WTQ1HE3B

100G QSFP28 Transceiver SMF 30km LC

Part Number
WTQ1HE3B-BXU30D



1. Product Overview

Features

- Supports 100GBASE-ER BIDI
- Lane signaling rate 106.25Gb/s with PAM4
- Up to 30km transmission on SMF
- EML laser and APD 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
- Maximum power consumption 4.5 W
- Operating case temperature: 0 to +70 °C
- Compliant to 802.3cu, SFF-8636&SFF-8679 standard

Applications

- 100GBASE-ER1-30 BIDI

2. Ordering Information

Part No.	Data Rate (Gbps)	Laser	Fiber Type	Distance(km)	Optical Interface	Temp(℃)	DDMI	Latch Color
WTQ1HE3B-BXU30D	106.25	Tx/Rx wavelength pair: configured per order	SMF	30	LC	0~70	Y	Blue
WTQ1HE3B-BXD30D	106.25	Tx/Rx wavelength pair: configured per order	SMF	30	LC	0~70	Y	Green

3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	TS	-40	-	+85	°C	
Supply Voltage	VCC	-0.5	-	+4.0	V	
Operating Relative Humidity	RH	-	-	+85	%	

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	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	-	Gb/s	
Transmission Distance	TD	-	-	30	km	Over SMF

5. Optical Parameters

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Center Wavelength	CW	1303.54	1304.58	1305.63	nm		
Center Wavelength	CW	1308.09	1309.14	1310.19	nm		
Average Launch Power	PTX	0	-	5.6	dBm	1	1
Outer Optical Modulation Amplitude	OMA	3.0	-	6.4	dBm	TDECQ＜1.4	TDECQ＜1.4
Outer Optical Modulation Amplitude	OMA	1.6+TDECQ	-	6.4	dBm	TDECQ＞1.4	TDECQ＞1.4
Transmitter and dispersion eye closure for PAM4 (TDECQ) (max)	TDECQ	-	-	3.9	dB		
|TDECQ-TECQ|		-	-	2.7	dB		
Average Output Power (Laser Turn off)	P0UT-OFF	-	-	-15	dBm		
Side Mode Suppression Ratio	SMSR	30	-	-	dB		
Extinction Ratio	ER	6	-	-	dB		
Transmitter reflectance	Tref	-	-	-26	dB		

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes	Notes
Optical Return Loss Tolerance	ORLT	-	-	15	dB		
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Center Wavelength	CW	1308.09	1309.14	1310.19	nm	nm	
Center Wavelength	CW	1303.54	1304.58	1305.63	nm	nm	
Damage threshold	Pdamage	-2.4	-	-	dBm	dBm	2
Average Rx Power	PRx	-14.7	-	-3.4	dBm	dBm	3
Receive power _OMAouter	POMA	-	-	-2.6	dBm	dBm	
Receiver sensitivity _OMAouter	SEN _OMA	-	-	-12.5	dBm	dBm	4
Los Assert	LosA	-26	-	-	dBm	dBm	
Los De-Assert	LosDA	-	-	-15	dBm	dBm	
Los Hysteresis	LosH	0.5	-	-	dB	dB	

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	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	

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
ModPrsL and IntL/ Rx los	VOH	VCC-0.5	-	VCC+0.3	V	

7. Digital Diagnostics

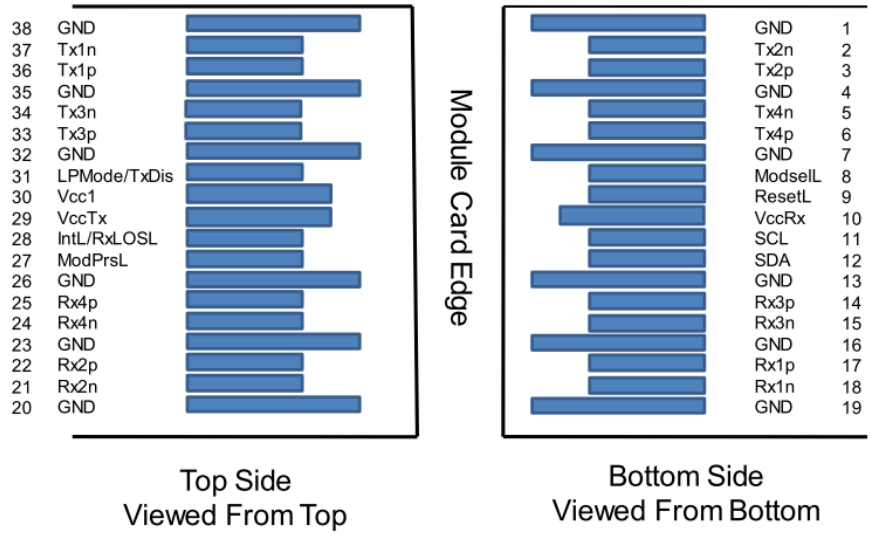
Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	±3	ºC	Internal
Voltage	0 to VCC	0.1	V	Internal
Tx Bias Current	0 to 100	10%	mA	Internal
Tx Output Power	0 to 5.6	±3	dB	Internal
Rx Input Power	-14.7 to -3.4	±3	dB	Internal

8. Pin Descriptions

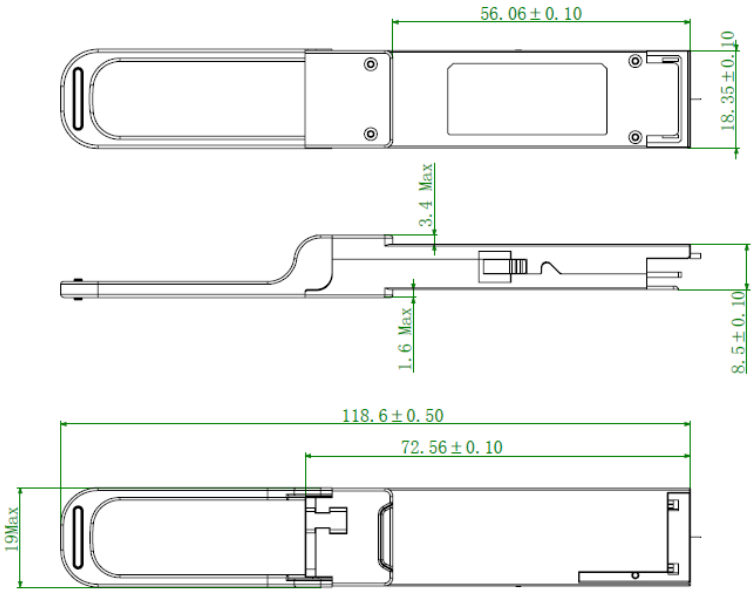
PIN	Logic	Symbol	Description	Plug Seq.	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	3	
4		GND	Ground	1	1
5		NC		3	
6		NC		3	
7		GND	Ground	1	1
8	LVTLL-I	ModSelL	Module Select	3	
9	LVTLL-I	ResetL	Module Reset	3	
10		VccRx	+ 3.3V 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

PIN	Logic	Symbol	Description	Plug Seq.	Notes
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	
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