V1.a	Tracy	Erik/Jason/Lyn/ Eliss/Airon/Kelly/ Elaine/Angela		Preliminary	Oct 12, 2017
V1.b	Tracy	kelly		Update the regulatory compliance information, part No. and channel wavelength description.	Mar 1,2019
V1.c	Elaine	Torres/Kelly		Corrected a typo error.	Jun 14, 2019
V1.d	Angela	Torres/Kelly		Complete parameters.	Sep 04, 2020

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