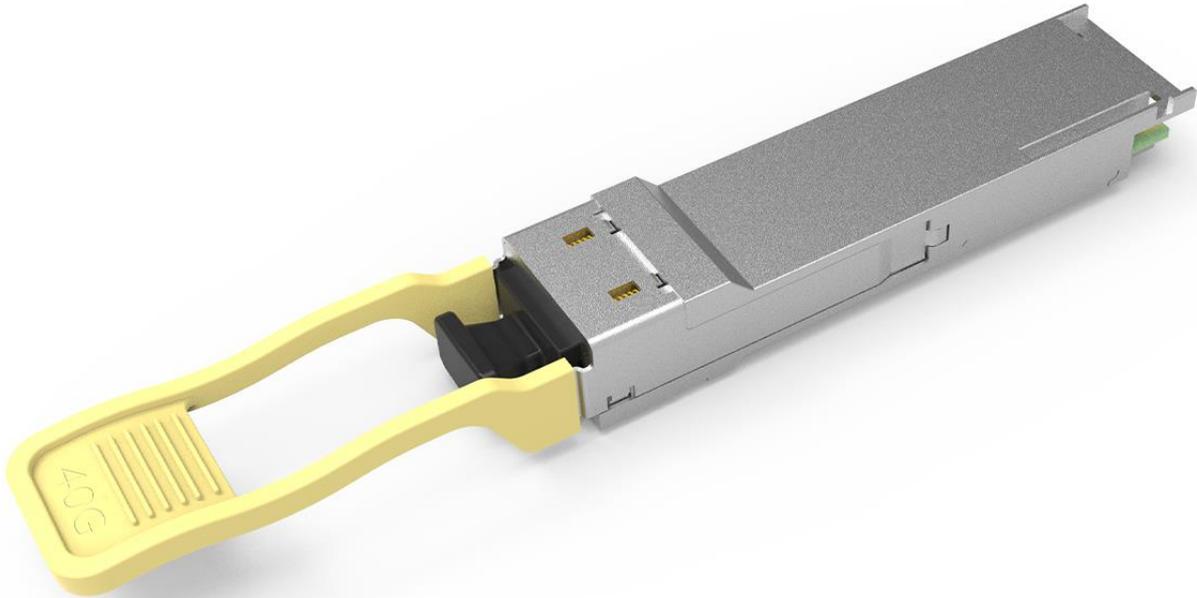


## Product Datasheet

### 40G QSFP+ SR4 Transceiver



#### Application

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers
- Telecom Central Offices (CO)
- Test and Measurement Equipment

#### Features

- Compliant with QSFP+ MSA Specification
- Wide Operating Temperature(-40°C~85°C)
- 4x10Gbps 850nm VCSEL-based Transmitter
- Maximum Link Length of 100m via OM3 Multimode Fiber (MMF)

## 1.0 Product Specification

### 1.1 Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Tstg	-40	+85	°C
Operating relative humidity (Non- condensing)	RH	0	85	%
Input Voltage		Vcc-0.3	Vcc+0.3	V
Supply Voltage	Vcc	-0.3	3.6	dBm

### 1.2 Recommended Operating Conditions and Power Supply Requirements (T=25°C, unless noted)

Parameter	Symbol	Min.	Type	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	BR		10.3125		Gb/s	
Supply Noise Rejection		---	---	100	mV	
Receiver Differential Data Output		---	100		Ohm	
Operating Distance	D			100	m	@ OM3 MMF

### 1.3 Electrical Characteristics (T=25°C, unless noted)

Parameter	Symbol	Min.	Type	Max.	Unit	NOTE
Power Consumption				3.5	W	
Supply Current	I <sub>cc</sub>			1050	mA	

### 1.4 Transmitter Characteristics (T=25°C, unless noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	NOTE
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	Pf	-8.4		2.4	dBm	
Optical Modulation Amplitude	TxOMA	-6.4		3	dBm	

(OMA), each lane						
Average launch power of OFF transmitter, each lane				-30	dBm	
Extinction ratio	ER	3			dB	
Optical return loss tolerance				12	dB	

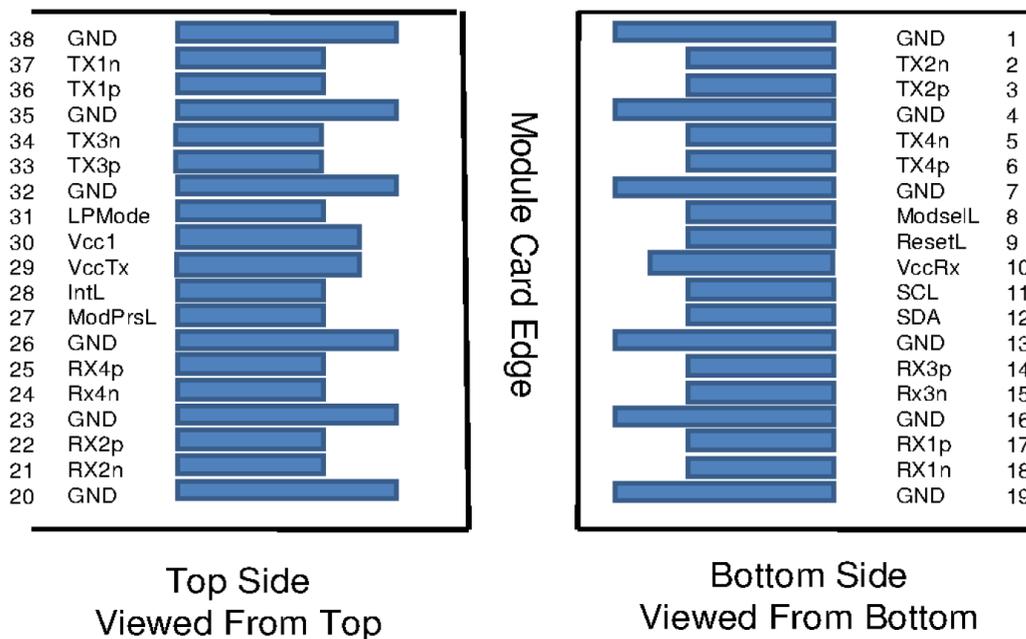
### 1.5 Receiver Characteristics (T=25°C, unless noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	NOTE
Signaling rate, each lane (range)	GBb		10.3125		GBb	
Center Wavelength	$\lambda$	840		860	nm	
Damage threshold		3.4			dBm	
Average power at receiver input, each lane		-10.3		2.4	dBm	
Receive power, each lane (OMA)				3	dBm	
Receiver sensitivity (OMA)	SOMA			-11.1	dBm	BER@5E-5
Receiver reflectance				-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOS <sub>D</sub>			-11	dBm	
LOS Hysteresis		0.5			dB	

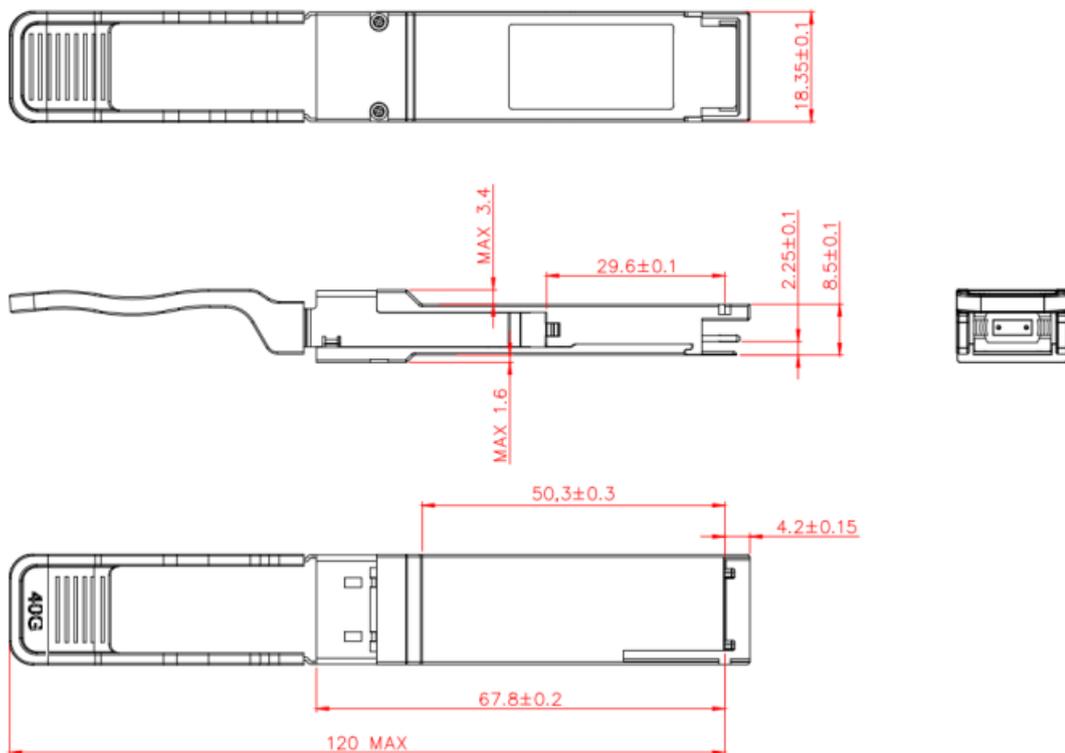
### 1.6 Pin Function Definition

PIN	Logic	Symbol	Name/Description
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
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
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



### 1.7 Mechanical Specifications



### 1.8 Performance Specifications

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

### 2.0 Product Information

Data Rate	Factor		Optical	Wavelength	Reach
40G	QSFP+	SR4	MPO	850nm	100m/300m

#### ESD Safety Cautions

This transceiver is specified as ESD threshold 1KV for high speed data pins based on Human Body Model per ANSI/ESDA/JEDECJS-001. The units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case. However, normal ESD precautions are still

required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

### Important Notice

The performance figures, data, and any illustrative material presented in this datasheet are typical and must be explicitly confirmed in writing by ZHAOLONG before they are deemed applicable to any specific order or contract.

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## 3.0 Revision Record

Rev.	Comments	Author	Date
A01	Initial Release	Koko Sun	10/01/2023