

Product Specification

100G QSFP28 40km ER4 Transceivers

OTQ-100G-ER4

FEATURES

- ✓ Support line rates from 103.125 Gb/s;
- ✓ Transmission data rate up to 25.78125Gbps per channel;
- ✓ Up to 40km transmission on single mode fiber;
- ✓ LAN WDM EML laser and APD;
- ✓ Support Multi-Pin function with IntL/RxLOSL and LPMode/TxDIS;
- ✓ High speed I/O electrical interface (CAUI-4);
- ✓ I2C interface with integrated Digital Diagnostic monitoring;
- ✓ QSFP28 MSA package with duplex LC connector;
- ✓ Single +3.3V power supply;
- ✓ dissipation

Commercial : < 5W

Industrial : <5.5W

- ✓ Temperature Range:
Commercial : 0°C ~+70°C
Industrial : -40°C ~+85°C
- ✓ Complies with EU Directive 2015/863/EU;



APPLICATIONS

- ✓ 100GBASE-ER4 Ethernet
- ✓ 100G Datacom&Telecom connections
- ✓ 100G 4WDM-40

The OTQ-100G-ER4 is designed for 40km optical communication applications. This module contains 4-lane optical transmitter, 4-lane optical receiver and module management block including 2 wire serial inter-face. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector.

ABSOLUTE MAXIMUM RATINGS

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

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Case Temperature	T_c		0		70	°C
Power Supply Voltage	V_{cc}		3.135	3.3	3.465	V
Signaling Rate each Channel				25.78125		Gbps
Supply Noise Rejection			---	---	100	mV
Receiver Differential Data Output			---	100		Ohm
Operating Distance	D		---	---	40	km

Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane			25.78125		Gbps	
Lane Wavelength	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	
Total Average Launch Power	P_T			12.5	dBm	1
Average Launch Power per Lane,	P_{avg}	0		6.5	dBm	1
OMA, each Lane	P_{OMA}	0		6.5	dBm	1
Difference in launch power between any two lanes(Average and OMA) between any Two Lanes (OMA)	$P_{tx,diff}$			3	dB	
Average Output Power (Laser Turn off)	P_{off}			-30	dBm	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	4.5			dB	
RIN20OMA	RIN			-130	dB/Hz	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter Reflectance	R_T			-26	dB	
Optical Eye Mask		{0.25,0.4, 0.45, 0.25, 0.28, 0.4}			%	2
Receiver						
Signaling rate, each lane			25.78125		Gbps	
Center Wavelength Lane 0	λ_0	1294.53	1295.56	1296.59	nm	
Center Wavelength Lane 1	λ_1	1299.02	1300.05	1301.09	nm	
Center Wavelength Lane 2	λ_2	1303.54	1304.58	1305.63	nm	

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2

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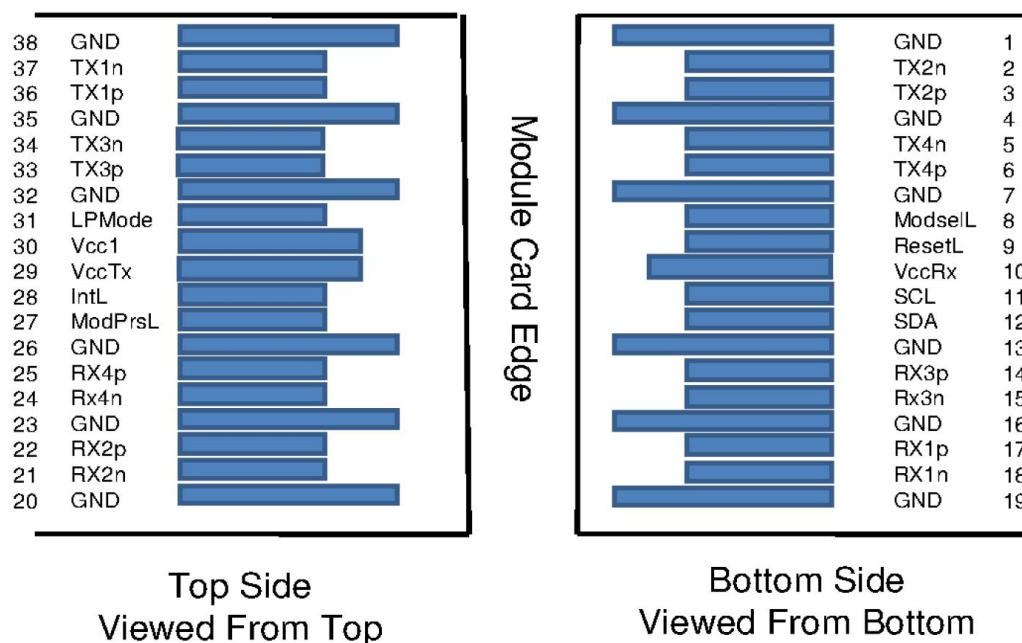
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Center Wavelength Lane 3	λ_3	1308.09	1309.14	1310.19	nm	
Damage threshold , each lane	Pdamage	-2.5			dBm	
Average Receive Power, each lane		-23		-3.5	dBm	
Receiver sensitivity, each lane	SEN			-16	dBm	3
Los Assert	LosA	-30			dBm	
Los De-assert	LosDA			-22	dBm	
Los Hysteresis	LosH	0.5			dB	

Note:

1. The optical power is launched into SMF.
2. Measured with a PRBS $2^{31}-1$ test pattern @25.78125, Hit ratio $\leq 5E-5$.
3. Measured with a PRBS $2^{31}-1$ test pattern @25.78125 Gb/s, BER $\leq 1E-12$.

PIN ASSIGNMENT



PIN DESCRIPTION

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	
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	

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4

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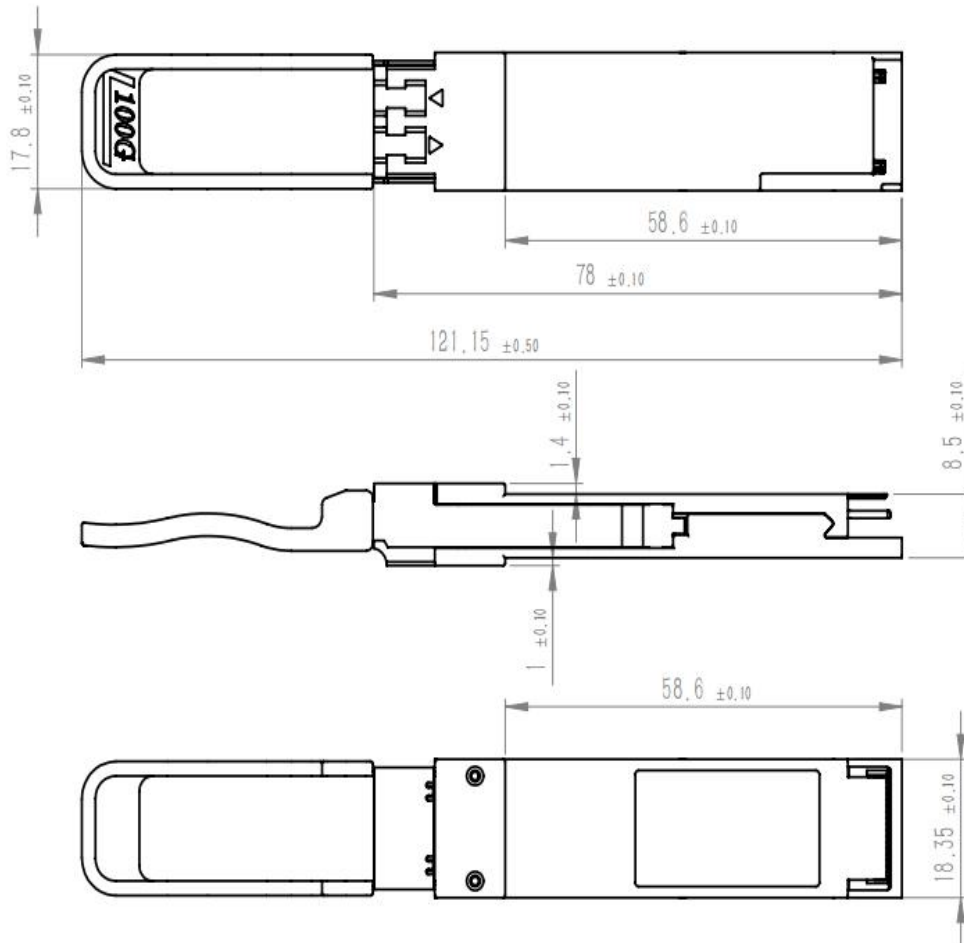
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16		GND	Ground	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	
20		GND	Ground	
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	
27	LVTTTL-O	ModPrsL	Module Present	
28	LVTTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	
30		Vcc1	+3.3 V Power Supply	
31	LVTTTL-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	

OUTLINE DIMENSIONS



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