WT290- 835/836

100G BIDI QSFP28 ZR4 Transceiver



1. Product Overview

Features

- Hot pluggable QSFP28 MSA form factor
- Supports 103.1Gb/s aggregate bit rate
- Up to 70km reach for G.652 SMF [with RS(528,514) FEC]
- Single +3.3V power supply
- Temperature Range -20 to 85°C
- Cooled 4x25Gb/s LAN WDM Blue or Red Side TOSA, LAN WDM Red or Blue Side ROSA
- Maximum power consumption（5.5W for 0~70°C operation, 6W for -20~85°C operation）
- Single LC receptacle
- Compatible with RoHS2.0
- DDM function

Applications

- Ethernet Links
- 100GBASE-ZR4

2. Ordering Information

Part No	Specifications	Specifications	Specifications	Specifications	Specifications	Specifications	Specifications	Specifications	Specifications	Application Code
Part No	Pack	Data rate	Tx	Pout	Rx	Sens	Top	Reach	Others	Application Code
WT290-835/836	QSFP28 BIDI	103.125Gbps	4x25Gb/s LAN-WDM EML	+2~7 dBm	SOA + PIN	<-25 dBm @5E-5	-20~85oC	70km	DDM	100GBASE -ZR4

3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Transportation and Storage Temperature Range	Ts	-40	+85	oC

Parameter	Symbol	Min.	Max.	Unit
Transportation and Storage Relative Humidity	RH	5	95	%
Power Supply Voltage	Vcc	-0.3	+3.6	V
Case Temperature Range when module is powered on Ready State	Tc	-20	85	oC
Mean Receiver Damage Threshold Per Lane	Pdag	+5.5		dBm
ESD(HBM)		1000		V

4. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Case Temperature Range	Tc	℃	-20		85
Relative Humidity	RH	%	0		90
Power Supply Voltage	Vcc	V	3.135	3.3	3.465
Total Power Consumption	Pw	W			6
Data rate (each line)		Gb/s		25.78125	-

5. Optical Parameters

PIN	DEFINITION	DESCRIPTION	NOTE
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V Power Supply Receiver	2
11	SCL	2-Wire Serial Interface Clock	
12	SDA	2-Wire Serial Interface Data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	

PIN	DEFINITION	DESCRIPTION	NOTE
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1

6. Optical Parameters

PIN	DEFINITION	DESCRIPTION	NOTE
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL/RxLosL	Interrupt. Optionally configurable as RxLOSL via the management interface(SFF-8636).	
29	VccTx	+3.3 V Power Supply transmitter	2
30	Vcc1	+3.3 V Power Supply	2
31	LPMode	Low Power Mode. Optionally configurable as TxDis via the management interface(SFF-8636).	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

7. Electrical Characteristics

NO.	Parameter	Symbol	Unit	Min	Typ	Max	Notes
1	Steady State Supply Current	Icc	mA	-	-	1732	
2	Sustained peak current	ISP	mA			1980	
3	Instantaneous peak current	IIP				2400	
4	Power Dissipation	Pw	W			6	
5	Low Power Dissipation	Plow	W			1.5	

8. Electrical Characteristics

NO.	Parameter	Symbol	Unit	Min	Typ	Max	Notes
	Pattern				PRBS9		
Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)	Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)
1 Differential voltage pk-pk	1 Differential voltage pk-pk	mV	mV		-	900	
2 Common mode noise (rms)	2 Common mode noise (rms)	mV	mV			17.5	
3 Eye height	3 Eye height	mV	mV	95			
4 Eye width	4 Eye width	Ui	Ui	0.46			
5 Differential termination mismatch	5 Differential termination mismatch	%	%			10	
6 Transition time	6 Transition time	ps	ps	10			20/80%
7 Common mode voltage	7 Common mode voltage	V	V	-0.3		2.8	

9. Electrical Characteristics

8	Differential voltage pk-pk		mV		-	900	
9	Common mode noise (rms)		mV			17.5	
10	Eye height		mV	228			
11	Eye width		Ui	0.57			
12	Differential termination mismatch		%			10	
13	Transition time		ps	9.5			20/80%
14	Vertical eye closure	VEC	dB			5.5	

10. Electrical Characteristics

NO.	Parameter	Symbol	Unit	Min	Typ	Max	Notes
1	Input High Voltage						
2	Input Low Voltage	VIL	V	-0.3		0.8	
3	Input Leakage Current	IIN	uA	-10		+10	
4	Output High Voltage (IOH=100uA)	VOH	V	Vcc-0.5		Vcc+0.3	
5	Output Low Voltage (IOL=100uA)	VOL	V	0		0.4	

11. Electrical Characteristics

NO.	Parameter	Symbol	Unit	Min	Typ	Max	Notes
1	Input High Voltage	VIH	V	Vcc*0.7	-	Vcc+0.5	
2	Input Low Voltage	VIL	V	-0.3	-	Vcc*0.3	
3	Output High Voltage (IOH=100uA)	VOH	V	Vcc-0.5	-	Vcc+0.3	
4	Output Low Voltage (IOL=100uA)	VOL	V	0		0.4	
5	I/O Pin Capacitance	Ci	pF			14	

12. Additional Specifications

Parameters	Unit	Requirements	Note
Temperature	℃	+/-3	
Voltage	V	+/-3%	
Rx power	dB	+/-3.0	
Tx power	dB	+/-3.0	

13. Additional Specifications

DDM temperature thresholds below apply to the commercial 0 to 70°C configuration only. Extended -20 to 85°C units require order-specific alarm thresholds and complementary wavelength-pair confirmation.

Parameters	Unit	Requirements	Description
Temp low warning	℃	-0	Min. case temperature
Temp high warning	℃	70	Max. case temperature
Voltage low warning	V	3.135	-5% Vcc target
Voltage high warning	V	3.465	+5% Vcc target
Tx power low warning	dBm	2	
Tx power high warning	dBm	7	
Rx power low warning	dBm	-25	
Rx power high warning	dBm	-6.5	
Temp low alarm	℃	-3	
Temp high alarm	℃	73	
Voltage low alarm	V	3.041	
Voltage high alarm	V	3.569	
Tx power low alarm	dBm	0.5	
Tx power high alarm	dBm	8	
Rx power low alarm	dBm	-28	

Parameters	Unit	Requirements	Description
Rx power high alarm	dBm	-3.5	

14. Technical Figure 1

NO.	Parameter	Symbol	Unit	Min	Typ	Max	Note
	Optical transmitter Characteristics						
1	Signaling Rate for Each Lane		Gbps	-	25.78125		
2	Signaling Speed Accuracy		ppm	-100		+100	
3	Blue Side Four Lane Wavelength Range WT290-835	λ1	nm	1272.55	1273.55	1274.54	
		λ2		1276.89	1277.89	1278.89	
		λ3		1281.25	1282.26	1283.27	
		λ4		1285.65	1286.66	1287.68	
4	Red Side Four Lane Wavelength Range WT290-836	λ5	nm	1294.53	1295.56	1296.59	
		λ6		1299.02	1300.05	1301.09	
		λ7		1303.54	1304.58	1305.63	
		λ8		1308.09	1309.14	1310.19	
5	Side Mode Suppression Ratio (min)	SMSR		30			
6	Total Average Launch Power	Pt	dBm	-		13	
7	Average Launch Power for Each Lane	Pa	dBm	2.0[1]		7.0	
8	Optical Modulation Amplitude for Each Lane	OMA	dBm	2.8[2]		8.8	
9	Difference in launch power between any two lanes(OMA) (max)		dB			3.6	
10	Average Launch Power of Off Transmitter for Each Lanes	Poff	dBm	----------		-30	

15. Technical Figure 2

	Optical receiver Characteristics						
16	Receive Rate for Each Lane		Gbps	-	25.78125		
17	Signaling Speed Accuracy		ppm	-100		+100	
18	Red Side Four Lane Wavelength Range WT290-835	λ5	nm	1294.53	1295.56	1296.59	
		λ6		1299.02	1300.05	1301.09	
		λ7		1303.54	1304.58	1305.63	
		λ8		1308.09	1309.14	1310.19	
19	Blue Side Four Lane Wavelength Range WT290-836	λ1	nm	1272.55	1273.55	1274.54	
		λ2		1276.89	1277.89	1278.89	
		λ3		1281.25	1282.26	1283.27	
		λ4		1285.65	1286.66	1287.68	
20	Damage threshold [5]	Pmax	dBm	5.5			
21	Average Receive Power for Each Lane	Pin		-28[6]		-5	
22	Receive Power In OMA for Each Lane	PinOMA	dBm	-		-3.5	
23	Receiver reflectance		dB			-26	
24	Receiver Sensitivity for Each Lane(100GbE) at BER= $5x10^{-5}$ BER[7]	S	dBm			-25	
25	Los Hysteresis		dB	0.5		5	

16. Revision History

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