QSFP28 100G CWDM4 2km Optical Transceiver

TQ13C2F-CN Product Specification

FEATURES

- High density interconnectivity
- Supports 100Gb/s data rate links up to 2km on a Singlemode Fiber (SMF)
- Industry standard QSFP28 form factor
- Power dissipation < 3.5W
- Single 3.3V power supply
- Supports operation for a case temperature of 0°C to +70 °C
- Compliant with the 100G CWDM4 MSA Technical Specification Rev 1.0
- Compliant to the SFF-8665 Pluggable Transceiver Solution (QSFP28) MSA
- Electrical Interface based on CAUI-4 as defined by IEEE 802.3 CL83E
- The transmitter consists of a retimed quad input, 4 un-cooled CWDM DFB lasers operating on the ITU G.694.2 wavelength grid at 1271, 1291, 1311 and 1331nm and multiplexed into a single SMF output
- Compliant to the SFF-8636 Common Management Interface MSA
- ROHS Compliant

APPLICATIONS

- Data Center interconnections
- 100GBASE Ethernet links

ORDERING INFORMATION

Part Number	From Factor	Data Rate（Gbps）	Media	Distance (km)	Wavelength (nm)	Temperature (℃)
TQ13C2F-CN	QSFP28	103.125	SMF	2	CWDM4	0~70

ABSOLUTE MAXIMUM RATINGS

Exceeding the limits below may damage the transceiver permanently.

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Storage Temperature	TSTG	-40	-	85	ºC	
Operating Relative Humidity	RH	10	-	95	%	
Supply Voltage	VCC	0	-	4	V	

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Operating Case Temperature	Tc	0	-	70	ºC	
Supply Voltage	VCC3	3.14	3.3	3.46	V	
Supply Current	Pdiss	-	-	3.5	mA	+3.3V Supply
Data Rate	DR	-	25.78125	-	Gbps	

OPTICAL CHARACTERISTICS

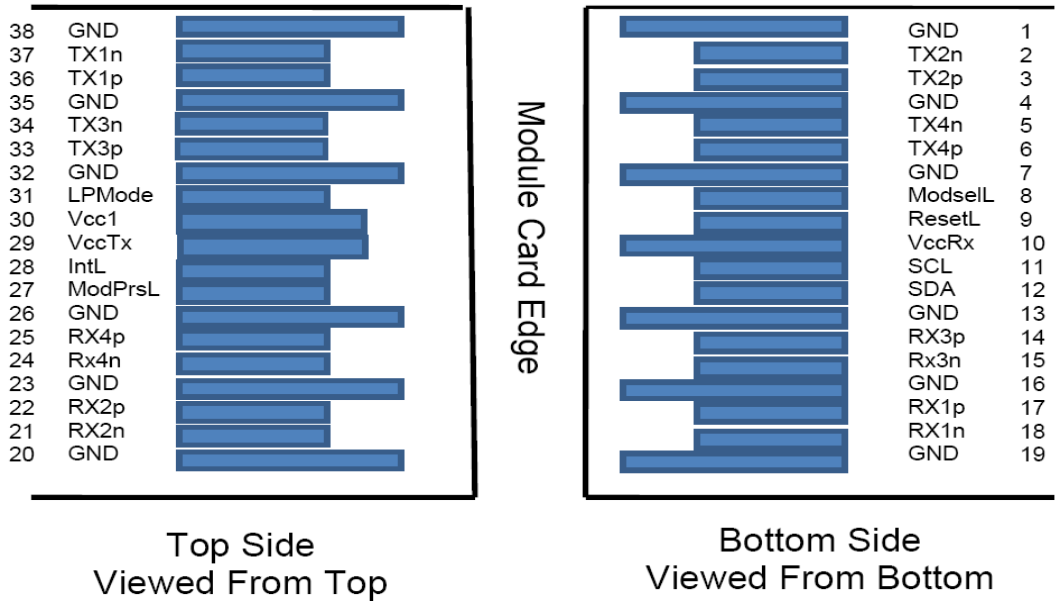
Parameter	Symbol	Min	Typ	Max	Unit.	Note
Transmitter						
Center Wavelength Range	L0	1264.5	1271	1277.5	nm	
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	
Side-Mode Suppression Ratio	SMSR	30	-	-	dB	
Total Averag Launch Power				8.5	dBm	
Average Launch power, each lane	Pavg	-6.5	-	2.5	dBm	
Optical Modulation Amplitude (OMA),each lane		-4		2.5	dBm	
Launch Power in OMA minus TDP,each lane		-5			dBm	
Transmitter and Dispersion Penalty (TDP)	TDP	-	-	3	dB	
Extinction ratio, each lane	ER	3.5	-	-	dB	
Relative Intensity Noise	RIN	-	-	-130	dB/Hz	
Optical Return Loss Tolerance	Tol	-	-	20	dB	
Transmitter Reflectance	Rt	-	-	-12	dBm	
Average Launch Power of OFF transmitter each lane	Poff	-	-	-30	dBm	

Parameter	Symbol	Min	Typ	Max	Unit.	Note
Transmitter Eye Mask Definition {X1,X2,X3,Y1,Y2,Y3}		{0.31,0.4,0.45,0.34,0.38,0.4}				
Receiver						
Receiver Optical Wavelength	L0	1264.5	1271	1277.5	nm	
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	
Damage threshold	Rdam	3.5			dBm	
Average Receive Power, each lane	Pin	-11.5	-	2.5	dBm	
Receiver Power, each lane		-	-	2.5	dBm	
Receiver Sensitivity(OMA), each lane	Sen			-10	dBm	Note 1
LOS Assert Level	LOSA	-30	-	-	dBm	
LOS De-Assert Level	LOSD	-	-	-13	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Digital Diagnostic Functions

Parameter	Symbol	Min.	Max.	Unit	Notes
Temperature	DDMI_Temp	-3	3	℃	1LSB=1/256℃
Supply Voltage	DDMI_V_{CC}	-3%	3%	V	1LSB=0.1mV
Bias Current	DDMI_I_{bias}	-10%	10%	mA	1LSB=2uA
TX Optical Power	DDMI_TX	-3	+3	dB	1LSB=0.1uW
RX Optical Power	DDMI_RX	-3	+3	dB	1LSB=0.1uW

PIN DIAGRAM



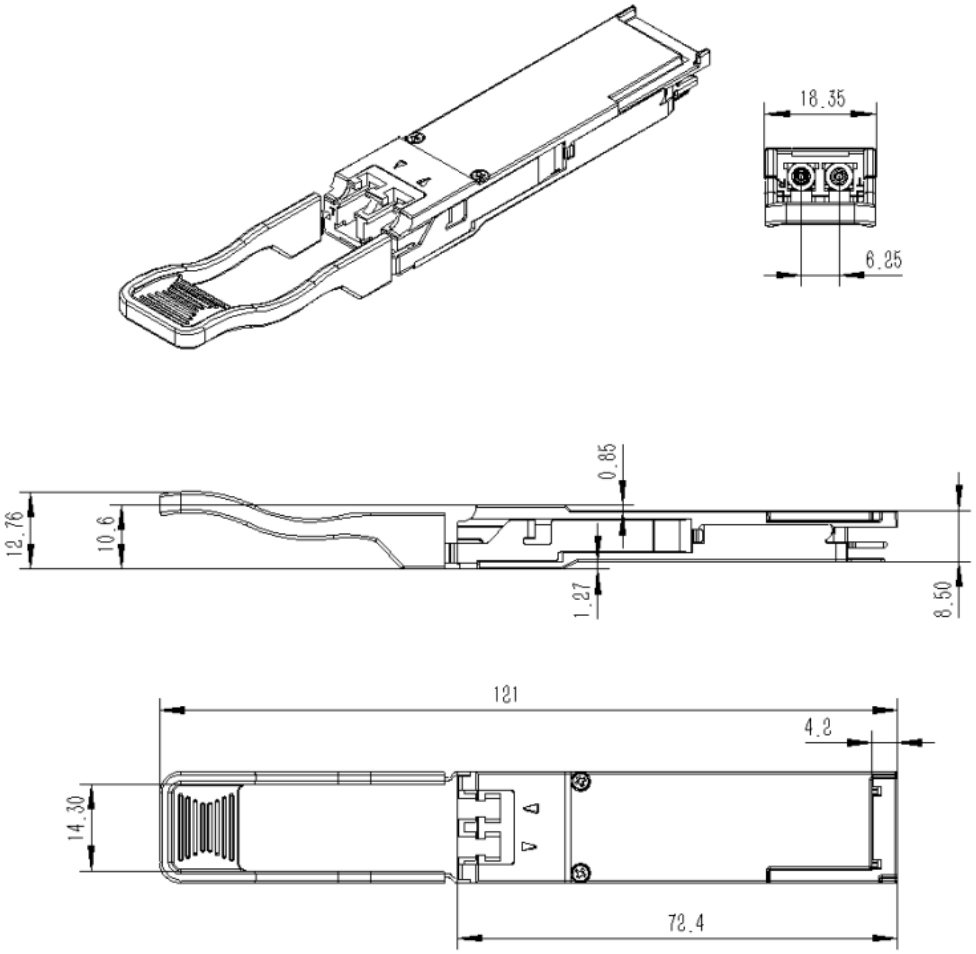
PIN DESCRIPTIONS

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Transmitter Ground (Common with Receiver Ground)	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Transmitter Ground (Common with Receiver Ground)	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Transmitter Ground (Common with Receiver Ground)	1
8	LVTTL-I	ModSelL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VccRx	3.3V Power Supply Receiver	
11	LVCMOS-I/O	SCL	2-Wire serial Interface Clock	2
12	LVCMOS-I/O	SDA	2-Wire serial Interface Data	2
13		GND	Transmitter Ground (Common with Receiver Ground)	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Transmitter Ground (Common with Receiver Ground)	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	

18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Transmitter Ground (Common with Receiver Ground)	1
20		GND	Transmitter Ground (Common with Receiver Ground)	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Transmitter Ground (Common with Receiver Ground)	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Transmitter Ground (Common with Receiver Ground)	1
27	LVTTL-O	ModPrsl	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	3.3V power supply transmitter	
30		Vcc1	3.3V power supply	
31	LVTTL-I	LPMode	Low Power Mode	2
32		GND	Transmitter Ground (Common with Receiver Ground)	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Transmitter Ground (Common with Receiver Ground)	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:
1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector should be pulled up with 4.7K to 10K ohms on host board to a voltage between 3.15V and 3.6V.

MECHANICAL SPECIFICATION



LABEL DIAGRAM

Optowire

TQ13C2F-CN

QSFP28 100G CWDM4 2km

Class 1 Laser

MADE IN CHINA

S/N: ?????????

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