WTQ2Bxx020C0CN1 QSFP28 Single Lambda Transceiver

100Gb/s BIDI SMF 20km / Product Overview 3

Part Number	Temperature
WTQ2BL3020C0CN1	0°C~+70°C

1. Product Overview

100Gbs QSFP28 LR1 BIDI Single Lambda transceivers with the part number listed in ordering information. Comply with the 100Gbs QSFP28 LR1 BIDI Single Lambda standard specification listed.

Features

- Supports 100GBASE-LR1-20 BIDI
- Lane signaling rate 106.25Gb/s with PAM4,111.8Gb/s compatible
- Up to 20km transmission on SMF
- EML Laser and PIN receiver
- 4x25.78Gb/s with NRZ electrical interface (CAUI-4)
- High speed I/O electrical interface
- I2C interface with integrated Digital Diagnostic monitoring
- QSFP28 MSA package with simplex LC connector
- Single +3.3V power supply
- Support HW TX_DIS and RX_LOS for telecom application
- Maximum power consumption 4.5 W
- Operating case temperature: 0 to +70 °C

Applications

- 100GBASE-LR1 BIDI

2. Ordering Information

Part Number	Data Rate (Gbps)	Wavelength (nm)	Transmission Distance(m)	Temperature (oC) (Operating Case)	Latch Color
WTQ2BL3020C0CN1	106.25Gbps	Tx1271/Rx1331	20km SMF	0°C~+70°C	Purple
WTQ2BL2020C0CN1	106.25Gbps	Tx1331/Rx1271	20km SMF	0°C~+70°C	Red

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Units	Notes
Storage Temperature	TS	-40	-	+85	°C	
Supply Voltage	VCC	-0.5	-	+4.0	V	

Parameter	Symbol	Min	Typical	Max	Units	Notes
Operating Relative Humidity	RH	-	-	+85	%	

4. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units	Notes
Operating Case Temperature	TC	0	-	+70	°C	
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC	-	-	1.3	A	
Maximum Power Dissipation	PD	-	-	4.5	W	
Data Rate(optical)	DRo	-	106.25	111.8	Gb/s	
Transmission Distance	TD	-	-	20	km	Over SMF

5. Optical Parameters

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Center Wavelength	CW	1264.5	1271	1277.5	nm	
Center Wavelength	CW	1324.5	1331	1337.5	nm	
Average Launch Power	PTX	-1.4	-	4.5	dBm	1
Outer Optical Modulation Amplitude	OMA	0.7	-	4.7	dBm	1
Launch power in OMA minus TDECQ (min)	OMA-TDECQ	-0.7	-	-	dBm	ER≧4.5 dB
Launch power in OMA minus TDECQ (min)	OMA-TDECQ	-0.6	-	-	dBm	ER<4.5dB
Transmitter and dispersion eye closure for PAM4 (TDECQ) (max)	TDECQ	-	-	3.4	dB	
Average Output Power (Laser Turn off)	P0UT-OFF	-	-	-30	dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Extinction Ratio	ER	3.5	-	-	dB	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Center Wavelength	CW	1324.5	1331	1337.5	nm	
Center Wavelength	CW	1264.5	1271	1277.5	nm	
Damage threshold	Pdamage	7.6	-	-	dBm	2
Average Rx Power	PRX	-10	-	6.6	dBm	3

Parameter	Symbol	Min	Typical	Max	Units	Notes
Receive power_OMAouter	POMA	-	-	6.8	dBm	
Receiver sensitivity _OMAouter	SEN _OMA	-	-	-7.6	dBm	TECQ≤1.4
Receiver sensitivity _OMAouter	SEN _OMA	-	-	-9+TECQ	dBm	1.4≤TECQ≤3.6
Los Assert	LosA	-26	-	-	dBm	
Los De-Assert	LosDA	-	-	-11	dBm	
Los Hysteresis	LosH	0.5	-	-	dB	

6. Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter (Module Input)	Transmitter (Module Input)	Transmitter (Module Input)	Transmitter (Module Input)	Transmitter (Module Input)	Transmitter (Module Input)	Transmitter (Module Input)
Input Differential Impedance	Rin	-	100	-	Ohm	
Differential Data Input Amplitude	VIN, P-P	80	-	900	mVpp	
Differential termination mismatch (max)	D-mismatch	-	-	10	%	
DC common-mode input voltage		-0.3	-	2.8	V	
Transition time (20%~80%)	Tr Tf	10	-	-	ps	
LPMode, Reset and ModSelL / Tx dis	VIL	-0.3	-	0.8	V	
LPMode, Reset and ModSelL / Tx dis	VIH	2.0	-	VCC+0.3	V	
Receiver (Module Output)	Receiver (Module Output)	Receiver (Module Output)	Receiver (Module Output)	Receiver (Module Output)	Receiver (Module Output)	Receiver (Module Output)
Output Differential Impedance	Rout	-	100	-	Ohm	
Differential Data Output Amplitude	VOUT, P-P	-	-	900	mVpp	
Differential termination mismatch (max)	D-mismatch	-	-	10	%	
Transition time, 20% to 80%	Tr Tf	12	-		ps	
ModPrsL and IntL/ Rx los	VOL	0	-	0.4	V	
ModPrsL and IntL/ Rx los	VOH	VCC-0.5	-	VCC+0.3	V	

7. Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	±3	ºC	Internal

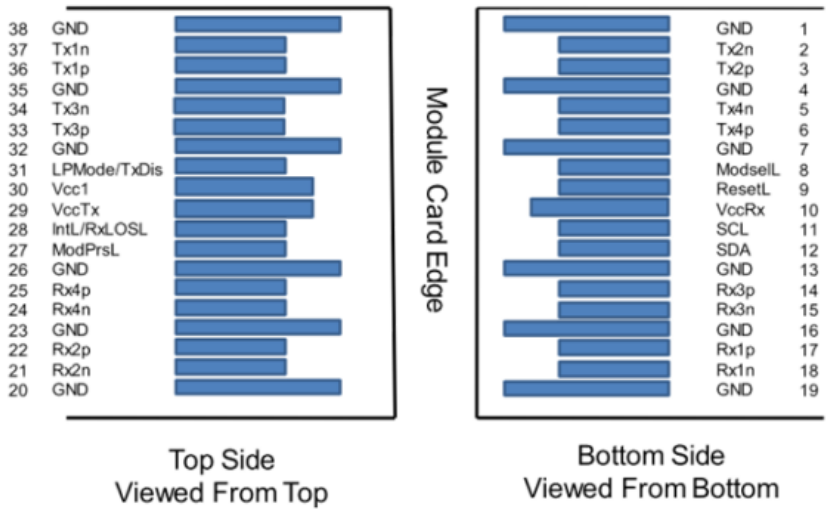
Parameter	Range	Accuracy	Unit	Calibration
Voltage	0 to VCC	10%	V	Internal
Tx Bias Current	0 to 100	10%	mA	Internal
Tx Output Power	-0.2 to 6.6	±3	dBm	Internal
Rx Power	-10 to 6.6	±3	dBm	Internal

8. Pin Descriptions

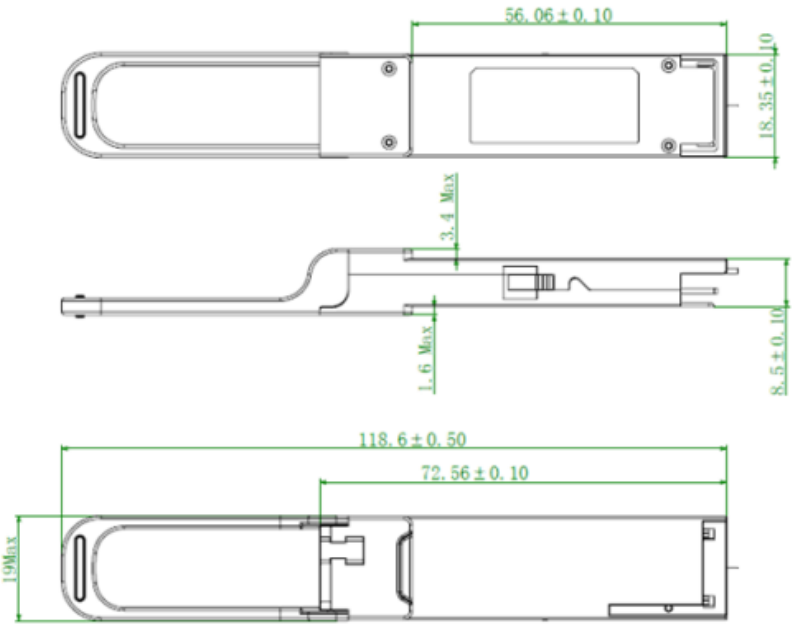
PIN	Logic	Symbol	Description	Plug Seq.	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	3	
4		GND	Ground	1	1
5		NC		3	
6		NC		3	
7		GND	Ground	1	1
8	LVTLL-I	ModSelL	Module Select	3	
9	LVTLL-I	ResetL	Module Reset	3	
10		VccRx	+ 3.3V Power Supply Receiver	2	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock	3	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data	3	
13		GND	Ground	1	
14		NC		3	
15		NC		3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24		NC		3	
25		NC		3	

PIN	Logic	Symbol	Description	Plug Seq.	Notes
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	+3.3 V Power Supply transmitter	2	2
30		Vcc1	+3.3 V Power Supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33		NC		3	
34		NC		3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Output	3	
38		GND	Ground	1	1

9. Technical Figure 1



10. Technical Figure 2



11. Revision History

Version	Date	Description	Prepared by
V6	2025	Unified WincoTek datasheet format	WincoTek
V6.1	2026-10-23	Engineering and format review	WincoTek