

TITLE 40G QSFP+ 40km ER4 Transceivers	DOC No. RFD-20250911100-002	
	REVISION : 01	AUTHORIZED BY : Hawk Rong
	DATE : 2025.09.11	CLASSIFICATION : Optical Transceivers

1. PRODUCT FEATURES

- Compliant with 40G Ethernet
- Uncooled 4x10Gb/s CWDM transmitter
- Supports Infiniband SDR, DDR and QDR
- Wide Operating Temperature (0°C~70°C)

2. PRODUCT APPLICATIONS

- Data Center Backbone
- Ethernet Switches
- High-speed Servers
- High-performance Computing Clusters
- SAN, Routers, Hubs, Load Balancer

3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)

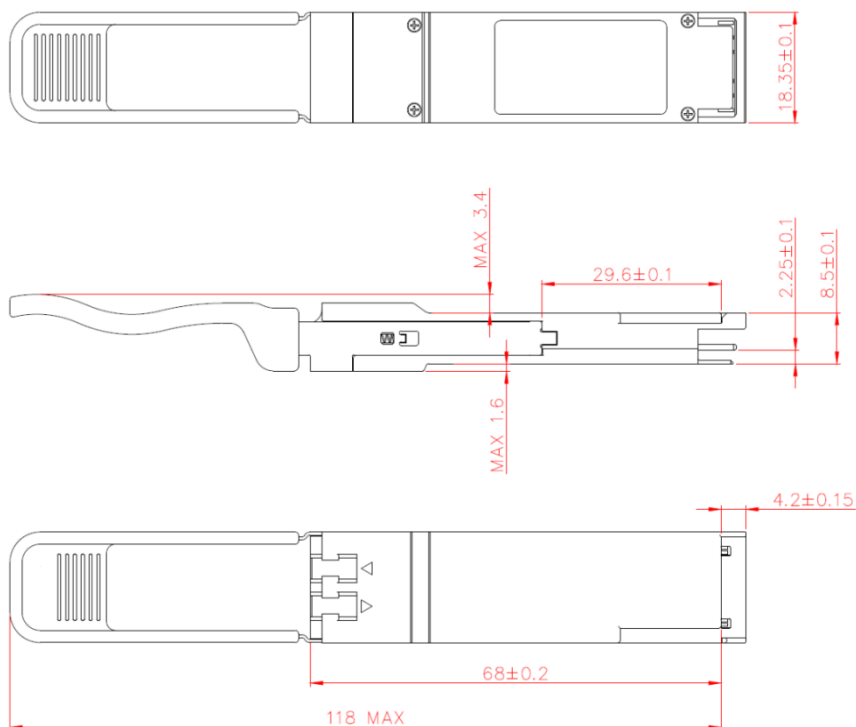
40G QSFP+ 40km ER4 Transceivers

JPC P/N	Bit Rate	Laser(nm)	Distance	Fiber Type	Connector	Tem.
P58**0DRCK40-G	40G QSFP+	1310nm	40km	SMF	LC	C

Note-1: ** Indicates the customer code.

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3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Unit is millimeter. All dimensions are $\pm 0.1\text{mm}$ unless otherwise specified

4. AbsoluteMaximum Ratings

Parameter	Symbol	Conditions	Min.	Max.	Unit
Storage Temperature	T_{Storage}		-40	+85	°C
Relative Humidity	RH		0	+85	%

5. Recommended Operating Conditions (T=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Case Temperature	T_c		0	40	70	°C

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Power Supply Voltage	V _{cc}		3.135	3.3	3.465	V
Signaling Rate each Channel				10.3125		Gbps
Two Wire Serial (TWS) Interface Clock Rate			---	---	400	kHz
Power Supply Noise			---	---	50	mVpp
Supply Noise Rejection			---	---	100	mV
Receiver Differential Data Output			---	100		Ohm
Operating Distance	D		---	40	---	km

6. Electrical Characteristics (T=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Consumption					3.5	W
Supply Current	I _{cc}				1050	mA

7. Transmitter Characteristics (T=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Signaling rate, each lane (range)	GBb			10.3125		GBb
Center Wavelength	λ ₀		1264.5		1277.5	nm
	λ ₁		1284.5		1297.5	nm
	λ ₂		1304.5		1317.5	nm
	λ ₃		1324.5		1337.5	nm
Side-mode suppression ratio	SMSR		30			dB
Total average launch power					13	dBm
Average launch power, each lane	P _f		2		7	dBm
Optical Modulation Amplitude (OMA), each lane	TxOMA		0		6	dBm
Difference in launch power between any two lanes (OMA)					6.5	dB
Transmitter and Dispersion Penalty	TDP				2.6	dB

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Launch power in OMA minus TDP, each lane	Tx-TDP		-4.8			dBm
Average launch power of OFF transmitter, each lane					-30	dBm
Extinction ratio	ER		4			dB
Relative Intensity Noise					-128	dB/Hz
Optical return loss tolerance					20	dB
Transmitter reflectance					-12	dB

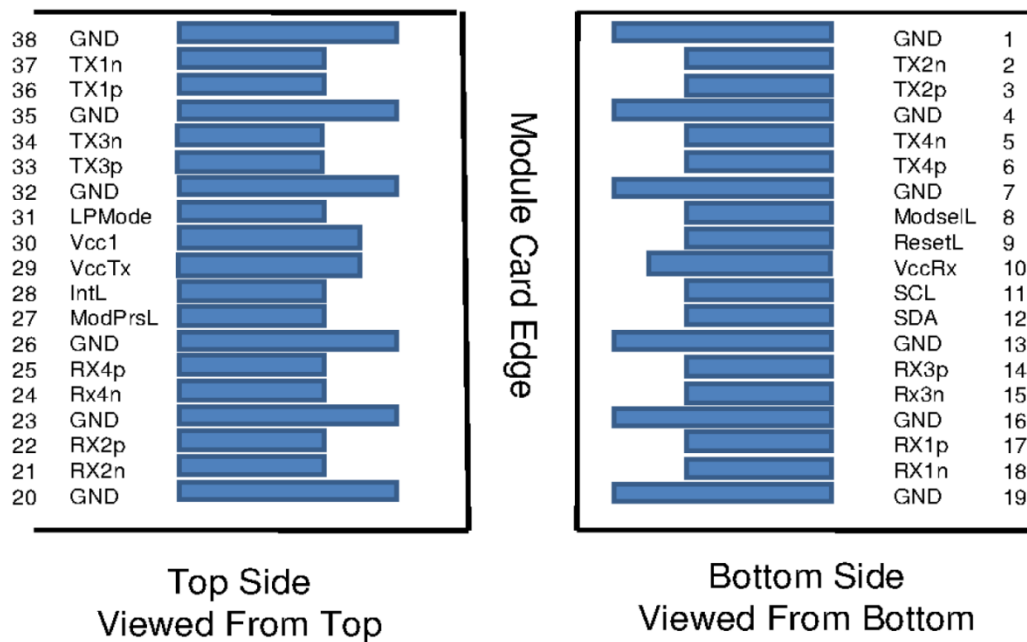
8. Receiver Characteristics (T=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Signaling rate, each lane (range)	GBb			10.3125		GBb
Center Wavelength	λ_0		1264.5		1277.5	nm
	λ_1		1284.5		1297.5	nm
	λ_2		1304.5		1317.5	nm
	λ_3		1324.5		1337.5	nm
Damage threshold			3.3			dBm
Average power at receiver input, each lane			-13.7		2.3	dBm
Receive power, each lane (OMA)					3.5	dBm
Difference in receive power between any two lanes (OMA)					7.5	dBm
Receiver reflectance					-26	dB
Receiver sensitivity (OMA)	S _{OMA}	BER@10e-12			-13	dBm
LOS Assert	LOS _A		-28			dBm
LOS De-Assert	LOS _D				-12	dBm
LOS Hysteresis			0.5		6	dB

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9. Applications Note:

Pin Definitions



Pin Function Definitions for QSFP+

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	

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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	
21	CML-O	Rx2n	Receiver Inverted Data Output	
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	
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	

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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	

10. Digital Diagnostic Monitor Accuracy

The following characteristics are defined over recommended operating conditions

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

11. Modification History

Rev.	Comments	Date	Originator	Approval
01	Initial	2025.09.11	Hawk Rong	Mike Sun