

## **TRA-QSFP-40G-ZR4**

1310nm / 80km / 40 Gigabit Ethernet / ZR-4

### **Features**

- 4 lanes MUX/DEMUX design
- Integrated LAN WDM TOSA / ROSA
- Up to 11.2Gbps per channel bandwidth
- Aggregate bandwidth of > 40Gbps
- Duplex LC connector
- Compliant with 40G Ethernet IEEE802.3ba and 40GBASE-ZR4
- QSFP MSA compliant
- APD photo-detector
- Up to 80 km transmission
- Compliant with QDR/DDR Infiniband data rates
- Single +3.3V power supply operating
- Built-in digital diagnostic functions
- Temperature range 0°C to 70°C
- RoHS Compliant Part



### **Applications**

- 40GBASE-ZR4
- Rack to Rack
- Switches and Routers
- Data centers Switches and Routers
- Metro networks

### **Description**

**TRansceiver.Asia** a transceiver module designed for 80km optical communication applications. The design is compliant to 40GBASE-ZR4 of the IEEE P802.3ba standard. The module converts 4 inputs channels of 10Gb/s electrical data to 4 CWDM optical signals, and multiplexes them into a single channel for 40Gb/s optical transmission. Reversely, on the receiver side, the module optically demultiplexes a 40Gb/s input into 4 CWDM channels signals, and converts them to 4 channel output electrical data. This transceiver module is compliant with the QSFP28 Multisource Agreement (MSA) and hot pluggable. Always contact **TRansceiver.Asia** commercial agents for compatibility with different equipment platforms

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T <sub>S</sub>	-40		+85	°C
Supply Voltage	V <sub>CC</sub> T, R	-0.5		4	V
Relative Humidity	RH	0		85	%

## Recommended Operating Environment

Parameter	Symbol	Min.	Typical	Max.	Unit
Case operating Temperature	T <sub>C</sub>	0		+70	°C
Supply Voltage	V <sub>CC</sub> T, R	+3.13	3.3	+3.47	V
Supply Current	I <sub>CC</sub>			1000	mA
Power Dissipation	PD			3.5	W

## Electrical Characteristics (TOP = 0 to 70 °C, VCC = 3.13 to 3.47 Volts)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Data Rate per Channel		-	10.3125	11.2	Gbps	
Power Consumption		-	2.5	5	W	
Supply Current	I <sub>CC</sub>		0.75	1.3	A	
Control I/O Voltage-High	V <sub>IH</sub>	2.0		V <sub>CC</sub>	V	
Control I/O Voltage-Low	V <sub>IL</sub>	0		0.7	V	
Inter-Channel Skew	TSK			150	Ps	
RESETL Duration			10		Us	
RESETL De-assert time				100	ms	
Power On Time				100	ms	
<b>Transmitter</b>						
Single Ended Output Voltage Tolerance		0.3		4	V	1
Common mode Voltage Tolerance		15			mV	
Transmit Input Diff Voltage	V <sub>I</sub>	150		1200	mV	
Transmit Input Diff Impedance	Z <sub>IN</sub>	85	100	115		
Data Dependent Input Jitter	DDJ		0.3		UI	
<b>Receiver</b>						
Single Ended Output Voltage Tolerance		0.3		4	V	
Rx Output Diff Voltage	V <sub>O</sub>	370	600	950	mV	
Rx Output Rise and Fall Voltage	Tr/Tf			35	ps	1
Total Jitter	TJ		0.3		UI	

**Optical Parameters (TOP = 0 to 70 °C, VCC = 3.0 to 3.6 Volts)**

Parameter	Symbol	Min	Typical	Max	Unit	Ref.
<b>Transmitter</b>						
Wavelength Assignment	L0	1294.53	1295.56	1296.59	nm	
	L1	1299.02	1300.05	1301.09	nm	
	L2	1303.54	1304.58	1305.63	nm	
	L3	1308.09	1309.14	1310.19	nm	
Side-mode Suppression Ratio	SMSR	30	-	-	dB	
Total Average Launch Power	PT		-	10.5	dBm	
Average Launch Power, each Lane		+4	-	7	dBm	
Transmit OMA per Lane	TxOMA	0.3		5.0	dBm	
Difference in launch power between any two lanes (OMA)				4.7	dBm	
Transmitter Dispersion Penalty each Lane	TDP			2.6	dB	
Extinction Ratio	ER	5.5	6.5		dB	
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				
Optical Return Loss Tolerance		-	-	20	dB	
Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Relative Intensity Noise	Rin			-128	dB/HZ	1
Optical Return Loss Tolerance		-	-	12	dB	
<b>Receiver</b>						
Damage Threshold	THd	0			dBm	1
Average Power at Receiver Input, each Lane	R	-24		-6	dBm	
Receive Electrical 3 dB upper Cut off Frequency, each Lane				12.3	GHz	
RSSI Accuracy		-2		2	dB	
Receiver Reflectance	Rrx			-26	dB	
Receiver Power (OMA), each Lane		-	-	-4	dBm	
Receive Electrical 3 dB upper Cutoff Frequency, each Lane				12.3	GHz	

LOS De-Assert	LOS <sub>D</sub>			-25	dBm	
LOS Assert	LOS <sub>A</sub>	-35			dBm	
LOS Hysteresis	LOS <sub>H</sub>	0.5			dB	

Note: 1. 2dB Reflection

## Ordering information

Part Number	Description
TRA-SFP-40G-ZR4	QSFP+,40Gb/s , 1295~1310nm,SMF, 80KM, DDM,LC connector, 0°C to 70°C

## Warnings

### Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles. It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

### Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

### Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser